Screening Level Risk Assessment
Port Lands, Toronto

Prepared for

Waterfront Toronto

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Acronyms and Abbreviations

atm-m^3/mol	atmosphere-cubic metre per mole
ABN	acid-base neutral
BTEX	benzene, toluene, ethylbenzene, xylene
COC	contaminant of concern
CP	chlorophenol
CSM	Conceptual Site Model
F	fraction
F4G	F4 Gravimetric
FID	flame ionization detector
GC	gas chromatography
H	Henry's Law Constant
HSP	Health and Safety Plan
ICC	industrial/commercial/community
m	metre
mbgs	metre below ground surface
MDL	Method Detection Limit
MGRA	Modified Generic Risk Assessment
MOECC	Ontario Ministry of the Environment and Climate Change
O. Reg.	Ontario Regulation
OCP	organochlorine pesticide
OTR	Ontario Typical Range
PAH	polycyclic aromatic hydrocarbon
PHC	petroleum hydrocarbon
RA	Risk Assessment
RBC	risk-based concentrations
RMM	Risk Management Measurement
RPI	residential/parkland/institutional
SCS	Site Condition Standards
SDL	sample detection limit
SLRA	Screening Level Risk Assessment
Torr	Torricelli
TL	target level
TRV	toxicity reference value

UCLm	upper confidence limit of the mean
VI	vapour intrusion
VOC	volatile organic carbon

Tab B. Screening Level Risk Assessment

Due to the timing of the completion of this Screening Level Risk Assessment (SLRA) report, this SLRA has been prepared using preliminary information (that is, Stage 1 data only), with the exception of Appendix B which considers both the Stage 1 and Stage 2 data. For more recent information regarding site conditions and parameters concentrations, please refer to GHD Limited (GHD) (2016). A review of the Stage 2 data indicated that additional contaminants of concern (COCs) would be identified for the Study Area (which is captured in Conceptual Site Model [CSM] [Tab A]); however, these additional COCs belonged to the same parameter groups already identified for the Study Area and the addition of the Stage 2 data would not change the overall conclusions of the SLRA. The full dataset (both Stage 1 and 2 data) will be considered in the development of the Community Based Risk Assessment (CBRA) for the Port Lands, thus please refer to the CBRA report for the updated assessment.

B.1 Screening-level Risk Assessment for the Toronto Port Lands

In the context of properties impacted by contaminants, Risk Assessment (RA) is the process of estimating the likelihood of undesired effects on human health and the environment resulting from exposure to chemical contaminants. In order for risks to human and ecological health to exist at chemically-impacted sites, the following components must be present

1. The chemical must be present at sufficient concentrations to cause a possible adverse effect.
2. A receptor must be present.
3. There must be a complete exposure pathway by which the receptor can come into contact with the chemical.

These three factors are interdependent because the significance of the environmental concentration and the potential environmental or health effects depend on the pathway by which the exposure occurs. The exposure pathway is also influenced by the nature (that is, the behaviour) of the receptor. These components are collectively integrated into models to illustrate potential pathways and to assist in the RA process.

The RA is part of a risk management approach used to determine the level of risk to human health and the environment that would result from planned activities at a contaminant-impacted property. The RA is also intended to effectively focus site-specific risk management efforts and resources on reducing the overall risk at the property and directing remedial actions, if required, to the risks associated with the soil and groundwater environmental impacts.

The objectives of this Screening Level Risk Assessment (SLRA) for the Study Area are as follows:

- Identify potentially complete exposure pathways with risks exceeding acceptable levels for human and ecological receptors.
- Understand the likely locations where risk management measures (RMMs) or remediation requirements are needed across the Study Area based on projected elevated risks.
- Align the locations for remediation and RMMs with the project landscape design to optimize the strategic site approach for the beneficial reuse of on-site soils.

The SLRA has been completed using the same dataset applied in the development of the Stage 1 CSM (Tab A [CH2M, 2015]) and the data gaps identified within the Stage 1 CSM may also influence the results of the SLRA. The SLRA process described herein involves an examination of the spatial distribution of

chemical exceedances in soil and groundwater for different component values across different exposure pathways over the Study Area. This process leads to a better understanding of the potential for elevated risks and the need for RMMs, or remediation, or both in specific areas across the Study Area to address specific pathways of exposure.

B.1.1 Background

B.1.1.1 Contaminant of Concern Review

Based on the current and future conditions of the Study Area, the COC screening process was conducted using the following Ontario Ministry of the Environment and Climate Change (MOECC) soil and groundwater standards:

- Sample locations currently situated within 30 metres (m) of Lake Ontario or the Don River were screened according to the *Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition* (Table 9 Site Condition Standards [SCS]) (MOECC, 2011b). The Table 9 SCS for both soil and groundwater are applicable to all land uses.
- Sample locations currently situated greater than 30 m of Lake Ontario or the Don River were screened according to the *Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition* (Table 3 SCS) (MOECC, 2011b). The Table 3 SCS for soil applies to either a residential/parkland/institutional (RPI) land use or an industrial/commercial/community (ICC) land use. Soil screening was conducted for both the RPI and ICC land uses. The Table 3 SCS for groundwater applies to all land uses.

A limited number of sample locations with elevated soil pH (that is, greater than pH 9 in surface soil and/or greater than pH 11 in subsurface soil) were observed during the investigative work in the Study Area. Elevated soil pH could result in the Study Area being designated as a Table 1 SCS site; however, for the purposes of this SLRA, it has been assumed that these limited locations could be addressed through additional sampling or remedial work, and that Table 3 SCS and Table 9 SCS will remain applicable.

Groundwater in the Study Area has also been identified at depths less than 1 metre below ground surface (mbgs) (see Section B.1.2.2.1). As groundwater is shallower than assumed in the derivation of the Table 3 SCS and Table 9 SCS (that is, 3 mbgs), screening to these standards alone may not be sufficiently protective of the groundwater to indoor air vapour intrusion pathway. To address this issue in the SLRA, the Table 7 GW2 component value from the *Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated Sites in Ontario* (MOECC Rationale document, 2011c) is applied to evaluate the potential for elevated risk to human receptors through the groundwater to indoor air pathway for volatile (that is, a chemical with a vapour pressure greater than 0.05 Torricelli [Torr] and a Henry's Law Constant [H] greater than 1×10^{-5} standard atmosphere-cubic metre per mole [atm-m^3/mol]) parameters in groundwater.

The list of COCs for initial consideration in both the human health and ecological SLRAs was determined according to the following screening process:

- A maximum concentration was identified for each parameter. The maximum concentration in soil and groundwater was determined as either the maximum measured value or the highest detection limit (if greater than the maximum measured value).
- Parameters were retained for further consideration under the screening process for soil and groundwater if the identified maximum concentration exceeded the either the Table 3 RPI/ICC (as applicable) or Table 9 SCS, depending on the location of the samples. Tables B1 through B5 show the detailed screening process, including the measured concentrations, number of samples, and number of detects greater than the Table 3 RPI/ICC (as applicable) or Table 9 SCS in soil and groundwater in the Study Area. As noted, while Table 1 SCS may be applicable in areas of the Study Area based on

elevated soil pH measurements, it is assumed that these could be addressed through additional sampling; therefore, Table 1 SCS was not applied. Table 7 SCS may also be applicable in certain areas of the Study Area based on depth to groundwater; however, this is accounted for through screening against the Table 7 GW2 component values (MOECC, 2011c) in the SLRA.

On a parameter-specific basis, a number of additional screening considerations were built into Step 2 of the screening process. The following describes particular considerations:

- Analytical results for methylnaphthalene in both soil and groundwater data were reported sometimes as methylnaphthalene 2-[1-] and sometimes as the separate isomers 1-methylnaphthalene and 2-methylnaphthalene. The maximum-detected concentration of each isomer was summed and compared to the maximum detected methylnaphthalene 2-[1-] data. The greater of these two values was conservatively applied as a 'total' methylnaphthalene concentration for comparison to the methylnaphthalene 2-[1-] Table 3 SCS or Table 9 SCS.
- The evaluation of xylenes in soil and groundwater data accounted for data reported as 'total' xylenes (xylene mixture), as well as the o-xylene isomer and m,p-xylene mixed isomers. For conservatism, the maximum detected value of the isomers was summed and compared to the total xylenes data value. The greatest reported xylene concentration (whether the 'total' mixture or summed mixed isomers value) was applied for the screening of 'total' xylene.
- The evaluation of 1,3-dichloropropene accounted for soil and groundwater data reported as 'total' 1,3-dichloropropene (mixture), as well as the cis and trans isomers. For conservatism, the maximum detected values of the isomers were summed and compared to the 'total' 1,3-dichloropropene data value. The greatest reported concentration (whether the 'total' mixture or summed mixed isomers value) was applied for the screening of 1,3-dichloropene.
- The evaluation of 2,4- and 2,6- dinitrotoluene accounted for soil and groundwater data reported as 2,4- and 2,6- dinitrotoluene (mixture), as well as the individual 2,4- and 2,6- isomers. For conservatism, the maximum detected value of the isomers were summed and compared to the 2,4- and 2,6- dinitrotoluene data value. The greatest reported concentration (whether the 'total' mixture or summed mixed isomers value) was applied for the screening of 2,4- and 2,6-dinitrotoluene.
- The evaluation of petroleum hydrocarbon (PHC) fraction (F)1, F2, and F3 accounted for both data reported with and without benzene, toluene, ethylbenzene, and xylenes (BTEX); naphthalene; and polycyclic aromatic hydrocarbons (PAHs), respectively, as well as historical data that reported only bulk PHC F1, F2 and F3 results. For conservatism, the greatest reported PHC fraction concentration was applied to screen each fraction, regardless of whether naphthalene or PAH data were included in the result (that is, the greater concentration between PHC F1 or PHC F1 [minus BTEX], PHC F2 or PHC F2 [minus naphthalene], and PHC F3 or PHC F3 [minus PAH]).
- The evaluation of PHC F4 in soil considered analytical results for F4 Gravimetric (F4G)-silica gel (Gravimetric heavy hydrocarbon-Silica). PHC F2, F3, and F4 fractions are determined via gas chromatography with a flame ionization detector (GC-FID). Laboratories analyze and report an F4G value in case the chromatogram tracing does not return to the baseline at or before the C50 carbon range. In some cases, this can result in a PHC F4 value (by GC-FID) that did not exceed the SCS, but an F4G concentration that did exceed the SCS. Canadian Council of Ministers of the Environment guidance (2008) indicates the greater of the F4 and F4G value should be reported as the PHC F4 value, which was the approach used for this SLRA.
- Chemicals detected in soil and groundwater as part of the current and historical investigations included some naturally-occurring elements and minerals with no applicable MOECC SCS. Detected parameters in soil were ruled out as COCs where possible using Ontario Typical Range

(OTR) values for Region 3, as provided in Table 8.2 of the MOECC rationale document (MOECC, 2011c) or the *Ontario Typical Range of Chemical Parameters in Soil, Vegetation, Moss Bags and Snow* (MOECC, 1999). The OTR values are considered representative of upper limits of typical province-wide background concentrations that are not contaminated by point sources. An OTR was not available for zirconium in soil. An alternate average zirconium concentration obtained from the United States Geological Survey document entitled *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States* (Shacklette and Boerngen, 1984) was used for screening in the absence of an OTR. Detected parameters in groundwater were ruled out as COCs where possible, using the 97.5 percentile of the Provincial Groundwater Monitoring Information System data, provided in Table 8.4 of the MOECC Rationale document (MOECC, 2011c)

- Chemicals with no applicable MOECC SCS or available background concentration were treated as follows:
  - Chemicals that were 100 percent nondetect in soil in groundwater were examined further to determine whether the reported maximum was based on an elevated sample detection limit (SDL). Chemicals that were 100 percent nondetect with nonelevated SDLs were not considered COCs, as they have not been detected in the Study Area. As the dataset comprises several years' worth of data, laboratory reporting limits and reporting accuracy may have changed over time. As such, the reported SDLs for each nondetect chemical without an applicable SCS were examined on a sampling event (date) basis. If all SDLs reported for the same sampling event were equal in value, the SDLs were considered to not be elevated. If one or more SDLs were higher than those from the same sampling event, the maximum SDLs were considered to be elevated, and the chemical was retained as a COC.
  - Chemicals that were detected and had no applicable MOECC SCS, or nondetect with elevated SDLs, were retained as COCs.

B.1.1.2 Receptors and Exposure Pathways

The proposed development of the Study Area includes multiple end uses, including a water lot and wetland, parkland use, residential use, commercial use, and community use (roads). To support this SLRA, for conservatism where applicable, screening of COCs was based on the most sensitive land use anticipated: residential and parkland property use. This SLRA has been completed under the assumption that the Study Area will maintain a nonpotable groundwater condition, and considers the management of existing soil and groundwater with COCs in place, combined with some targeted remediation and removal.

Tables B1 to B5 present the identified COCs for this SLRA. The potential exposure pathways for human and ecological receptors to these COCs considered within the SLRA are summarized in Exhibit B1.

Exhibit B1. Exposure Pathways Considered in Screening Level Risk Assessment

Medium	Receptor	Exposure Pathway	Applicable Component Values/Screening Criteria [a]
Soil	Human	Direct contact (incidental ingestion, dermal, inhalation of particulate)	S1, S3
		Vapour intrusion (volatilization from soil and migration to indoor air)	S-IA
		Outdoor air inhalation (volatilization from soil and migration to outdoor air)	S-OA
	Ecological	Direct contact (plants, soil organisms, birds, mammals)	Plants & Soil Org.; Mammals & Birds
		Soil leaching to groundwater with discharge to surface water >36.5 m away (aquatic receptors)	S-GW3
		Soil leaching to groundwater with discharge to nearby surface water, and/or soil moving to sediment (aquatic receptors)	Table 9 SCS
Groundwater	Human	Vapour intrusion (volatilization from groundwater and migration to indoor air)	Table 7 GW2
	Ecological	Groundwater discharging to surface water (aquatic receptors)	GW3

Note:
[a.] From MOECC Rationale document (MOECC, 2011c)

Additional assessment was completed to review the potential for the formation and presence of free-phase product based on concentrations observed in soil and groundwater.

B.1.1.3 Environmental Fate and Transport of Chemicals of Concern

The potential fate and transport of a chemical is characterized by its physical and chemical properties. Water solubility predicts the amount of a chemical that will dissolve in water. The soil sorption coefficient predicts the ratio of the chemical mass that will adsorb to soil versus the mass that will dissolve in water. The vapour pressure of a chemical can indicate the likelihood that a chemical will volatilize from its pure compound state; chemicals with high vapour pressures are expected to readily volatilize. The H for a chemical indicates the theoretical amount of a chemical that will volatilize from the dissolved-water phase to the vapour phase; chemicals with high H (that is, greater than 1×10^{-5} atm-m^3/mol) and vapour pressure (that is, greater than 0.05 Torr) are expected to volatilize from water. These values are examined for each COC as part of the exposure assessment in order to evaluate the potential for COC migration and to assess the potential for movement of COCs from the subsurface to a receptor along a potentially-complete exposure pathway. Inorganics were not considered volatile and were not retained for the vapour inhalation pathway.

B.1.1.4 Contaminant of Concern Screening Based on Physical and Chemical Properties

Chemical screening incorporates elements of both toxicity analysis and exposure assessment by selecting screening criteria that have previously been developed through an RA approach. Risk-based screening criteria use toxicity reference values (TRVs) derived by regulatory agencies in Canada and the United States (U.S.). Regulatory agencies use TRVs to back-calculate standards considered to be protective of various land uses. The risk-based standards also incorporate assumptions regarding the most sensitive receptor characteristic (for the land use identified), such as: body weight, ingestion rate, and exposure duration (based on land use).

The MOECC Rationale document (MOECC, 2011c) presents generic, risk-based component values for multiple exposure pathways. The Ontario Regulation (O. Reg.) 153/04 (MOECC, 2011a) Modified Generic Risk Assessment (MGRA) Tier 2 model (MOECC, 2011d) allows for the development of site-specific

component values, provided site-specific data is collected per O. Reg. 153/04 (MOECC, 2011a) requirements to support this development. Based on the current dataset, insufficient information was available to apply the MGRA Tier 2 model (MOECC, 2011d) to develop site-specific component values for each COC to evaluate the different exposure pathways in the SLRA. Consequently, COC concentrations were largely screened against MOECC generic component values obtained from the MGRA Tier 2 model (MOECC, 2011d) to identify potentially complete exposure pathways for human and ecological receptors; however, some exceptions were applied as follows:

- Component values for 1,1,1-trichloroethane, 1,1,2,2-tetrachloroethane, 1,1'-biphenyl, 1,1-dichloroethane, 1,2-dichloropropane, 1,3-dichlorobenzene, 1+2-methylnaphthalenes, anthracene, antimony, arsenic, bromodichloromethane, bromoform, cadmium, carbon tetrachloride, cis-1,2-dichloroethene, copper, dichloromethane, ethylbenzene, fluorene, hexachlorobenzene, hexachloroethane, lead, naphthalene, n-hexane, pentachlorophenol, phenanthrene, selenium, silver, tetrachloroethene, trichloroethylene, vinyl chloride, and zinc were revised based on updated TRVs determined through a review of current toxicity data

The TRVs were obtained from regulatory agencies including the MOECC and the U.S. Environmental Protection Agency (Integrated Risk Information System). Other TRVs cited in the MOECC Rationale document (MOECC, 2011c) (such as, those developed by the California Environmental Protection Agency, and the Agency for Toxic Substances and Disease Registry), were also considered. TRVs were obtained from published toxicity databases. If a database did not have a published value, an alternate source was reviewed. The TRVs used from other credible jurisdictions meet the requirements as set out in Section 4.3.2 of *Procedures for the Use of Risk Assessment under Part XV.1 of the Environmental Protection Act* (MOE, 2005). These TRVs are presented in Table B6.

A limited number of parameters, including some considered essential nutrients, were identified as COCs because there is no applicable MOECC SCS and they met one or more of the following conditions: 1) they were detected; 2) they were nondetect but with elevated SDLs; or 3) the maximum concentration exceeded the expected background level for soil or groundwater in Ontario. These parameters are not included in the MGRA Tier 2 model (MOECC, 2011d); therefore, they could not be compared to component values in the SLRA. These parameters may require a more detailed assessment during additional site-specific RA-related activities or evaluations. While the exclusion of these parameters from the component value screening does add uncertainty to the SLRA, the conclusions of the SLRA are not expected to be impacted.

The component values applied in the SLRA are summarized in Tables B7 and B8 for soil and groundwater, respectively. For COCs where the observed concentration exceeded the generic (or modified, as applicable) component value for an exposure pathway, the potential for elevated risk beyond acceptable levels to receptors along that pathway could not be ruled out and the need for RMMs or remediation, or both, to address the fact that potential risk requires further exploration.

B.1.1.5 Statistical Assessment

B.1.1.5.1 Summary Statistics

Soil and groundwater samples were analyzed for COCs. Chemistry results were assembled into a database and analytical results reported by the laboratory were used to calculate univariate summary statistics. For the purposes of screening, all non-detect values were replaced by the reported detection limit for use in calculation of summary statistics. Plots were created for each contaminant of concern, in each media, to visually inspect the sampling distribution (see Appendix A). Shapiro Wilk test for normality was employed in addition to visual inspection of distribution shapes. In general, sampling distributions did not follow normal (Gaussian) distributions. Some COC datasets were left censored (because of reported detection limits) and also included extreme values (due to potential contaminant hotspots). Therefore, in addition to univariate statistics, the 95th percentile value (95P) for each COC

was estimated from the analytical dataset for each media analyzed. The upper confidence limit of the mean (UCLm) was calculated parametrically (from the number of samples, mean and standard deviation). These two estimates provide information about of the underlying distribution of COC concentrations at the subject property. The 95P identifies and upper bound where no more than 5% of concentrations are higher, and the UCLm is an upper-bound estimate of average concentration of COCs in environmental media, and is therefore a conservative estimate, useful for screening.

B.1.1.5.2 Stats Results

Tables B9 to B13 present the various COC lists, including the calculated the 95P concentrations, counts for exceedances of the 95P, and the count of locations associated with the 95P exceedances.

For locations greater than 30 m from Lake Ontario or the Don River (based on the current Study Area layout), when the 95P concentrations in soil are compared to either the ICC or RPI Table 3 SCS, approximately 35 percent of 95P concentrations are less than the Table 3 SCS, for either an RPI or ICC land use. If 95P concentrations were used for COC selection, an estimated 30 chemicals could be excluded as soil COCs. For the same comparison in groundwater, approximately 35 percent of 95P concentrations are less than the Table 3 SCS (all land uses). This equates to an estimated 20 chemicals that could be excluded as groundwater COCs if the 95P concentrations were applied for COC screening.

For locations within 30 m of Lake Ontario or the Don River (based on the current Study Area layout), approximately 15 percent of 95P concentrations are less than the Table 9 SCS. If 95P concentrations were used for COC selection, an estimated 10 chemicals could be excluded as soil COCs. For the same comparison in groundwater, approximately 35 percent of 95P concentrations are less than the Table 9 SCS (all land uses). This equates to an estimated 15 chemicals that could be excluded as groundwater COCs if the 95P concentrations were applied for COC screening.

This information suggests that even if the COC lists for soil and groundwater were selected based on 95P concentrations instead of maximum concentrations, there still remains a substantial number of COCs that would require assessment and management.

The counts of results exceeding the 95P concentrations (Tables B9 to B13) were examined for evidence of hotspots that could be potentially recommended for remedial action and reduce the need for RMMs or pathway-specific RMMs in those locations. The exceedance counts indicate hotspots may exist for certain chemicals, which may benefit from remediation or removal. However, there is a substantial number of COCs in soil, groundwater, or both, that would not generally be targeted for remediation; therefore, RMMs would still be required for the Study Area. Based on this information, further identification of hotspots was not conducted as part of the SLRA.

B.1.2 Risk Evaluation

As presented in Section B.1.1.1, parameters in soil and groundwater were screened against the Table 3 SCS and Table 9 SCS (within 30 m of waterbody only) based on detected concentrations and analytical detection limits. This screening process identified the set of COCs requiring evaluation in the SLRA. The observed COC concentrations were compared to pathway-specific component values (see Section B.1.1.4) to assess the potential for elevated risks to receptors along those pathways, and review the potential distribution of areas indicating potential for elevated risks. This distribution was reviewed in the context of the planned site redevelopment, to assess the need for RMMs or remediation, or both, to address potentially elevated risks. Again, not every COC has a developed component value for each exposure pathway, which does add uncertainty to the SLRA; however, this uncertainty is not expected to change the conclusions of the SLRA.

B.1.2.1 Soil

B.1.2.1.1 Direct Contact – Human

The potential for elevated risk to human receptors via direct contact exposure (incidental ingestion and dermal contact) was evaluated by comparing the COC concentration (generally, residents and park users). Note, site workers are not specifically assessed in the SLRA via use of the MOECC S2 component values (MOECC, 2011c), but are understood to be conservatively accounted for through the application of the S1 component values. Additionally, the potential for elevated risk to subsurface human receptors (that is, construction and utility workers engaged in excavation activities) via direct contact exposure (incidental ingestion, dermal contact, and dust inhalation) was evaluated by comparing the COC concentrations to the MOECC S3 component values presented in Table B7.

The results for the S1 and S3 screenings, including the distribution of the exceedances, are presented on Figures 16(A and B) and 17.

Figure 16A indicates where sample results met (green dot) or exceeded (red dot) the S1 component values for volatile organic compounds (VOCs), PAHs, PHCs, acid-base neutral (ABN), chlorophenols (CPs), and organochlorine pesticide (OCP) parameters. As can be seen on Figure 16A, the majority of the sample results exceed the S1 component values for these parameters across the Study Area.

Figure 16B indicates where sample results met or exceeded the S1 component values for inorganic parameters. As indicated on Figure 16B, most of the sample results exceeded the S1 component values for inorganic parameters across the Study Area. This result may indicate a limited potential to use these soils as capping soils following the redevelopment; however, further investigation and risk analysis is required to confirm the significance of this finding.

Figure 17 indicates where sample results met or exceeded the S3 component values for VOCs, PAHs, PHC, ABN, CP, OCP, and inorganic parameters (that is, all parameters). As indicated on Figure 17, the majority of the sample results met the S3 component values for these parameters, while a limited number of exceedances can be observed in the river valley, park area, and development blocks. This result may indicate excavation workers exposed to Study Area soil would not require significant health and safety precautions to protect them from soil exposure, although additional confirmation is required.

B.1.2.1.2 Direct Contact – Ecological

The potential for elevated risk to ecological receptors via direct contact exposure was evaluated by comparing the COC concentrations to the lower of the Plant & Soil Organisms and Mammals & Birds component values presented in Table B7 for each COC. The results, including the distribution of the exceedances, are presented on Figure 18.

Figure 18 indicates where sample results met or exceeded the Plant & Soil Organisms and Mammals & Birds component values for All Parameters. As indicated on Figure 18, exceedances are observed across most portions of the Study Area. This result may indicate a limited potential to use these soils as capping soils following the redevelopment; however, further investigation and risk analysis is required to confirm the significance of this finding. It is noted that there may be some potential to apply a Modified Ecological Protection approach to assessing the risks to these soils in the Study Area and this approach may support identifying re-use options for some of the soils; however, this consideration is outside of the current SLRA.

B.1.2.1.3 Indoor Air Inhalation – Human

The potential for elevated risk to human receptors via the inhalation of indoor air was evaluated by comparing the volatile COC concentrations to the S-IA component values presented in Table B7 for residential/parkland use. Again, industrial/commercial workers are not specifically assessed in the SLRA via use of the S-IA component values for industrial/commercial use; however they are understood to be conservatively accounted for through the application of the residential/parkland S-IA component value. Parameters were retained for assessment related to vapour intrusion (VI) through the soil-to-indoor-air

pathway if they were considered a volatile (that is, a chemical with a vapour pressure greater than 0.05 Torr and an H greater than 1×10^{-5} atm-m^3/mol). Elevated concentrations of volatile COCs located in the saturated zone would not represent a complete VI pathway; however, all COC concentrations are considered within the current assessment, regardless of their depth. The results, including the distribution of the exceedances, are presented on Figure 19.

Figure 19 indicates where sample results met or exceeded the S-IA RPI component values for volatile parameters. As indicated on Figure 19, the majority of the sample results exceeded the S-IA RPI component values for these parameters, and only a limited number of sample results did meet this criteria. This result may indicate VI mitigation controls could be required in the Study Area to protect human receptors from inhalation exposure to indoor air. A more detailed review of VI exposure under developed conditions is required to confirm this finding.

B.1.2.1.4 Outdoor Air Inhalation – Human

The potential for elevated risk to human receptors via the inhalation of volatile COCs in outdoor air was evaluated by comparing the COC concentrations to the Outdoor Air component values presented in Table B7. Parameters were retained for assessment related to outdoor air inhalation if they were considered a volatile (that is, a chemical with a vapour pressure greater than 0.05 Torr and an H greater than 1×10^{-5} atm-m^3/mol). Note, elevated concentrations of volatile COCs located below the water table would not represent a complete outdoor air inhalation pathway for surface receptors. To examine the potential differences between volatile COC concentrations observed in the saturated zone and the unsaturated, concentrations observed below 1 m depth were considered potentially saturated and concentrations observed above 1 m depth were considered potentially unsaturated. The results, including the distribution of the exceedances, are presented on Figures 20A and 20B for observations above 1 m depth and below 1 m depth, respectively.

Figure 20A indicates where sample results met or exceeded the S-OA component values for volatile parameters located less than 1 mbgs, which is understood to represent the potentially unsaturated zone. As indicated on Figure 20A, the majority of these sample results meet the S-OA component values, except for a limited number of exceedances within the planned river valley area and select locations in the development blocks. It is expected that exceedances observed within the river valley area will likely be addressed via excavation and remediation activities already planned for that area. In terms of the exceedances observed within the development blocks, the significance of these exceedances and potential for elevated risk to human receptors via outdoor air inhalation requires a more detailed review than can be completed within this SLRA. Therefore, for the purpose of this SLRA, it is assumed that these limited exceedances do not represent an elevated risk that would require remediation or risk management measures.

Figure 20B indicates where sample results met or exceeded the S-OA component values for volatile parameters located at 1 mbgs or deeper, which is generally considered herein to represent the potentially saturated zone. As indicated on Figure 20B, a number of exceedances are observed within the planned river valley area, as well as in the development blocks and planned park area. Because these concentrations may largely fall within the saturated zone, they may not represent an elevated risk beyond acceptable levels; however, a better understanding of fluctuations in the groundwater table through the Study Area seasonally is required to better asses the significance of these observations. It is, again, expected that the exceedances observed within the river valley area may be addressed via excavation and remediation activities already planned for that area. Regardless, for the purpose of this SLRA, it is assumed that these exceedances do not represent an elevated risk that would require remediation or risk management measures.

B.1.2.1.5 Interior Soil Leaching to Groundwater – Ecological

The potential for elevated risk to ecological receptors via soil leaching to groundwater and ultimately discharging to surface water located 36.5 m or greater away was evaluated by comparing the COC concentrations to the S-GW3 component values presented in Table B7. The results, including the

distribution of the exceedances, are presented on Figures 21A, 21B, 21C, and 21D for VOCs, PHC, PAH, and ABN/CP/OCP, respectively. No exceedances were observed for inorganics; therefore, a figure has not been provided for this parameter. For the other parameters, some of the observed exceedances are more than 36.5 m away from the planned shoreline, and may not reflect the potential for an elevated risk.

Figure 21A indicates where sample results met or exceeded the S-GW3 component values for VOC parameters. As indicated on Figure 21A, exceedances were observed in the planned river valley, planned park area, and various locations within the development blocks. In the western portion of the Study Area, soils appear to largely meet the S-GW3 criteria.

Figure 21B indicates where sample results met or exceeded the S-GW3 component values for PHC F1 and F2 parameters. PHC F3 and F4 are not generally considered mobile and do not have S-GW3 component values. As indicated on Figure 21B, exceedances for PHC F1 and F2 were observed in the planned river valley, planned park area, and various locations within the development blocks. Again, for the western portion of the Study Area, soils largely meet the S-GW3 criteria for PHCs.

Figure 21C indicates where sample results met or exceeded the S-GW3 component values for PAHs. As indicated on Figure 21C, exceedances were observed in the planned river valley, limited areas within the planned park, and various locations within the development blocks. Although a limited number of exceedances are now observed in the western portion of the Study Area, these soils still do appear to largely meet the S-GW3 criteria for PAHs. Most PAH parameters are not considered mobile; therefore, understanding the significance of the PAH exceedances requires a more detailed assessment than can be provided in this SLRA.

Figure 21D indicates where sample results met or exceeded the S-GW3 component values for ABN, CP and OCP parameters. As indicated on Figure 21D, limited exceedances were observed in the planned river valley, planned park, and a planned development block. Only limited sampling appears to have been completed for these parameters, suggesting their potential presence in the Study Area is likely limited.

Overall, it is of note that the soils located in the western portion of the Study Area appear to largely meet S-GW3 criteria. This may have implications for the potential reuse of these soils, or need for RMMs related to this pathway, during development activities.

B.1.2.1.6 Near-shore Soil Leaching to Groundwater or Moving to Sediment – Ecological

The potential for elevated risk to ecological receptors via soil leaching to groundwater and ultimately discharging to nearby surface water, or soil moving to sediment, was evaluated by comparing the COC concentrations to MOECC Table 9 SCS (MOECC, 2011b). The results, including the distribution of the exceedances, are presented on Figure 22.

Figure 22 indicates where sample results met or exceeded the Table 9 SCS for All Parameters. As indicated on Figure 22, exceedances are observed across most portions of the Study Area. This result may indicate a limited potential to use these soils as near shore fill during the redevelopment (e.g., in Essroc Quay); however, further investigation and risk analysis is required to confirm the significance of this finding.

B.1.2.1.7 Formation of Free-phase Product

The potential for the formation of free-phase produce was also evaluated by comparing the COC concentrations to MOECC free-phase thresholds for organic parameters (that is, PHC, VOCs, and PAHs), as obtained from the MOECC Rationale document (MOECC, 2011c). The results, including the distribution of the exceedances, are presented on Figures 23A, 23B, and 23C for PHC, VOCs, and PAHs, respectively.

Figure 23A indicates where sample results met or exceeded the free-phase threshold values for PHC. As indicated on Figure 23A, exceedances were observed in the planned river valley, limited areas within the planned park, and various locations within the development blocks. The exceedances observed within the planned river valley, assuming they represent a potential free phase formation, can be addressed via remedial activities planned for these soils during the excavation work required to construct the river

valley (see Remediation and Treatment Options [Tab E]). The exceedances observed within the planned park and development blocks require further investigation to confirm whether free-phase product is in fact an issue within those areas. Although historical reports have indicated prior records of free-phase product in various portions of the Study Area (i.e., 309 Cherry Street, 480 Lakeshore Blvd E, 54 Commissioners Street, 75 Commissioners Street, 105 Villiers Street, Block from 21-63 Commissioners, including 181/185 Cherry Street, and 130 Commissioners Street) (CSM [Tab A]), Stage 1 investigations did not identify free-phase product in areas outside of the planned river valley. Areas outside the river valley and not already being targeted for remediation would need to be further investigated to confirm concentrations, the potential for free-phase product formation, and the need for remediation to address this risk.

Figures 23B and 23C indicate where sample results met or exceeded the free-phase threshold values for VOCs and PAHs, respectively. As indicated on Figure 23B, limited exceedances for VOCs are observed in the planned river valley which is already identified for remediation. The one exceedance is colocated with PHC exceedances and thus may reflect PHC impacts. As indicated on Figure 23C, the only exceedance for PAHs is observed in the developable portion of the site, which is not currently targeted for remediation. This exceedance is also colocated with a PHC free-phase threshold exceedance and thus may reflect PHC impacts. Again, as this area is located outside the river valley, further investigation is required to confirm the potential for free-phase product formation in this area.

For the purpose of this SLRA completed based on preliminary (that is Stage 1) information, it has been assumed that concentrations outside the river valley do not reflect and will not result in free-phase product formation and can be managed in place. It is acknowledged that additional investigative activities (GHD, 2016) have since revealed the presence of free-phase product outside of the river valley, and these impacts will be addressed within the CBRA.

B.1.2.1.8 Summary of Results

Exceedances of human health and ecological direct contact criteria across the Study Area may have implications for the potential to reuse site soils for soft caps, although further investigation and risk analysis are required to confirm the significance of this finding. The indoor air inhalation exposure pathway is potentially complete across the developable portion of the Study Area; therefore, VI mitigation measures may be required for current or future buildings. Some soil concentrations outside the river valley suggest the soil to outdoor air inhalation pathway may also be complete and further assessment is required to confirm whether additional management would be required. However, for the purpose of this SLRA, it is assumed that risk via outdoor air inhalation is not elevated beyond acceptable levels in the Study Area. An examination of the soil leaching to groundwater pathway suggests soils located in the western portion of the Study Area may benefit from strategic site management and site placement. It was also noted risks that via construction worker exposure to soils during excavation activities may not be elevated for most of the soils across the Study Area. Finally, exceedances of free-phase thresholds were largely observed for PHCs. While exceedances located in the planned river valley are expected to be addressed via planned construction and remediation activities, exceedances located outside the river valley require further examination. For the purpose of this SLRA, it is assumed that concentrations outside the river valley can be managed in place.

B.1.2.2 Groundwater

B.1.2.2.1 Groundwater Elevations

Based on investigative information collected at the Study Area in Stage 1 (CSM, Tab A [CH2M, 2015]) by GHD Limited, the minimum and maximum depths to groundwater are 1.01 mbgs and 4.96 mbgs, respectively. These depths suggest the potential for surface human receptors to have direct contact with groundwater in the Study Area is minimal, although subsurface excavation workers could still have contact with groundwater during excavation activities. These depths also suggest Table 3 SCS and Table 9 SCS may not be sufficiently protective of the groundwater to indoor air vapour intrusion pathway –

especially for non-slab-on-grade buildings (e.g., buildings with basements or sub-grade parking garages). Consequently, in this SLRA the Table 7 GW2 component values (MOECC, 2011c) are applied to evaluate the potential for elevated risk to human receptors through the groundwater to indoor air pathway for volatile parameters in groundwater.

B.1.2.2.2 Direct contact – Human

The potential for elevated risk to subsurface human receptors (that is, construction and utility workers engaged in excavation activities) via direct contact exposure to groundwater was not evaluated as no MOECC component values specific to this pathway have been developed; however, elevated risk to subsurface workers via this pathway could not be ruled out in the SLRA.

B.1.2.2.3 Formation of Free-phase Product

The potential for the formation of free-phase product was evaluated by comparing the COC concentrations to MOECC ½ solubility values, as obtained from the MOECC Rationale document (MOECC, 2011c) and presented in Table B8. The results, including the distribution of the exceedances, are presented on Figures 24A and 24B for PHC and VOCs, respectively.

Figure 24A indicates where sample results met or exceeded the ½ solubility for PHC. As indicated on Figure 24A, exceedances for PHC were observed in the planned river valley, the planned park, and various locations within the development blocks. The wide-spread distribution of the exceedances likely reflects the understanding that PHC F3 and F4 are generally considered insoluble, and the ½ solubility for PHC F2 is equal to the Table 3 SCS (that is, any Table 3 SCS exceedance of PHC F2 also reflects a ½ solubility exceedance). Whether or not these ½ solubility exceedance indicate the potential for free phase formation requires further examination; however, for the purpose of this SLRA completed based on preliminary (that is Stage 1) information, it has been assumed that exceedances within the planned river valley will be addressed via the anticipated construction/remediation activities and that exceedances observed within the park and development blocks can be addressed via additional investigation activities and do not represent free phase product formation. It is acknowledged that additional investigative activities (GHD, 2016) have since revealed the presence of free-phase product outside of the river valley, and these impacts will be addressed within the CBRA.

Figure 24B indicates where sample results met or exceeded the ½ solubility for VOCs. As indicated on Figure 24B, no exceedances for VOCs were observed in the Study Area.

B.1.2.2.4 Indoor Air Inhalation – Human

For the VI pathway, in the derivation of the generic standards, the MOECC has assumed a 1-m separation distance between a building's foundation and the water table. The MOECC's assumed separation distance may not be met in the Study Area under a scenario in which buildings with basements or below grade parking are constructed. Therefore, in order to account for the 1 m separation distance assumed by the MOECC chemicals considered volatile were compared to the Table 7 GW2 component value (for shallow soil properties) (MOECC, 2011c). Slab-on-grade buildings could also be constructed in the Study Area for which the 1-m separation distance between the slab and water table may be met; however, this scenario is not considered in this SLRA and only the more conservative scenario is applied. It is also assumed within this assessment that no buildings are planned for construction in the future Table 9 areas.

The results, including the distribution of the exceedances, are presented on Figure 25. Locations with exceedances for GW2 appear to generally align with those observed for S-IA, suggesting there could be limited benefit to managing soil movement based on this pathway (that is, groundwater conditions may require VI mitigation in any case, so there may be limited value in managing placement of soil exceeding S-IA below caps away from buildings). A more in depth and site-specific assessment of VI risk is required to determine whether or not groundwater conditions do mean VI mitigation is required for the planned developed area; however, for the purposes of this SLRA, and based on the information provided, it

appears VI mitigation may be required across the development areas where buildings are planned and this understanding is being carried forward to develop the site strategy.

B.1.2.2.5 Discharge to Surface Water – Ecological

The potential for elevated risk to ecological receptors via groundwater discharging to surface water was evaluated by comparing the COC concentrations to the GW3 component values obtained from the MGRA Tier 2 model (MOECC, 2011d) and presented in Table B8. The results, including the distribution of the exceedances, are presented on Figures 26A, 26B, 26C, and 26D for PHC, VOCs, inorganics and PAHs, respectively.

Figure 26A indicates where sample results met or exceeded the GW3 component values for PHC F1 and F2 parameters. PHC F3 and F4 are not generally considered mobile and do not have GW3 component values. As indicated on Figure 26A, exceedances for PHC F1 and F2 were observed in the planned river valley, limited areas within the planned park, and various locations within the development blocks. In the western portion of the Study Area, groundwater largely met the GW3 criteria for PHCs.

Figure 26B indicates where sample results met or exceeded the GW3 component values for VOCs. As indicated on Figure 26B, exceedances were observed in the planned river valley and limited locations within the development blocks on Villiers Island. Again, for the western portion of the Study Area, groundwater appears to meet the VOC GW3 criteria. Groundwater in the southern portion of the Study Area also appears to meet the GW3 criteria for VOCs.

Figure 26C indicates where sample results met or exceeded the GW3 component values for inorganic parameters. As indicated on Figure 26C, exceedances were observed in the planned river valley and various locations within the development blocks on Villiers Island. Again, for the western and southern portions of the Study Area, groundwater appears to meet the GW3 criteria for inorganic parameters.

Figure 26D indicates where sample results met or exceeded the GW3 component values for PAHs. As indicated on Figure 26D, exceedances were observed in the planned river valley, planned park, and planned development blocks. It is noted that exceedances by PAHs are observed in the western and southern portions of the Study Area; however, most PAH parameters are not considered mobile, and an understanding the significance of the PAH exceedances requires a more detailed assessment than can be provided in this SLRA.

Overall, it is of note that the groundwater located in the western portion of the Study Area appears to largely meet GW3 criteria, and the primary COCs of concern for groundwater discharge to surface water appear to be PHC F1 and F2. This may have implications regarding the potential need for long-term groundwater controls or barriers along the newly constructed river valley.

It is noted that observed exceedances of S-GW3 component values in soil and GW3 component values in groundwater for some portions of the Study Area do not necessarily indicate that management of the groundwater to surface water pathway will be required. Based on previous experience at similar sites, and a high level review of potential groundwater to surface water interactions for the redeveloped Study Area (see Appendix B), a more in-depth assessment of groundwater to surface water interaction could reveal this pathway is incomplete. Noting this, and given that excavation activities in the river valley and development of the Flood Protection Landform will likely address some of most significant impacts, it is assumed herein that management of groundwater to surface water interactions in the new river valley will not be required post-development. A more in depth review of anticipated groundwater to surface water interactions under redeveloped conditions is required to validate this assumption.

B.1.2.2.6 Summary of Results

The potential for elevated risk to subsurface human receptors (that is, construction and utility workers engaged in excavation activities) via direct contact exposure to groundwater could not be ruled out via the SLRA, as no MOECC component values specific to this pathway have been developed. The potential

for elevated risk to ecological receptors via groundwater discharging to surface water also could not be ruled out for various portions of the site, although the results did suggest it may not be an issue across the entire Study Area. The potential for elevated risk to human receptors via indoor air inhalation of volatiles originating from groundwater could also not be ruled out across the Study Area. Therefore, VI mitigation measures may be required across the development areas where buildings are planned. Exceedances of ½ solubility values for PHC was also observed across the Study Area and further investigations are required to confirm free-phase product has not formed outside the river valley area.

B.1.3 Site-specific Criteria

Site-specific criteria, including both risk-based concentrations (RBCs) and target levels (TLs), were selected for the different media and scenarios within the Study Area. The RBCs identify COC concentrations that may be managed in place without the use of RMMs, while the TLs identify COC concentrations that may be managed in place with the use of RMMs.

RBCs were established for different media and scenarios by: 1) first confirming the applicable component values for each media and scenario; 2) selecting the lowest component value for each media and scenario as the potential RBC; and 3) comparing the potential RBCs for each media and scenario to background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). The final proposed RBC for each COC in each media and scenario was then established as the higher of the potential RBC, the background concentration, and the MDL.

TLs were established for soil and groundwater by calculating estimated site maximums. The estimated site maximums were derived by applying the greater of the maximum detected concentration multiplied by 1.2 and then rounded down to two significant digits, as appropriate, and the MDL. This approach was inferred from information provided in the MOECC MGRA model spreadsheet (MOEC, 2011d). The MGRA model spreadsheet will accept an estimated maximum concentration up to 20 percent higher than the measured maximum. The potential soil estimated site maximums were then compared to the free-phase threshold concentrations to assess the concentrations for the potential development of free-phase product. Where the potential soil estimated site maximums exceeded the threshold concentrations, the threshold concentrations were carried forward as the TL. Finally, the potential TLs for each medium and scenario identified via this process were compared to background concentrations and MDLs as included in the MGRA Tier 2 model (MOECC, 2011d). The TL for each COC in each medium and scenario was then established as the higher of the potential TL, background concentration, and MDL.

Soil TLs were compared to the S-OA component values and groundwater TLs were compared to ½ solubility values to identify concentrations that may require further assessment as potential TLs under a more detailed RA; however, no adjustment to the TLs was made within SLRA to account for the S-OA component values or ½ solubility values.

B.1.3.1 Soil Risk-based Concentrations

Soil RBCs were developed for a number of scenarios, as summarized in Exhibit B2.

Exhibit B2. Soil Risk-based Concentrations Scenarios

Soil Use	Placement		Applicable Component Value Table
	Less than 30 m from a Building	Less than 30 m from Shore	
Surface soil – Soft Cap	Yes	No	MOECC Table 3 SCS
	No	Yes	MOECC Table 9 SCS; minus S-IA considerations
Subsurface soil – under hard cap or >1.5 m deep	Yes	No	MOECC Table 3 SCS; minus ecological component values

Soil Use	Placement		Applicable Component Value Table
	Yes or No	Yes	MOECC Table 9 SCS

B.1.3.1.1 Surface Soil – Soft Cap

RBCs for surface soil that could be used as a planting media and could be located within 30 m of a building and greater than 30 m away from a waterbody were established via application of S1, Plants & Soil Organisms, Birds & Mammals, S-GW3, S-OA, and S-IA component values, as well as free phase threshold values. The results are presented in Table B14.

RBCs for surface soil that could be used as a planting media and would be located greater than 30 m away from any buildings and within 30 m of a waterbody (since it is assumed the redevelopment will not involve the construction of any buildings within the park area) were established via application of S1, Plants & Soil Organisms, Birds & Mammals, S-OA, Table 9 Standards and S-GW3 component values, as well as free phase threshold values. The results are presented in Table B15.

B.1.3.1.2 Soil under Hard Cap or Greater than 1.5 mbgs

RBCs for soil planned for placement under hard caps (such as roadways, sidewalk, and so on) or at depths greater than 1.5 mbgs, and that could be located within 30 m of a building and more than 30 m away from a water body were, established by applying S3, S-OA, S-GW3, and S-IA component values, as well as free-phase threshold values. The results are presented in Table B16.

For soil placed under a hard cap and located within 36.5 m of a water body, Table 9 SCS would apply as soil RBCs.

B.1.3.2 Groundwater Risk-based Concentrations

Groundwater RBCs were developed for a number of scenarios, as summarized in Exhibit B3.

Exhibit B3. Groundwater Risk-based Concentrations Scenarios

Scenario	Placement		Applicable Component Value Table
	Less than 30 m from a Building	Less than 30 m from Shore	
Protective of Subsurface Worker Direct Contact	Yes	No	MOECC Table 6
	No	Yes	MOECC Table 8; minus GW2 considerations
Subsurface Worker Contact Managed under Health and Safety Plan	Yes	No	MOECC Table 7
	No	Yes	MOECC Table 9; minus GW2 considerations

B.1.3.2.1 Interior Groundwater with Buildings Present

RBCs for groundwater protective of subsurface worker direct contact, discharge to surface water greater than 30 m away (i.e., considered to be groundwater interior to the Study Area, as opposed to near shore), and VI were established by applying GW1, Table 6 GW3, and Table 6 GW2 (residential) component values, and ½ solubility values. The results are presented in Table B17.

Alternatively, if subsurface worker exposure to groundwater was managed through a Health and Safety Plan (HSP), RBCs for groundwater protective of discharge to surface water greater than 30 m away, and VI could be established via application of Table 7 GW3, and Table 7 GW2 (residential) component values, as well as ½ solubility values. These RBCs are presented in Table B18.

B.1.3.2.2 Near Shore Groundwater with no Buildings Present

RBCs for groundwater protective of subsurface worker direct contact and discharge to surface water less than 30 m away, with the assumption that no buildings would be located within 30 m of this area, were established by applying GW1 and Table 8 GW3 component values, as well as the ½ solubility values. The results are presented in Table B19.

Alternatively, if subsurface worker exposure to groundwater was managed through an HSP, RBCs for groundwater protective of discharge to surface water less than 30 m away, with the assumption that no buildings would be located within 30 m of this area, could be established by applying Table 9 GW3 component values and the ½ solubility values. These RBCs are presented in Table B20.

B.1.3.2.3 Comparison of RBCs to ½ Solubilities

The RBCs for PHC F3, PHC F4, benzo[g,h,i]perylene, and indeno[1,2,3-Cd]pyrene have been set at values greater than the ½ solubility values. Although this is believed to be appropriate for these parameters, further assessment of RBCs for these parameters may be required in a more detailed RA.

B.1.3.3 Interim Target Levels

This SLRA considers the Study Area as two portions: 1) the Table 3 SCS area, which is located greater than 30 m from a water body, and 2) the Table 9 SCS area, which is located within 30 m of a water body. Interim target levels have been established for both of these areas. Tables B21 and B22, present the interim target levels for soil in the Table 3 SCS and Table 9 SCS areas, respectively; Tables B23 and B24 present the interim target levels for groundwater in the Table 3 SCS and Table 9 SCS areas, respectively.

As presented in Tables B-21 and B-22, the interim target levels for soil were determined by comparing the lesser of the estimated maximum concentration and the free-phase threshold to the greater value of the background concentration and MDL, as included in the MGRA Tier 2 model (MOECC, 2011d). If the lesser of the estimated maximum and free-phase threshold was less than the background concentration/MDL, the interim target level was set to the greater of the background concentration/MDL. Tables B-21 and B-22 also present a comparison of the estimated maximums to the soil to outdoor air component values; exceedances are noted for several VOCs, PAHs, and PHCs. Further analysis is recommended to determine whether the interim target levels are protective of the outdoor air inhalation pathway for these soil parameters.

As presented in Tables B-23 and B-24, the interim target levels for groundwater were determined by comparing the estimated maximum concentration to the greater value of the background concentration and MDL as included in the MGRA Tier 2 model (MOECC, 2011d). If the estimated maximum was less than the background concentration/MDL, the interim target level was set to the greater of the background concentration/MDL. Tables B-23 and B-24 also present a comparison of the estimated maximums to the half solubility component values to assess the potential for free-phase formation; exceedances are noted for several PAHs and PHCs. Further analysis is recommended to determine whether the interim target levels are sufficiently protective of the potential formation of free-phase for these groundwater parameters.

B.1.4 Risk Management and Development Strategy

Typical RMMs applied at brownfield sites to support the management of COCs in place when risks exceeding acceptable levels cannot be ruled out include a combination of engineered controls, administrative controls, and long-term monitoring, maintenance and record-keeping requirements, as summarized in Exhibit B4. RMMs are put in place to block exposure pathways and/or reduce exposures to acceptable levels. In some cases, remediation activities can also be applied to protect site receptors from exposure to COCs.

Based on the current understanding of conditions across the Study Area and the planned construction activities, it is understood that remedial activities for soil and groundwater impacts will be targeted to

the planned river valley area, while other impacts in the planned park and development blocks are expected to be managed in place. Additional investigative activities are required to confirm remedial actions are not required in the park area or development blocks for potential free-phase formation or elevated risks related to the soil to outdoor air inhalation pathway. However, this SLRA assumes COCs in these areas can be managed in place via the RMMs listed in Exhibit B4. The potential remedial activities to be implemented in portions of the river valley are outlined in the Remediation and Treatment Options report (Tab E). Additional information regarding soil management requirements can be found in the Soil Management Plan (Tab F), and information regarding potential groundwater monitoring programs can be found in the Groundwater Management Plan (Tab G).

Exhibit B4. Typical Risk Management Measurements for Brownfield Sites

Engineered Controls	Administrative Controls	Long-term management
1) Capping - Soft cap (0.5 to 1.5 m thick) - Hard caps (0.225 m thick or more) - Utility corridors/preferential pathways - Site Plan (barrier quality and placement documentation) 2) Vapour Intrusion Mitigation - Vapour barrier - Subslab venting system - Submembrane venting system - Asbuilts; Proposed Testing and Performance Requirements documentation	Soil Management Plan (Tab F) HSP	Groundwater Management Plan (Tab G) Vapour Intrusion monitoring Inspection/maintenance program for caps and VI barriers Annual Reporting

B.2 References

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Tables

TABLE B1

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m from Lake Ontario/Don River)

COC Screening - Table 3 Standards - RPI

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (RPI) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (RPI) SCS	Count of Non-Detects Above Table 3 (RPI) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1,1,2-Tetrachloroethane	Volatile	170	405	0.058	10	180	180	32	48	**Included (Max > Table 3 [RPI] SCS)**
1,1,1-Trichloroethane	Volatile	171	406	0.38	38	180	180	20	17	**Included (Max > Table 3 [RPI] SCS)**
1,1,2,2-Tetrachloroethane	Volatile	171	406	0.05	10	180	180	32	60	**Included (Max > Table 3 [RPI] SCS)**
1,1,2-Trichloroethane	Volatile	162	390	0.05	10	370	370	32	52	**Included (Max > Table 3 [RPI] SCS)**
1,1'-Biphenyl	Non-Volatile	8	13	0.31		1	1		2	**Included (Max > Table 3 [RPI] SCS)**
1,1-Dichloroethane	Volatile	170	406	3.5	10	180	180	6	3	**Included (Max > Table 3 [RPI] SCS)**
1,1-Dichloroethene	Volatile	169	404	0.05	10	44	44	32	50	**Included (Max > Table 3 [RPI] SCS)**
1,2,4-Trichlorobenzene	Volatile	13	13	0.36		2	2		2	**Included (Max > Table 3 [RPI] SCS)**
1,2-Dibromoethane	Volatile	170	405	0.05	10	92	92	32	51	**Included (Max > Table 3 [RPI] SCS)**
1,2-Dichlorobenzene	Volatile	170	408	3.4	10	180	180	6	3	**Included (Max > Table 3 [RPI] SCS)**
1,2-Dichloroethane	Volatile	170	405	0.05	10	180	180	32	52	**Included (Max > Table 3 [RPI] SCS)**
1,2-Dichloropropane	Volatile	170	405	0.05	10	180	180	32	52	**Included (Max > Table 3 [RPI] SCS)**
1,3-Dichlorobenzene	Volatile	170	408	4.8	10	180	180	4	4	**Included (Max > Table 3 [RPI] SCS)**
1,3-Dichloropropene (max)	Volatile	170	405	0.05	10	92	92	32	37	**Included (Max > Table 3 [RPI] SCS)**
1,4-Dichlorobenzene	Volatile	170	408	0.083	10	180	180	32	44	**Included (Max > Table 3 [RPI] SCS)**
1+2-Methylnaphthalenes (max)	Volatile	139	394	0.99	5100	1	5100	72	2	**Included (Max > Table 3 [RPI] SCS)**
2,4&2,6-Dinitrotoluene (max)	Non-Volatile	8	9	0.92		1	1		2	**Included (Max > Table 3 [RPI] SCS)**
2-Butanone	Volatile	170	403	16	100	2800	2800	9	5	**Included (Max > Table 3 [RPI] SCS)**
3,3`-Dichlorobenzidine	Non-Volatile	8	9	1		9.99	9.99		8	**Included (Max > Table 3 [RPI] SCS)**
4-Chloroaniline	Non-Volatile	3	3	0.5		2	2		2	**Included (Max > Table 3 [RPI] SCS)**
4-Methyl-2-Pentanone	Volatile	165	399	1.7	100	1800	1800	25	21	**Included (Max > Table 3 [RPI] SCS)**
Acenaphthene	Non-Volatile	187	430	7.9	2100	6	2100	18		**Included (Max > Table 3 [RPI] SCS)**
Acenaphthylene	Non-Volatile	187	430	0.15	280	1.5	280	58	12	**Included (Max > Table 3 [RPI] SCS)**
Acetone	Volatile	170	404	16	500	2800	2800	20	9	**Included (Max > Table 3 [RPI] SCS)**
Ammonia	Volatile	2	2		157		157			**Included (No SCS; known to be present)**
Anthracene	Non-Volatile	187	430	0.67	970	1	970	53	1	**Included (Max > Table 3 [RPI] SCS)**
Antimony	Non-Volatile	176	426	7.5	33	1.6	33	3		**Included (Max > Table 3 [RPI] SCS)**
Arsenic	Non-Volatile	188	438	18	86	1	86	17		**Included (Max > Table 3 [RPI] SCS)**
Barium	Non-Volatile	193	443	390	930		930	3		**Included (Max > Table 3 [RPI] SCS)**
Benzene	Volatile	193	565	0.21	460	92	460	80	12	**Included (Max > Table 3 [RPI] SCS)**
Benzo(a)anthracene	Non-Volatile	187	426	0.5	460	1	460	88	1	**Included (Max > Table 3 [RPI] SCS)**
Benzo(a)pyrene	Non-Volatile	187	430	0.3	330	1	330	102	3	**Included (Max > Table 3 [RPI] SCS)**
Benzo(b&j)fluoranthene	Non-Volatile	187	430	0.78	260	1	260	59	1	**Included (Max > Table 3 [RPI] SCS)**
Benzo(g,h,i)perylene	Non-Volatile	186	429	6.6	130	1	130	12		**Included (Max > Table 3 [RPI] SCS)**
Benzo(k)fluoranthene	Non-Volatile	182	424	0.78	93	1	93	25	1	**Included (Max > Table 3 [RPI] SCS)**
Bis (2-chloroethyl) ether	Volatile	3	3	0.5		2	2		2	**Included (Max > Table 3 [RPI] SCS)**
bis (2-Chloroisopropyl) ether	Non-Volatile	6	7	0.67		1	1		2	**Included (Max > Table 3 [RPI] SCS)**
Boron (hot water extractable) [f]	Non-Volatile	126	361	1.5	7.38	0.1	7.38	37		**Included (Max > Table 3 [RPI] SCS)**
Bromide	Non-Volatile	5	5		4.99	3	4.99			**Included (No SCS; known to be present)**
Bromodichloromethane	Volatile	170	405	13	10	180	180		1	**Included (Max > Table 3 [RPI] SCS)**
Bromoform	Volatile	170	405	0.27	10	370	370	20	16	**Included (Max > Table 3 [RPI] SCS)**
Bromomethane	Volatile	170	405	0.05	20	370	370	32	54	**Included (Max > Table 3 [RPI] SCS)**
Cadmium	Non-Volatile	193	443	1.2	20	0.5	20	15		**Included (Max > Table 3 [RPI] SCS)**

TABLE B1

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m from Lake Ontario/Don River)

COC Screening - Table 3 Standards - RPI

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (RPI) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (RPI) SCS	Count of Non-Detects Above Table 3 (RPI) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
Calcium	Non-Volatile	13	13	49000	144000		144000			**Included (Max > OTR value)**
Carbon tetrachloride	Volatile	170	405	0.05	10	180	180	32	52	**Included (Max > Table 3 [RPI] SCS)**
Chloride (Cl)	Non-Volatile	5	5	130	231	347	347			**Included (Max > OTR value)**
Chlorobenzene	Volatile	170	405	2.4	10	92	92	6	3	**Included (Max > Table 3 [RPI] SCS)**
Chlorodibromomethane	Volatile	170	405	9.4	10	180	180	1	2	**Included (Max > Table 3 [RPI] SCS)**
Chloroform	Volatile	170	405	0.05	10	180	180	32	64	**Included (Max > Table 3 [RPI] SCS)**
Chromium	Non-Volatile	193	504	160	714	1	714	1		**Included (Max > Table 3 [RPI] SCS)**
Chrysene	Non-Volatile	187	430	7	390	1	390	15		**Included (Max > Table 3 [RPI] SCS)**
cis-1,2-Dichloroethene	Volatile	167	400	3.4	10	180	180	6	3	**Included (Max > Table 3 [RPI] SCS)**
Cobalt	Non-Volatile	193	443	22	90.9	2	90.9	4		**Included (Max > Table 3 [RPI] SCS)**
Copper	Non-Volatile	193	443	140	1200		1200	10		**Included (Max > Table 3 [RPI] SCS)**
Cyanide	Non-Volatile	146	393	0.051	1	1	1	48	8	**Included (Max > Table 3 [RPI] SCS)**
Dibenzo(a,h)anthracene	Non-Volatile	187	430	0.1	35	1	35	57	21	**Included (Max > Table 3 [RPI] SCS)**
Dichloromethane	Volatile	170	404	0.1	460	180	460	33	30	**Included (Max > Table 3 [RPI] SCS)**
Diethylphthalate	Non-Volatile	8	9	0.5		2	2		2	**Included (Max > Table 3 [RPI] SCS)**
Dimethylphthalate	Non-Volatile	8	9	0.5		2	2		2	**Included (Max > Table 3 [RPI] SCS)**
Electrical Conductivity [e, f]	Non-Volatile	154	401	0.7	5.85		5.85	72		**Included (Max > Table 3 [RPI] SCS)**
Ethylbenzene	Volatile	193	566	2	2700	20	2700	68	2	**Included (Max > Table 3 [RPI] SCS)**
F1 (C6-C10) (max)	Volatile	184	491	55	8840	400	8840	83	1	**Included (Max > Table 3 [RPI] SCS)**
F2 (C10-C16) (max)	Volatile	184	468	98	51000	50	51000	104		**Included (Max > Table 3 [RPI] SCS)**
F3 (C16-C34) (max)	Non-Volatile	184	469	300	48000	150	48000	113		**Included (Max > Table 3 [RPI] SCS)**
F4 (C34-C50) (max)	Non-Volatile	184	466	2800	44000	150	44000	20		**Included (Max > Table 3 [RPI] SCS)**
Fluoranthene	Non-Volatile	187	428	0.69	1000	1	1000	108	1	**Included (Max > Table 3 [RPI] SCS)**
Fluorene	Non-Volatile	187	428	62	1100	1	1100	7		**Included (Max > Table 3 [RPI] SCS)**
Hexachlorobenzene	Non-Volatile	8	9	0.52		2	2		2	**Included (Max > Table 3 [RPI] SCS)**
Hexachlorobutadiene	Volatile	3	3	0.012		1	1		3	**Included (Max > Table 3 [RPI] SCS)**
Hexachloroethane	Volatile	3	3	0.089		1	1		3	**Included (Max > Table 3 [RPI] SCS)**
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	187	430	0.38	110	1	110	67	4	**Included (Max > Table 3 [RPI] SCS)**
Lead	Non-Volatile	193	443	120	3700		3700	52		**Included (Max > Table 3 [RPI] SCS)**
Magnesium	Non-Volatile	13	13	15000	71599.99		71599.99			**Included (Max > OTR value)**
Mercury	Non-Volatile	186	437	0.27	9.1	0.05	9.1	41		**Included (Max > Table 3 [RPI] SCS)**
Methyl tert-butyl ether (MTBE)	Volatile	170	405	0.75	10	370	370	13	16	**Included (Max > Table 3 [RPI] SCS)**
Molybdenum	Non-Volatile	192	443	6.9	8.2	3	8.2	3		**Included (Max > Table 3 [RPI] SCS)**
Naphthalene	Volatile	175	412	0.6	8700	5	8700	68	2	**Included (Max > Table 3 [RPI] SCS)**
n-Hexane	Volatile	85	274	2.8	17.6	2	17.6	3		**Included (Max > Table 3 [RPI] SCS)**
Nickel	Non-Volatile	193	443	100	239.99	2	239.99	2		**Included (Max > Table 3 [RPI] SCS)**
PCB, Total	Non-Volatile	36	48	0.35	0.6	0.3	0.6	2		**Included (Max > Table 3 [RPI] SCS)**
Pentachlorophenol	Non-Volatile	3	3	0.1		2	2		3	**Included (Max > Table 3 [RPI] SCS)**
Perchlorate	Non-Volatile	4	4		0.82		0.82			**Included (No SCS; known to be present)**
Phenanthrene	Non-Volatile	187	430	6.2	3100	1	3100	36		**Included (Max > Table 3 [RPI] SCS)**
Pyrene	Non-Volatile	187	429	78	1400	1	1400	8		**Included (Max > Table 3 [RPI] SCS)**
Selenium	Non-Volatile	188	438	2.4	12	1	12	5		**Included (Max > Table 3 [RPI] SCS)**
Sodium Adsorption Ratio [e, f]	Non-Volatile	157	391	5	703940		703940	45		**Included (Max > Table 3 [RPI] SCS)**

TABLE B1

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m from Lake Ontario/Don River)

COC Screening - Table 3 Standards - RPI

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (RPI) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (RPI) SCS	Count of Non-Detects Above Table 3 (RPI) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
Strontium	Non-Volatile	13	13	77	109		109			**Included (Max > OTR value)**
Styrene	Volatile	170	405	0.7	10	180	180	13	8	**Included (Max > Table 3 [RPI] SCS)**
Tetrachloroethene	Volatile	171	406	0.28	10	180	180	20	17	**Included (Max > Table 3 [RPI] SCS)**
Thallium	Non-Volatile	184	434	1	1	2	2		12	**Included (Max > Table 3 [RPI] SCS)**
Toluene	Volatile	194	567	2.3	1900	0.39	1900	28		**Included (Max > Table 3 [RPI] SCS)**
trans-1,2-Dichloroethene	Volatile	170	405	0.084	10	180	180	33	42	**Included (Max > Table 3 [RPI] SCS)**
Trichloroethylene	Volatile	171	422	0.061	10	180	180	34	34	**Included (Max > Table 3 [RPI] SCS)**
Trichlorofluoromethane	Volatile	104	300	4		18.99	18.99		1	**Included (Max > Table 3 [RPI] SCS)**
Vanadium	Non-Volatile	193	443	86	89.3	5	89.3	2		**Included (Max > Table 3 [RPI] SCS)**
Vinyl Chloride	Volatile	171	405	0.02	10	55	55	38	50	**Included (Max > Table 3 [RPI] SCS)**
Xylenes, Total (max)	Volatile	194	567	3.1	11000	1.8	11000	61		**Included (Max > Table 3 [RPI] SCS)**
Zinc	Non-Volatile	193	443	340	1800		1800	19		**Included (Max > Table 3 [RPI] SCS)**
2-Chloroethyl Vinyl Ether	Volatile	9	15			97	97			**Included (No SCS, not detected, with elevated SDL)**
Chloroethane	Volatile	18	24			18.99	18.99			**Included (No SCS, not detected, with elevated SDL)**
Chloromethane	Volatile	18	24			18.99	18.99			**Included (No SCS, not detected, with elevated SDL)**
Nitrite (as N)	Non-Volatile	7	7	44	1	1	1			Excluded (Max < or = OTR Value)
Sulfate	Non-Volatile	5	5	1100	132		132			Excluded (Max < or = OTR Value)
Zirconium	Non-Volatile	12	12	230	8.99		8.99			Excluded (Max < or = Natural Range)
2,4,5-Trichlorophenol	Non-Volatile	3	3	4.4		1	1			Excluded (Max < or = Table 3 [RPI] SCS)
2,4,6-Trichlorophenol	Non-Volatile	3	3	3.8		1	1			Excluded (Max < or = Table 3 [RPI] SCS)
2,4-Dichlorophenol	Non-Volatile	3	3	1.7		1	1			Excluded (Max < or = Table 3 [RPI] SCS)
2,4-Dimethylphenol	Non-Volatile	3	3	390		1	1			Excluded (Max < or = Table 3 [RPI] SCS)
2,4-Dinitrophenol	Non-Volatile	3	3	38		2	2			Excluded (Max < or = Table 3 [RPI] SCS)
2-Chloronaphthalene	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
2-Chlorophenol	Volatile	3	3	1.6		1	1			Excluded (Max < or = Table 3 [RPI] SCS)
2-Hexanone	Volatile	9	9			0.47	0.47			Excluded (No SCS, not detected, no elevated SDL)
4-Bromophenyl Phenyl Ether	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
4-Chlorophenyl Phenylether	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
Aluminum	Non-Volatile	13	13	26000	11100		11100			Excluded (Max < or = OTR Value)
Beryllium	Non-Volatile	193	443	4	2	0.5	2			Excluded (Max < or = Table 3 [RPI] SCS)
Bis (2-chloroethoxy) methane	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
Bis (2-ethylhexyl) phthalate	Non-Volatile	8	9	5		4.99	4.99			Excluded (Max < or = Table 3 [RPI] SCS)
Boron	Non-Volatile	122	335	120	53.9	5	53.9			Excluded (Max < or = Table 3 [RPI] SCS)
Butyl benzyl phthalate	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
Chromium, Hexavalent (Cr6+)	Non-Volatile	127	363	8	2	1	2			Excluded (Max < or = Table 3 [RPI] SCS)
Dichlorodifluoromethane	Volatile	85	275	16		2	2			Excluded (Max < or = Table 3 [RPI] SCS)
Di-N-Butylphthalate	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
Di-n-octyl phthalate	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
Fluoride	Non-Volatile	5	5	110	4.99	4.99	4.99			Excluded (Max < or = OTR Value)
Iron	Non-Volatile	13	13	34000	17299.99		17299.99			Excluded (Max < or = OTR Value)
Isophorone	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
Manganese	Non-Volatile	13	13	1400	333		333			Excluded (Max < or = OTR Value)
Nitrate (as N)	Non-Volatile	7	7	44		2	2			Excluded (Max < or = OTR Value)

TABLE B1

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m from Lake Ontario/Don River)

COC Screening - Table 3 Standards - RPI

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (RPI) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (RPI) SCS	Count of Non-Detects Above Table 3 (RPI) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
N-Nitrosodi-N-propylamine	Non-Volatile	5	6			1	1			Excluded (No SCS, not detected, no elevated SDL)
N-Nitrosodiphenylamine	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
ortho-Phosphate	Non-Volatile	5	5	1500		4.99	4.99			Excluded (Max < or = OTR Value)
Phenol	Non-Volatile	3	3	9.4		2	2			Excluded (Max < or = Table 3 [RPI] SCS)
Phosphorus	Non-Volatile	15	15	1500	980	20	980			Excluded (Max < or = OTR Value)
Potassium	Non-Volatile	15	15	4900	2000		2000			Excluded (Max < or = OTR Value)
Silver	Non-Volatile	193	443	20	10.3	0.69	10.3			Excluded (Max < or = Table 3 [RPI] SCS)
Sodium	Non-Volatile	13	13	1000	370		370			Excluded (Max < or = OTR Value)
Titanium	Non-Volatile	12	12	4700	449.99		449.99			Excluded (Max < or = OTR Value)
Total Kjeldahl Nitrogen	Non-Volatile	2	2	7000	1630		1630			Excluded (Max < or = OTR Value)
Uranium (U)	Non-Volatile	85	273	23	1.9	1	1.9			Excluded (Max < or = Table 3 [RPI] SCS)

Notes:

[a] (max) indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition* (RPI land use) (MOECC, 2011), for all COCs, except for aluminum, calcium, chloride, fluoride, iron, manganese, magnesium, phosphorus, potassium, sodium, strontium, titanium and total Kjeldahl nitrogen, for which the *Ontario Typical Range* value (MOECC, 2011) is presented. The average soil concentration of zirconium in soil as reported by the United States Geological Survey in Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States (1984) has been presented for zirconium. The OTR value (MOECC, 1999) for nitrate+nitrate has been applied to nitrate and nitrite. The OTR (MOECC, 2011) value for phosphorus and sulphur has been applied to ortho-Phosphate and sulphate, respectively.

[d] Column lists the greater of the Maximum Detected Concentration and the Maximum Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm and units for sodium adsorption ratio are SAR.

[f] Parameter is not applicable to human health.

Bold parameters are identified as COCs

mS/cm - milliSiemens per centimetre

COC - contaminant of concern

Max - maximum concentration

mg/kg - milligrams per kilogram

MOECC - Ontario Ministry of the Environment and Climate Change

NA - not applicable

SAR - sodium adsorption ratio

SCS - site condition standard

SDL - sample detection limit

PCB - polychlorinated biphenyls

RPI - residential/parkland/institutional

m - metres

TABLE B2

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m From Lake Ontario/Don River)

COC Screening - Table 3 Standards - ICC

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (ICC) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (ICC) SCS	Count of Non-Detects Above Table 3 (ICC) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1,1,2-Tetrachloroethane	Volatile	170	405	0.087	10	180	180	32	38	**Included (Max > Table 3 [ICC] SCS)**
1,1,1-Trichloroethane	Volatile	171	406	6.1	38	180	180	2	3	**Included (Max > Table 3 [ICC] SCS)**
1,1,2,2-Tetrachloroethane	Volatile	171	406	0.05	10	180	180	32	60	**Included (Max > Table 3 [ICC] SCS)**
1,1,2-Trichloroethane	Volatile	162	390	0.05	10	370	370	32	52	**Included (Max > Table 3 [ICC] SCS)**
1,1-Dichloroethane	Volatile	170	406	17	10	180	180		1	**Included (Max > Table 3 [ICC] SCS)**
1,1-Dichloroethene	Volatile	169	404	0.064	10	44	44	32	50	**Included (Max > Table 3 [ICC] SCS)**
1,2-Dibromoethane	Volatile	170	405	0.05	10	92	92	32	51	**Included (Max > Table 3 [ICC] SCS)**
1,2-Dichlorobenzene	Volatile	170	408	6.8	10	180	180	1	3	**Included (Max > Table 3 [ICC] SCS)**
1,2-Dichloroethane	Volatile	170	405	0.05	10	180	180	32	52	**Included (Max > Table 3 [ICC] SCS)**
1,2-Dichloropropane	Volatile	170	405	0.16	10	180	180	25	24	**Included (Max > Table 3 [ICC] SCS)**
1,3-Dichlorobenzene	Volatile	170	408	9.6	10	180	180	1	3	**Included (Max > Table 3 [ICC] SCS)**
1,3-Dichloropropene (max)	Volatile	170	405	0.18	10	92	92	25	19	**Included (Max > Table 3 [ICC] SCS)**
1,4-Dichlorobenzene	Volatile	170	408	0.2	10	180	180	20	20	**Included (Max > Table 3 [ICC] SCS)**
1+2-Methylnaphthalenes (max)	Volatile	139	394	76	5100	1	5100	13		**Included (Max > Table 3 [ICC] SCS)**
2-Butanone	Volatile	170	403	70	100	2800	2800	1	3	**Included (Max > Table 3 [ICC] SCS)**
3,3`-Dichlorobenzidine	Non-Volatile	8	9	1		9.99	9.99		8	**Included (Max > Table 3 [ICC] SCS)**
4-Chloroaniline	Non-Volatile	3	3	0.5		2	2		2	**Included (Max > Table 3 [ICC] SCS)**
4-Methyl-2-Pentanone	Volatile	165	399	31	100	1800	1800	6	3	**Included (Max > Table 3 [ICC] SCS)**
Acenaphthene	Non-Volatile	187	430	96	2100	6	2100	7		**Included (Max > Table 3 [ICC] SCS)**
Acenaphthylene	Non-Volatile	187	430	0.15	280	1.5	280	58	12	**Included (Max > Table 3 [ICC] SCS)**
Acetone	Volatile	170	404	16	500	2800	2800	20	9	**Included (Max > Table 3 [ICC] SCS)**
Ammonia	Volatile	2	2		157		157			**Included (No SCS; known to be present)**
Anthracene	Non-Volatile	187	430	0.67	970	1	970	53	1	**Included (Max > Table 3 [ICC] SCS)**
Arsenic	Non-Volatile	188	438	18	86	1	86	17		**Included (Max > Table 3 [ICC] SCS)**
Barium	Non-Volatile	193	443	670	930		930	2		**Included (Max > Table 3 [ICC] SCS)**
Benzene	Volatile	193	565	0.32	460	92	460	68	7	**Included (Max > Table 3 [ICC] SCS)**
Benzo(a)anthracene	Non-Volatile	187	426	0.96	460	1	460	61	1	**Included (Max > Table 3 [ICC] SCS)**
Benzo(a)pyrene	Non-Volatile	187	430	0.3	330	1	330	102	3	**Included (Max > Table 3 [ICC] SCS)**
Benzo(b&j)fluoranthene	Non-Volatile	187	430	0.96	260	1	260	51	1	**Included (Max > Table 3 [ICC] SCS)**
Benzo(g,h,i)perylene	Non-Volatile	186	429	9.6	130	1	130	7		**Included (Max > Table 3 [ICC] SCS)**
Benzo(k)fluoranthene	Non-Volatile	182	424	0.96	93	1	93	21	1	**Included (Max > Table 3 [ICC] SCS)**
Bis (2-chloroethyl) ether	Volatile	3	3	0.5		2	2		2	**Included (Max > Table 3 [ICC] SCS)**
Boron (hot water extractable) [f]	Non-Volatile	126	361	2	7.38	0.1	7.38	21		**Included (Max > Table 3 [ICC] SCS)**
Bromide	Non-Volatile	5	5		4.99	3	4.99			**Included (No SCS; known to be present)**
Bromodichloromethane	Volatile	170	405	18	10	180	180		1	**Included (Max > Table 3 [ICC] SCS)**
Bromoform	Volatile	170	405	0.61	10	370	370	13	12	**Included (Max > Table 3 [ICC] SCS)**
Bromomethane	Volatile	170	405	0.05	20	370	370	32	54	**Included (Max > Table 3 [ICC] SCS)**
Cadmium	Non-Volatile	193	443	1.9	20	0.5	20	7		**Included (Max > Table 3 [ICC] SCS)**
Calcium	Non-Volatile	13	13	49000	144000		144000			**Included (Max > OTR value)**
Carbon tetrachloride	Volatile	170	405	0.21	10	180	180	20	19	**Included (Max > Table 3 [ICC] SCS)**
Chloride (Cl)	Non-Volatile	5	5	130	231	347	347			**Included (Max > OTR value)**
Chlorobenzene	Volatile	170	405	2.4	10	92	92	6	3	**Included (Max > Table 3 [ICC] SCS)**
Chlorodibromomethane	Volatile	170	405	13	10	180	180		1	**Included (Max > Table 3 [ICC] SCS)**
Chloroform	Volatile	170	405	0.47	10	180	180	15	15	**Included (Max > Table 3 [ICC] SCS)**
Chromium	Non-Volatile	193	504	160	714	1	714	1		**Included (Max > Table 3 [ICC] SCS)**
Chrysene	Non-Volatile	187	430	9.6	390	1	390	12		**Included (Max > Table 3 [ICC] SCS)**
cis-1,2-Dichloroethene	Volatile	167	400	55	10	180	180		1	**Included (Max > Table 3 [ICC] SCS)**

TABLE B2

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m From Lake Ontario/Don River)

COC Screening - Table 3 Standards - ICC

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (ICC) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (ICC) SCS	Count of Non-Detects Above Table 3 (ICC) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
Cobalt	Non-Volatile	193	443	80	90.9	2	90.9	1		**Included (Max > Table 3 [ICC] SCS)**
Copper	Non-Volatile	193	443	230	1200		1200	5		**Included (Max > Table 3 [ICC] SCS)**
Cyanide	Non-Volatile	146	393	0.051	1	1	1	48	8	**Included (Max > Table 3 [ICC] SCS)**
Dibenzo(a,h)anthracene	Non-Volatile	187	430	0.1	35	1	35	57	21	**Included (Max > Table 3 [ICC] SCS)**
Dichloromethane	Volatile	170	404	1.6	460	180	460	14	4	**Included (Max > Table 3 [ICC] SCS)**
Diethylphthalate	Non-Volatile	8	9	0.5		2	2		2	**Included (Max > Table 3 [ICC] SCS)**
Dimethylphthalate	Non-Volatile	8	9	0.5		2	2		2	**Included (Max > Table 3 [ICC] SCS)**
Electrical Conductivity [e, f]	Non-Volatile	154	401	1.4	5.85		5.85	32		**Included (Max > Table 3 [ICC] SCS)**
Ethylbenzene	Volatile	193	566	9.5	2700	20	2700	41	1	**Included (Max > Table 3 [ICC] SCS)**
F1 (C6-C10) (max)	Volatile	184	491	55	8840	400	8840	83	1	**Included (Max > Table 3 [ICC] SCS)**
F2 (C10-C16) (max)	Volatile	184	468	230	51000	50	51000	77		**Included (Max > Table 3 [ICC] SCS)**
F3 (C16-C34) (max)	Non-Volatile	184	469	1700	48000	150	48000	41		**Included (Max > Table 3 [ICC] SCS)**
F4 (C34-C50) (max)	Non-Volatile	184	466	3300	44000	150	44000	20		**Included (Max > Table 3 [ICC] SCS)**
Fluoranthene	Non-Volatile	187	428	9.6	1000	1	1000	19		**Included (Max > Table 3 [ICC] SCS)**
Fluorene	Non-Volatile	187	428	62	1100	1	1100	7		**Included (Max > Table 3 [ICC] SCS)**
Hexachlorobenzene	Non-Volatile	8	9	0.66		2	2		2	**Included (Max > Table 3 [ICC] SCS)**
Hexachlorobutadiene	Volatile	3	3	0.031		1	1		3	**Included (Max > Table 3 [ICC] SCS)**
Hexachloroethane	Volatile	3	3	0.21		1	1		2	**Included (Max > Table 3 [ICC] SCS)**
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	187	430	0.76	110	1	110	38	1	**Included (Max > Table 3 [ICC] SCS)**
Lead	Non-Volatile	193	443	120	3700		3700	52		**Included (Max > Table 3 [ICC] SCS)**
Magnesium	Non-Volatile	13	13	15000	71599.99		71599.99			**Included (Max > OTR value)**
Mercury	Non-Volatile	186	437	3.9	9.1	0.05	9.1	5		**Included (Max > Table 3 [ICC] SCS)**
Methyl tert-butyl ether (MTBE)	Volatile	170	405	11	10	370	370		3	**Included (Max > Table 3 [ICC] SCS)**
Naphthalene	Volatile	175	412	9.6	8700	5	8700	29		**Included (Max > Table 3 [ICC] SCS)**
Perchlorate	Non-Volatile	4	4		0.82		0.82			**Included (No SCS; known to be present)**
Phenanthrene	Non-Volatile	187	430	12	3100	1	3100	24		**Included (Max > Table 3 [ICC] SCS)**
Pyrene	Non-Volatile	187	429	96	1400	1	1400	6		**Included (Max > Table 3 [ICC] SCS)**
Selenium	Non-Volatile	188	438	5.5	12	1	12	2		**Included (Max > Table 3 [ICC] SCS)**
Sodium Absorption Ratio [e, f]	Non-Volatile	157	391	12	703940		703940	32		**Included (Max > Table 3 [ICC] SCS)**
Strontium	Non-Volatile	13	13	77	109		109			**Included (Max > OTR value)**
Styrene	Volatile	170	405	34	10	180	180		2	**Included (Max > Table 3 [ICC] SCS)**
Tetrachloroethene	Volatile	171	406	4.5	10	180	180	4	3	**Included (Max > Table 3 [ICC] SCS)**
Toluene	Volatile	194	567	68	1900	0.39	1900	13		**Included (Max > Table 3 [ICC] SCS)**
trans-1,2-Dichloroethene	Volatile	170	405	1.3	10	180	180	9	5	**Included (Max > Table 3 [ICC] SCS)**
Trichloroethylene	Volatile	171	422	0.91	10	180	180	14	5	**Included (Max > Table 3 [ICC] SCS)**
Trichlorofluoromethane	Volatile	104	300	4		18.99	18.99		1	**Included (Max > Table 3 [ICC] SCS)**
Vanadium	Non-Volatile	193	443	86	89.3	5	89.3	2		**Included (Max > Table 3 [ICC] SCS)**
Vinyl Chloride	Volatile	171	405	0.032	10	55	55	37	36	**Included (Max > Table 3 [ICC] SCS)**
Xylenes, Total	Volatile	194	567	26	11000	1.8	11000	31		**Included (Max > Table 3 [ICC] SCS)**
Zinc	Non-Volatile	193	443	340	1800		1800	19		**Included (Max > Table 3 [ICC] SCS)**
2-Chloroethyl Vinyl Ether	Volatile	9	15			97	97			**Included (No SCS, not detected, with elevated SDL)**
Chloroethane	Volatile	18	24			18.99	18.99			**Included (No SCS, not detected, with elevated SDL)**
Chloromethane	Volatile	18	24			18.99	18.99			**Included (No SCS, not detected, with elevated SDL)**
Nitrite (as N)	Non-Volatile	7	7	44	1	1	1			Excluded (Max < or = OTR Value)
Sulfate	Non-Volatile	5	5	1100	132		132			Excluded (Max < or = OTR Value)
Total Kjeldahl Nitrogen	Non-Volatile	2	2	7000	1630		1630			Excluded (Max < or = OTR Value)
Zirconium	Non-Volatile	12	12	230	8.99		8.99			Excluded (Max < or = Natural Range)

TABLE B2

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m From Lake Ontario/Don River)

COC Screening - Table 3 Standards - ICC

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (ICC) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (ICC) SCS	Count of Non-Detects Above Table 3 (ICC) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1'-Biphenyl	Non-Volatile	8	13	52		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
1,2,4-Trichlorobenzene	Volatile	13	13	3.2		2	2			Excluded (Max < or = Table 3 [ICC] SCS)
2,4,5-Trichlorophenol	Non-Volatile	3	3	10		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
2,4,6-Trichlorophenol	Non-Volatile	3	3	3.8		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
2,4-Dichlorophenol	Non-Volatile	3	3	3.4		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
2,4-Dimethylphenol	Non-Volatile	3	3	390		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
2,4-Dinitrophenol	Non-Volatile	3	3	59		2	2			Excluded (Max < or = Table 3 [ICC] SCS)
2,4&2,6-Dinitrotoluene (max)	Non-Volatile	8	9	1.2		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
2-Chloronaphthalene	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
2-Chlorophenol	Volatile	3	3	3.1		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
2-Hexanone	Volatile	9	9			0.47	0.47			Excluded (No SCS, not detected, no elevated SDL)
4-Bromophenyl Phenyl Ether	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
4-Chlorophenyl Phenylether	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
Aluminum	Non-Volatile	13	13	26000	11100		11100			Excluded (Max < or = OTR Value)
Antimony	Non-Volatile	176	426	40	33	1.6	33			Excluded (Max < or = Table 3 [ICC] SCS)
Beryllium	Non-Volatile	193	443	8	2	0.5	2			Excluded (Max < or = Table 3 [ICC] SCS)
Bis (2-chloroethoxy) methane	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
bis (2-Chloroisopropyl) ether	Non-Volatile	6	7	11		1	1			Excluded (Max < or = Table 3 [ICC] SCS)
Bis (2-ethylhexyl) phthalate	Non-Volatile	8	9	28		4.99	4.99			Excluded (Max < or = Table 3 [ICC] SCS)
Boron	Non-Volatile	122	335	120	53.9	5	53.9			Excluded (Max < or = Table 3 [ICC] SCS)
Butyl benzyl phthalate	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
Chromium, Hexavalent (Cr6+)	Non-Volatile	127	363	8	2	1	2			Excluded (Max < or = Table 3 [ICC] SCS)
Dichlorodifluoromethane	Volatile	85	275	16		2	2			Excluded (Max < or = Table 3 [ICC] SCS)
Di-N-Butylphthalate	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
Di-n-octyl phthalate	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
Fluoride	Non-Volatile	5	5	110	4.99	4.99	4.99			Excluded (Max < or = OTR Value)
Iron	Non-Volatile	13	13	34000	17299.99		17299.99			Excluded (Max < or = OTR Value)
Isophorone	Non-Volatile	5	6			0.19	0.19			Excluded (No SCS, not detected, no elevated SDL)
Manganese	Non-Volatile	13	13	1400	333		333			Excluded (Max < or = OTR Value)
Molybdenum	Non-Volatile	192	443	40	8.2	3	8.2			Excluded (Max < or = Table 3 [ICC] SCS)
n-Hexane	Volatile	85	274	46	17.6	2	17.6			Excluded (Max < or = Table 3 [ICC] SCS)
Nickel	Non-Volatile	193	443	270	239.99	2	239.99			Excluded (Max < or = Table 3 [ICC] SCS)
Nitrate (as N)	Non-Volatile	7	7	44		2	2			Excluded (Max < or = OTR Value)
N-Nitrosodi-N-propylamine	Non-Volatile	5	6			1	1			Excluded (No SCS, not detected, no elevated SDL)
N-Nitrosodiphenylamine	Non-Volatile	5	6			0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
ortho-Phosphate	Non-Volatile	5	5	1500		4.99	4.99			Excluded (Max < or = OTR Value)
PCB, Total	Non-Volatile	36	48	1.1	0.6	0.3	0.6			Excluded (Max < or = Table 3 [ICC] SCS)
Pentachlorophenol	Non-Volatile	3	3	2.9		2	2			Excluded (Max < or = Table 3 [ICC] SCS)
Phenol	Non-Volatile	3	3	9.4		2	2			Excluded (Max < or = Table 3 [ICC] SCS)
Phosphorus	Non-Volatile	15	15	1500	980	20	980			Excluded (Max < or = OTR Value)
Potassium	Non-Volatile	15	15	4900	2000		2000			Excluded (Max < or = OTR Value)
Silver	Non-Volatile	193	443	40	10.3	0.69	10.3			Excluded (Max < or = Table 3 [ICC] SCS)
Sodium	Non-Volatile	13	13	1000	370		370			Excluded (Max < or = OTR Value)
Thallium	Non-Volatile	184	434	3.3	1	2	2			Excluded (Max < or = Table 3 [ICC] SCS)
Titanium	Non-Volatile	12	12	4700	449.99		449.99			Excluded (Max < or = OTR Value)
Uranium (U)	Non-Volatile	85	273	33	1.9	1	1.9			Excluded (Max < or = Table 3 [ICC] SCS)

TABLE B2

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Greater Than 30 m From Lake Ontario/Don River)

COC Screening - Table 3 Standards - ICC

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (ICC) SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 3 (ICC) SCS	Count of Non-Detects Above Table 3 (ICC) SCS (Using Max SDL)	Included/Excluded as COC (Rationale)

Notes:

[a] (max) indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition* (ICC land use) (MOECC, 2011), for all COCs, except for aluminum, calcium, chloride, fluouride, iron, manganese, magnesium, phosphorus, potassium, sodium, strontium, titanium and total Kjeldahl nitrogen, for which the *Ontario Typical Range* value (MOECC, 2011) is presented. The average soil concentration of zirconium in soil as reported by the United States Geological Survey in *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States* (1984) has been presented for zirconium. The OTR value (MOECC, 1999) for nitrate+nitrate has been applied to nitrate and nitrite. The OTR (MOECC, 2011) value for phosphorus and sulphur has been applied to ortho-Phosphate and sulphate, respectively.

[d] Column lists the greater of the Maximum Detected Concentration and the Maximum Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm and units for sodium adsorption ratio are SAR.

[f] Parameter is not applicable to human health.

Bold parameters are identified as COCs

mS/cm - milliSiemens per centimetre

COC - contaminant of concern

Max - maximum concentration

mg/kg - milligrams per kilogram

MOECC - Ontario Ministry of the Environment and Climate Change

PAH - polycyclic aromatic hydrocarbon

SAR - sodium adsorption ratio

SCS - site condition standard

SDL - sample detection limit

PCB - polychlorinated biphenyls

ICC - industrial/commercial/community

m - metres

TABLE B3

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Less Than 30 m From Lake Ontario/Don River)

COC Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1,1,2-Tetrachloroethane	Volatile	18	41	0.05	2	0.05	2	4		**Included (Max > Table 9 SCS)**
1,1,1-Trichloroethane	Volatile	18	41	0.05	8.39	1.4	8.39	4	1	**Included (Max > Table 9 SCS)**
1,1,2,2-Tetrachloroethane	Volatile	18	41	0.05	9.39	0.05	9.39	5		**Included (Max > Table 9 SCS)**
1,1,2-Trichloroethane	Volatile	18	41	0.05	2	0.19	2	3	1	**Included (Max > Table 9 SCS)**
1,1-Dichloroethane	Volatile	18	41	0.05	3.68	0.05	3.68	5		**Included (Max > Table 9 SCS)**
1,1-Dichloroethene	Volatile	18	41	0.05	2	0.05	2	3		**Included (Max > Table 9 SCS)**
1,2-Dibromoethane	Volatile	18	41	0.05	17600	0.05	17600	4		**Included (Max > Table 9 SCS)**
1,2-Dichlorobenzene	Volatile	18	41	0.05	2	0.05	2	4		**Included (Max > Table 9 SCS)**
1,2-Dichloroethane	Volatile	18	41	0.05	2	0.05	2	5		**Included (Max > Table 9 SCS)**
1,2-Dichloropropane	Volatile	18	41	0.05	2	0.25	2	3	2	**Included (Max > Table 9 SCS)**
1,3-Dichlorobenzene	Volatile	18	41	0.05	2	0.19	2	3	1	**Included (Max > Table 9 SCS)**
1,3-Dichloropropene (max)	Volatile	17	39	0.05	2	0.19	2	3	1	**Included (Max > Table 9 SCS)**
1,4-Dichlorobenzene	Volatile	18	41	0.05	2	0.05	2	3		**Included (Max > Table 9 SCS)**
1+2-Methylnaphthalenes (max)	Volatile	25	29	0.59	57	0.04	57	5		**Included (Max > Table 9 SCS)**
2-Butanone	Volatile	18	41	0.5	8550	0.5	8550	4		**Included (Max > Table 9 SCS)**
2-Hexanone	Volatile	1	2			0.04	0.04			**Included (No SCS, not detected, with elevated SDL)**
4-Methyl-2-Pentanone	Volatile	18	41	0.5	12600	0.5	12600	4		**Included (Max > Table 9 SCS)**
Acenaphthene	Non-Volatile	25	59	0.072	46.99	0.25	46.99	21	2	**Included (Max > Table 9 SCS)**
Acenaphthylene	Non-Volatile	25	59	0.093	8.99	0.1	8.99	9	1	**Included (Max > Table 9 SCS)**
Acetone	Volatile	18	41	0.5	100	1	100	3	1	**Included (Max > Table 9 SCS)**
Anthracene	Non-Volatile	25	59	0.22	24.4	0.05	24.4	14		**Included (Max > Table 9 SCS)**
Antimony	Non-Volatile	26	75	1.3	669	1	669	13		**Included (Max > Table 9 SCS)**
Arsenic	Non-Volatile	26	75	18	220	1	220	5		**Included (Max > Table 9 SCS)**
Barium	Non-Volatile	26	75	220	330		330	3		**Included (Max > Table 9 SCS)**
Benzene	Volatile	25	75	0.02	35900	4.99	35900	13	3	**Included (Max > Table 9 SCS)**
Benzo(a)anthracene	Non-Volatile	25	59	0.36	113	0.05	113	10		**Included (Max > Table 9 SCS)**
Benzo(a)pyrene	Non-Volatile	25	59	0.3	86.9	0.05	86.9	10		**Included (Max > Table 9 SCS)**
Benzo(b&j)fluoranthene	Non-Volatile	25	59	0.47	105	0.05	105	8		**Included (Max > Table 9 SCS)**
Benzo(g,h,i)perylene	Non-Volatile	25	59	0.68	33.7	0.05	33.7	3		**Included (Max > Table 9 SCS)**
Benzo(k)fluoranthene	Non-Volatile	25	59	0.48	37.8	9.99	37.8	3	1	**Included (Max > Table 9 SCS)**
Beryllium	Non-Volatile	26	75	2.5	50	9.99	50	1	1	**Included (Max > Table 9 SCS)**
Boron (hot water extractable) [f]	Non-Volatile	24	71	1.5	3.23	0.1	3.23	6		**Included (Max > Table 9 SCS)**
Bromodichloromethane	Volatile	18	41	0.05	2	0.19	2	4	2	**Included (Max > Table 9 SCS)**
Bromoform	Volatile	18	41	0.05	2	0.05	2	3		**Included (Max > Table 9 SCS)**
Bromomethane	Volatile	18	41	0.05	3	0.05	3	3		**Included (Max > Table 9 SCS)**
Cadmium	Non-Volatile	26	75	1.2	50	0.5	50	4		**Included (Max > Table 9 SCS)**
Carbon tetrachloride	Volatile	18	41	0.05	2	0.05	2	4		**Included (Max > Table 9 SCS)**
Chlorobenzene	Volatile	18	41	0.05	2	0.25	2	3	1	**Included (Max > Table 9 SCS)**
Chlorodibromomethane	Volatile	18	41	0.05	81599.99	0.05	81599.99	4		**Included (Max > Table 9 SCS)**
Chloroethane	Volatile	1	2		0.005	0.19	0.19			**Included (No SCS; known to be present)**
Chloroform	Volatile	18	41	0.05	2	0.19	2	3	1	**Included (Max > Table 9 SCS)**
Chromium, Hexavalent (Cr6+)	Non-Volatile	24	74	0.66	6	0.2	6	7		**Included (Max > Table 9 SCS)**
Chrysene	Non-Volatile	25	59	2.8	103	0.05	103	3		**Included (Max > Table 9 SCS)**

TABLE B3

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Less Than 30 m From Lake Ontario/Don River)

COC Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
cis-1,2-Dichloroethene	Volatile	18	41	0.05	2.9	0.05	2.9	4		**Included (Max > Table 9 SCS)**
Cobalt	Non-Volatile	26	75	22	71	9.99	71	2		**Included (Max > Table 9 SCS)**
Copper	Non-Volatile	26	75	92	420	9.99	420	4		**Included (Max > Table 9 SCS)**
Cyanide	Non-Volatile	25	74	0.051	0.05	0.09	0.09		1	**Included (Max > Table 9 SCS)**
Dibenzo(a,h)anthracene	Non-Volatile	25	59	0.1	13.8	9.99	13.8	4	1	**Included (Max > Table 9 SCS)**
Dichloromethane	Volatile	18	41	0.05	12800	0.05	12800	5		**Included (Max > Table 9 SCS)**
Electrical Conductivity [e, f]	NA	24	72	0.7	2.8		2.8	26		**Included (Max > Table 9 SCS)**
Ethylbenzene	Volatile	25	76	0.05	16799.99	4.99	16799.99	10	2	**Included (Max > Table 9 SCS)**
F1 (C6-C10) (max)	Volatile	25	66	25	830	5	830	7		**Included (Max > Table 9 SCS)**
F2 (C10-C16) (max)	Volatile	25	69	10	4200	10	4200	21		**Included (Max > Table 9 SCS)**
F3 (C16-C34) (max)	Non-Volatile	25	69	240	6700	50	6700	12		**Included (Max > Table 9 SCS)**
F4 (C34-C50) (max)	Non-Volatile	25	69	120	2300	50	2300	11		**Included (Max > Table 9 SCS)**
Fluoranthene	Non-Volatile	25	59	0.69	205	9.99	205	10	1	**Included (Max > Table 9 SCS)**
Fluorene	Non-Volatile	25	59	0.19	6.7	9.99	9.99	11	1	**Included (Max > Table 9 SCS)**
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	25	59	0.23	43.4	0.05	43.4	7		**Included (Max > Table 9 SCS)**
Lead	Non-Volatile	26	75	120	1200		1200	13		**Included (Max > Table 9 SCS)**
Mercury	Non-Volatile	25	73	0.27	0.93	0.04	0.93	7		**Included (Max > Table 9 SCS)**
Methyl tert-butyl ether (MTBE)	Volatile	18	41	0.05	13000	0.09	13000	4	1	**Included (Max > Table 9 SCS)**
Molybdenum	Non-Volatile	26	75	2	250	75	250	6	1	**Included (Max > Table 9 SCS)**
Naphthalene	Volatile	25	59	0.09	59.99	0.05	59.99	8		**Included (Max > Table 9 SCS)**
n-Hexane	Volatile	8	29	0.05	0.83	0.05	0.83	2		**Included (Max > Table 9 SCS)**
PCB, Total	Non-Volatile	7	7	0.3	0.01	9.99	9.99		1	**Included (Max > Table 9 SCS)**
Phenanthrene	Non-Volatile	25	59	0.69	83	9.99	83	11	1	**Included (Max > Table 9 SCS)**
Pyrene	Non-Volatile	25	59	1	171	0.05	171	9		**Included (Max > Table 9 SCS)**
Selenium	Non-Volatile	26	75	1.5	250	270	270	4	1	**Included (Max > Table 9 SCS)**
Silver	Non-Volatile	26	75	0.5	39.99	0.69	39.99	3	1	**Included (Max > Table 9 SCS)**
Sodium Adsorption Ratio [e, f]	NA	25	71	5	42		42	9		**Included for Ecological RA (Max > Table 9 SCS) (f)**
Styrene	Volatile	18	41	0.05	13500	0.05	13500	4		**Included (Max > Table 9 SCS)**
Tetrachloroethene	Volatile	18	41	0.05	13300	0.05	13300	4		**Included (Max > Table 9 SCS)**
Toluene	Volatile	25	75	0.2	71500	0.08	71500	7		**Included (Max > Table 9 SCS)**
trans-1,2-Dichloroethene	Volatile	18	41	0.05	60099.99	0.05	60099.99	4		**Included (Max > Table 9 SCS)**
Trichloroethylene	Volatile	18	41	0.05	13300	0.19	13300	4	1	**Included (Max > Table 9 SCS)**
Trichlorofluoromethane	Volatile	9	31	0.25	12500	0.19	12500	1		**Included (Max > Table 9 SCS)**
Vinyl Chloride	Volatile	18	41	0.02	8540	0.19	8540	4	1	**Included (Max > Table 9 SCS)**
Xylenes, Total (max)	Volatile	25	76	0.05	116000	0.19	116000	15	1	**Included (Max > Table 9 SCS)**
Zinc	Non-Volatile	26	75	290	480	0.19	480	2		**Included (Max > Table 9 SCS)**
Aluminum	Non-Volatile	1	2	26000	100		100			Excluded (Max < or = OTR Value)
Boron	Non-Volatile	9	30	36	11	5	11			Excluded (Max < or = Table 9 SCS)
Chloromethane	Volatile	1	2			0.03	0.03			Excluded (No SCS, not detected, no elevated SDL)
Chromium	Non-Volatile	26	76	70	44.8	9.99	44.8			Excluded (Max < or = Table 9 SCS)
Dichlorodifluoromethane	Volatile	8	29	0.05		0.05	0.05			Excluded (Max < or = Table 9 SCS)
Iron	Non-Volatile	1	2	34000	15	9.99	15			Excluded (Max < or = OTR Value)
Manganese	Non-Volatile	1	2	1400	250	75	250			Excluded (Max < or = OTR Value)

TABLE B3

Summary of Chemicals Detected and Maximum Concentrations in Soil (Land Less Than 30 m From Lake Ontario/Don River)

COC Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 SCS [c] (mg/kg)	Max Detected Concentration (mg/kg)	Max Non-Detect Concentration (mg/kg)	Max Concentration [d] (mg/kg)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
Nickel	Non-Volatile	26	75	82	73	45	73			Excluded (Max < or = Table 9 SCS)
Phosphorus	Non-Volatile	1	2	1500		270	270			Excluded (Max < or = OTR Value)
Thallium	Non-Volatile	25	73	1	0.54	1	1			Excluded (Max < or = Table 9 SCS)
Titanium	Non-Volatile	1	2	4700		9.99	9.99			Excluded (Max < or = OTR Value)
Uranium (U)	Non-Volatile	8	29	2.5		1	1			Excluded (Max < or = Table 9 SCS)
Vanadium	Non-Volatile	26	75	86	59.99		59.99			Excluded (Max < or = Table 9 SCS)

Notes:

[a] (max) indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition* (MOECC, 2011), for all COCs, except for aluminum, iron, manganese, phosphorus, and titanium, for which the *Ontario Typical Range* value (MOECC, 2011) is presented.

[d] Column lists the greater of the Maximum Detected Concentration and the Maximum Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm and units for sodium adsorption ratio are SAR.

[f] Parameter is not applicable to human health.

Bold parameters are identified as COCs

mS/cm - milliSiemens per centimetre

COC - contaminant of concern

Max - maximum concentration

mg/kg - milligrams per kilogram

MOECC - Ontario Ministry of the Environment and Climate Change

NA - not applicable

SAR - sodium adsorption ratio

SCS - site condition standard

SDL - sample detection limit

PCB - polychlorinated biphenyls

TABLE B4

Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land Greater Than 30 m from Lake Ontario/Don R

COC Screening - Table 3 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 [c] SCS (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 3 SCS	Count of Non-Detects Above Table 3 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1,1,2-Tetrachloroethane	Volatile	140	162	3.3	25	440	440	20	9	9	**Included (Max > Table 3 SCS)**
1,1,2,2-Tetrachloroethane	Volatile	139	161	3.2	50	870	870	38	15	7	**Included (Max > Table 3 SCS)**
1,1,2-Trichloroethane	Volatile	139	153	4.7	50	440	440	22	13	8	**Included (Max > Table 3 SCS)**
1,1-Dichloroethane	Volatile	140	164	320	25	349.99	349.99	16		2	**Included (Max > Table 3 SCS)**
1,1-Dichloroethene	Volatile	137	159	1.6	25	440	440	20	15	9	**Included (Max > Table 3 SCS)**
1,2-Dibromoethane	Volatile	140	162	0.25	50	440	440	20	30	40	**Included (Max > Table 3 SCS)**
1,2-Dichloroethane	Volatile	139	161	1.6	50	440	440	21	19	9	**Included (Max > Table 3 SCS)**
1,2-Dichloropropane	Volatile	139	161	16	25	440	440	20	1	5	**Included (Max > Table 3 SCS)**
1,3-Dichloropropene (max)	Volatile	136	161	5.2	50	120	120	7.2	11	5	**Included (Max > Table 3 SCS)**
1,4-Dichlorobenzene	Volatile	139	165	8	50	440	440	20	9	7	**Included (Max > Table 3 SCS)**
1+2-Methylnaphthalenes (max)	Volatile	96	113	1800	2610	0.02	2610	200	2		**Included (Max > Table 3 SCS)**
2-Hexanone	Volatile	11	19			3	3	1			**Included (No SCS, not detected, with elevated SDL)**
Acenaphthene	Non-Volatile	142	165	600	823	300	823	33	1		**Included (Max > Table 3 SCS)**
Acenaphthylene	Non-Volatile	142	167	1.8	220	300	300	9.5	9	5	**Included (Max > Table 3 SCS)**
Anthracene	Non-Volatile	142	166	2.4	377	10	377	15	20	1	**Included (Max > Table 3 SCS)**
Barium	Non-Volatile	139	158	29000	42300	400	42300	1800	2		**Included (Max > Table 3 SCS)**
Benzene	Volatile	150	238	44	3000	4700	4700	160	49	3	**Included (Max > Table 3 SCS)**
Benzo(a)anthracene	Non-Volatile	142	167	4.7	319.99	90	319.99	9.7	8	1	**Included (Max > Table 3 SCS)**
Benzo(a)pyrene	Non-Volatile	142	166	0.81	209.99	0.5	209.99	6.2	25		**Included (Max > Table 3 SCS)**
Benzo(b&j)fluoranthene	Non-Volatile	141	181	0.75	259.99	90	259.99	6.9	25	2	**Included (Max > Table 3 SCS)**
Benzo(g,h,i)perylene	Non-Volatile	142	167	0.2	72.99	190	190	4.8	42	9	**Included (Max > Table 3 SCS)**
Benzo(k)fluoranthene	Non-Volatile	142	167	0.4	100	10	100	2.5	24	7	**Included (Max > Table 3 SCS)**
Bromomethane	Volatile	139	161	5.6	130	2599.99	2599.99	110	15	8	**Included (Max > Table 3 SCS)**
Carbon tetrachloride	Volatile	140	162	0.79	25	440	440	19	19	12	**Included (Max > Table 3 SCS)**
Chloride (Cl)	Non-Volatile	92	101	2300000	14000000	130	14000000	1100000	5		**Included (Max > Table 3 SCS)**
Chloroethane	Volatile	11	19		5.9	2	5.9	2.4			**Included (No SCS; known to be present)**
Chloroform	Volatile	140	162	2.4	25	170	170	8.5	13	9	**Included (Max > Table 3 SCS)**
Chloromethane	Volatile	11	19			4	4	1.2			**Included (No SCS, not detected, with elevated SDL)**
Chrysene	Non-Volatile	142	167	1	280	40	280	7.7	24	1	**Included (Max > Table 3 SCS)**
cis-1,2-Dichloroethene	Volatile	134	155	1.6	9699.99	430	9699.99	290	22	6	**Included (Max > Table 3 SCS)**
Copper	Non-Volatile	145	164	87	138	24	138	7.2	2		**Included (Max > Table 3 SCS)**
Cyanide	Non-Volatile	103	120	66	180	9.99	180	7.5	1		**Included (Max > Table 3 SCS)**
Dibenzo(a,h)anthracene	Non-Volatile	142	167	0.52	26	90	90	2.3	9	11	**Included (Max > Table 3 SCS)**
Dichloromethane	Volatile	140	162	610	640	870	870	49	1	2	**Included (Max > Table 3 SCS)**
Electrical Conductivity [e]	Non-Volatile	61	75	3.16	36		36	4.7			**Included (Max > PGMIS background)**
Ethylbenzene	Volatile	151	243	2300	9520	520	9520	470	11		**Included (Max > Table 3 SCS)**
F1 (C6-C10) (max)	Volatile	145	215	750	103000	10000	103000	4200	61	3	**Included (Max > Table 3 SCS)**
F2 (C10-C16) (max)	Volatile	145	200	150	76000	4100	76000	3700	94	2	**Included (Max > Table 3 SCS)**
F3 (C16-C34) (max)	Non-Volatile	145	190	500	120000	500	120000	3600	57		**Included (Max > Table 3 SCS)**
F4 (C34-C50)	Non-Volatile	144	183	500	6200	500	6200	470	20		**Included (Max > Table 3 SCS)**
Fluoranthene	Non-Volatile	136	159	130	248	50	248	10	3		**Included (Max > Table 3 SCS)**
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	142	167	0.2	70	190	190	4.8	38	10	**Included (Max > Table 3 SCS)**
Lead	Non-Volatile	145	164	25	1140	5	1140	26	6		**Included (Max > Table 3 SCS)**
Mercury	Non-Volatile	141	160	0.29	17.1	0.1	17.1	0.77	21		**Included (Max > Table 3 SCS)**
Methyl tert-butyl ether (MTBE)	Volatile	140	162	190	50	1700	1700	75		5	**Included (Max > Table 3 SCS)**
Naphthalene	Volatile	133	153	1400	4310	1900	4310	190	3	1	**Included (Max > Table 3 SCS)**
Nitrate (as N)	Non-Volatile	37	38	11500	128000		128000	0.04			**Included (Max > PGMIS background)**
Nitrate-Nitrite (as N)	Non-Volatile	37	38	11500	128000		128000	10000			**Included (Max > PGMIS background)**

TABLE B4

Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land Greater Than 30 m from Lake Ontario/Don R

COC Screening - Table 3 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 [c] SCS (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 3 SCS	Count of Non-Detects Above Table 3 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
Phenanthrene	Non-Volatile	142	166	580	1300	90	1300	53	4		**Included (Max > Table 3 SCS)**
Pyrene	Non-Volatile	137	160	68	720	110	720	24	4	1	**Included (Max > Table 3 SCS)**
Silver	Non-Volatile	139	158	1.5	1	5	5	0.54		3	**Included (Max > Table 3 SCS)**
Sodium	Non-Volatile	122	135	2300000	7330000	890000	7330000	460000	4		**Included (Max > Table 3 SCS)**
Tetrachloroethene	Volatile	139	161	1.6	25	440	440	20	15	9	**Included (Max > Table 3 SCS)**
Toluene	Volatile	151	240	18000	46299.99	220	46299.99	1400	4		**Included (Max > Table 3 SCS)**
trans-1,2-Dichloroethene	Volatile	140	162	1.6	25	870	870	32	18	9	**Included (Max > Table 3 SCS)**
Trichloroethylene	Volatile	138	168	1.6	25	440	440	19	15	9	**Included (Max > Table 3 SCS)**
Vinyl Chloride	Volatile	139	161	0.5	870	86.99	870	35	35	10	**Included (Max > Table 3 SCS)**
Xylenes, Total (max)	Volatile	151	240	4200	37000	190	37000	1700	11		**Included (Max > Table 3 SCS)**
1,1,1-Trichloroethane	Volatile	140	162	640	25	220	220	11			Excluded (Max < or = Table 3 SCS)
1,2,4-Trichlorobenzene	Volatile	18	27	180		3	3	0.85			Excluded (Max < or = Table 3 SCS)
1,2-Dichlorobenzene	Volatile	140	166	4600	50	440	440	21			Excluded (Max < or = Table 3 SCS)
1,3-Dichlorobenzene	Volatile	140	166	9600	50	440	440	20			Excluded (Max < or = Table 3 SCS)
2,4,5-Trichlorophenol	Non-Volatile	3	4	1600		4.99	4.99	5			Excluded (Max < or = Table 3 SCS)
2,4,6-Trichlorophenol	Non-Volatile	3	4	230		4.99	4.99	5			Excluded (Max < or = Table 3 SCS)
2,4-Dichlorophenol	Non-Volatile	3	4	4600		4.99	4.99	5.2			Excluded (Max < or = Table 3 SCS)
2,4-Dimethylphenol	Non-Volatile	3	4	39000	67	20	67	78			Excluded (Max < or = Table 3 SCS)
2,4-Dinitrophenol	Non-Volatile	3	4	11000		20	20	30			Excluded (Max < or = Table 3 SCS)
2,4&2,6-Dinitrotoluene (max)	Non-Volatile	9	11	2900		3	3	2.3			Excluded (Max < or = Table 3 SCS)
2-Butanone	Volatile	140	162	470000	1300	13000	13000	600			Excluded (Max < or = Table 3 SCS)
2-Chloronaphthalene	Non-Volatile	6	7			1	1	1			Excluded (No SCS, not detected, no elevated SDL)
2-Chlorophenol	Volatile	3	4	3300		1	1	1			Excluded (Max < or = Table 3 SCS)
3,3`-Dichlorobenzidine	Non-Volatile	9	11	640		25	25	25			Excluded (Max < or = Table 3 SCS)
4-Bromophenyl Phenyl Ether	Non-Volatile	6	7			0.3	0.3	0.3			Excluded (No SCS, not detected, no elevated SDL)
4-Chloroaniline	Non-Volatile	3	4	400		9.99	9.99	10			Excluded (Max < or = Table 3 SCS)
4-Chlorophenyl Phenylether	Non-Volatile	6	7			0.5	0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
4-Methyl-2-Pentanone	Volatile	140	162	140000	1300	8699.99	8699.99	420			Excluded (Max < or = Table 3 SCS)
Acetone	Volatile	140	162	130000	2500	13000	13000	650			Excluded (Max < or = Table 3 SCS)
Antimony	Non-Volatile	139	158	20000	12	10	12	1.5			Excluded (Max < or = Table 3 SCS)
Arsenic	Non-Volatile	139	158	1900	50.79	16	50.79	5.7			Excluded (Max < or = Table 3 SCS)
Benzo(e)pyrene	Non-Volatile	5	5			0.05	0.05	0.05			Excluded (No SCS, not detected, no elevated SDL)
Beryllium	Non-Volatile	133	151	67	5	10	10	1.2			Excluded (Max < or = Table 3 SCS)
Bis (2-chloroethoxy) methane	Non-Volatile	6	7			2	2	2			Excluded (No SCS, not detected, no elevated SDL)
Bis (2-chloroethyl) ether	Volatile	3	4	300000		4.99	4.99	5			Excluded (Max < or = Table 3 SCS)
bis (2-Chloroisopropyl) ether	Non-Volatile	8	10	20000		4.99	4.99	4.3			Excluded (Max < or = Table 3 SCS)
Bis (2-ethylhexyl) phthalate	Non-Volatile	9	11	140		9.99	9.99	7.6			Excluded (Max < or = Table 3 SCS)
Boron	Non-Volatile	139	158	45000	20000	3000	20000	1000			Excluded (Max < or = Table 3 SCS)
Bromodichloromethane	Volatile	140	162	85000	25	170	170	9			Excluded (Max < or = Table 3 SCS)
Bromoform	Volatile	139	161	380	50	170	170	11			Excluded (Max < or = Table 3 SCS)
Butyl benzyl phthalate	Non-Volatile	6	7			0.5	0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
Cadmium	Non-Volatile	145	164	2.7	1	1	1	0.35			Excluded (Max < or = Table 3 SCS)
Chlorobenzene	Volatile	140	162	630	25	440	440	20			Excluded (Max < or = Table 3 SCS)
Chlorodibromomethane	Volatile	140	162	82000	50	170	170	9.8			Excluded (Max < or = Table 3 SCS)
Chromium	Non-Volatile	145	205	810	50	50	50	7.3			Excluded (Max < or = Table 3 SCS)
Chromium, Hexavalent (Cr6+)	Non-Volatile	91	101	140	23	10	23	8.9			Excluded (Max < or = Table 3 SCS)
Cobalt	Non-Volatile	139	158	66	30	10	30	4.5			Excluded (Max < or = Table 3 SCS)

TABLE B4

Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land Greater Than 30 m from Lake Ontario/Don R

COC Screening - Table 3 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 [c] SCS (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 3 SCS	Count of Non-Detects Above Table 3 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
Dichlorodifluoromethane	Volatile	58	66	4400		50	50	4.2			Excluded (Max < or = Table 3 SCS)
Diethylphthalate	Non-Volatile	9	11	38		9.99	9.99	3.6			Excluded (Max < or = Table 3 SCS)
Dimethylphthalate	Non-Volatile	9	11	38		2	2	2			Excluded (Max < or = Table 3 SCS)
Di-N-Butylphthalate	Non-Volatile	6	7			2	2	2			Excluded (No SCS, not detected, no elevated SDL)
Di-n-octyl phthalate	Non-Volatile	6	7			2	2	2			Excluded (No SCS, not detected, no elevated SDL)
Fluorene	Non-Volatile	142	166	400	352	390	390	19			Excluded (Max < or = Table 3 SCS)
Hexachlorobenzene	Non-Volatile	6	7	3.1		1	1	1			Excluded (Max < or = Table 3 SCS)
Hexachloroethane	Volatile	3	4	94		2	2	2			Excluded (Max < or = Table 3 SCS)
Isophorone	Non-Volatile	6	7			0.5	0.5	0.5			Excluded (No SCS, not detected, no elevated SDL)
Molybdenum	Non-Volatile	139	158	9200	56	65	65	4.4			Excluded (Max < or = Table 3 SCS)
n-Hexane	Volatile	56	64	51		50	50	3.2			Excluded (Max < or = Table 3 SCS)
Nickel	Non-Volatile	145	164	490	84.79	50	84.79	8.2			Excluded (Max < or = Table 3 SCS)
Nitrite (as N)	Non-Volatile	44	45	121	55	0.04	55	13			Excluded (Max < or = PGMIS background)
N-Nitrosodi-N-propylamine	Non-Volatile	6	7			2	2	2			Excluded (No SCS, not detected, no elevated SDL)
N-Nitrosodiphenylamine	Non-Volatile	6	7			2	2	2			Excluded (No SCS, not detected, no elevated SDL)
PCB, Total	Non-Volatile	15	16	7.8	0.19	0.5	0.5	0.16			Excluded (Max < or = Table 3 SCS)
Pentachlorophenol	Non-Volatile	3	4	62		4.99	4.99	5.2			Excluded (Max < or = Table 3 SCS)
Perylene	Non-Volatile	5	5			0.05	0.05	0.05			Excluded (No SCS, not detected, no elevated SDL)
Phenol	Non-Volatile	3	4	12000		4.99	4.99	5			Excluded (Max < or = Table 3 SCS)
Selenium	Non-Volatile	139	158	63	20.1	10	20.1	2.9			Excluded (Max < or = Table 3 SCS)
Styrene	Volatile	140	162	1300	50	440	440	20			Excluded (Max < or = Table 3 SCS)
Thallium	Non-Volatile	139	158	510	0.56	1	1	0.33			Excluded (Max < or = Table 3 SCS)
Trichlorofluoromethane	Volatile	69	85	2500		25	25	4.8			Excluded (Max < or = Table 3 SCS)
Uranium (U)	Non-Volatile	58	66	420	7.33	1	7.33	1.6			Excluded (Max < or = Table 3 SCS)
Vanadium	Non-Volatile	139	158	250	30.8	50	50	4.8			Excluded (Max < or = Table 3 SCS)
Zinc	Non-Volatile	145	164	1100	230	100	230	23			Excluded (Max < or = Table 3 SCS)

Notes:

[a] (max) Indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition* (All land uses) (MOECC, 2011) for all COCs, for all COCs, except for electrical conductivity and nitrate/nitrite, for which the 97.5th percentile of the Provincial Groundwater Monitoring Information System (PGMIS) value (MOECC, 2011) is presented.

[d] Column lists the greater of the maximum concentration between Max Detected Concentration and Max Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm.

Bold parameters are identified as COCs

µg/L - microgram per litre

COC - contaminant of concern

Max - maximum concentration

MOECC - Ontario Ministry of the Environment and Climate Change

SCS - site condition standard

SDL - sample detection limit

mS/cm - milliSiemens per centimetre

TABLE B5

Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land Less Than 30 m From Lake Ontario/Don Rive

COC Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 [c] SCS (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1,1,2-Tetrachloroethane	Volatile	27	28	3.3	5	0.5	5	1.2	2		**Included (Max > Table 9 SCS)**
1,1,2,2-Tetrachloroethane	Volatile	27	28	3.2	10	0.5	10	2.1	2		**Included (Max > Table 9 SCS)**
1,1,2-Trichloroethane	Volatile	27	28	4.7	10	0.5	10	2.1	2		**Included (Max > Table 9 SCS)**
1,1-Dichloroethene	Volatile	27	28	1.6	5	0.5	5	1.2	2		**Included (Max > Table 9 SCS)**
1,2-Dibromoethane	Volatile	27	28	0.25	10	0.5	10	2	7	1	**Included (Max > Table 9 SCS)**
1,2-Dichloroethane	Volatile	27	28	1.6	10	0.5	10	2.1	2		**Included (Max > Table 9 SCS)**
1,3-Dichloropropene (max)	Volatile	26	26	5.2	10	0.5	10	2.2	2		**Included (Max > Table 9 SCS)**
1,4-Dichlorobenzene	Volatile	27	28	8	10	0.5	10	2.1	2		**Included (Max > Table 9 SCS)**
2-Hexanone	Volatile	1	2			0.09	0.09	0.61			**Included (No SCS, not detected, with elevated SDL)**
Acenaphthylene	Non-Volatile	28	29	1.4	4	0.02	4	0.65	3		**Included (Max > Table 9 SCS)**
Anthracene	Non-Volatile	28	29	1	7.1	0.02	7.1	1.1	3		**Included (Max > Table 9 SCS)**
Benzene	Volatile	28	29	44	420	0.5	420	56	2		**Included (Max > Table 9 SCS)**
Benzo(a)anthracene	Non-Volatile	28	29	1.8	24	0.09	24	2.9	2		**Included (Max > Table 9 SCS)**
Benzo(a)pyrene	Non-Volatile	28	29	0.81	28	0.09	28	3.3	5		**Included (Max > Table 9 SCS)**
Benzo(b&j)fluoranthene	Non-Volatile	28	29	0.75	16	0.09	16	2.1	5		**Included (Max > Table 9 SCS)**
Benzo(g,h,i)perylene	Non-Volatile	28	29	0.2	16	0.09	16	1.9	8		**Included (Max > Table 9 SCS)**
Benzo(k)fluoranthene	Non-Volatile	28	29	0.4	6	0.02	6	0.77	4		**Included (Max > Table 9 SCS)**
Bismuth	Non-Volatile	1	2		11	0.002	11	75			**Included (No SCS; known to be present)**
Bromomethane	Volatile	27	28	5.6	25	0.5	25	6.2	3		**Included (Max > Table 9 SCS)**
Cadmium	Non-Volatile	28	29	2.1	23	0.19	23	2.5	1		**Included (Max > Table 9 SCS)**
Carbon tetrachloride	Volatile	27	28	0.79	27	0.2	27	3.5	3		**Included (Max > Table 9 SCS)**
Chloride (Cl)	Non-Volatile	28	29	1800000	2500000	0.003	2500000	680000	2		**Included (Max > Table 9 SCS)**
Chloroethane	Volatile	1	2		21	0.003	21	140			**Included (No SCS; known to be present)**
Chloroform	Volatile	27	28	2.4	5	1	5	1.5	2		**Included (Max > Table 9 SCS)**
Chloromethane	Volatile	1	2			0.5	0.5	3.4			**Included (No SCS, not detected, with elevated SDL)**
Chrysene	Non-Volatile	28	29	0.7	3.2	0.5	3.2	0.66	4		**Included (Max > Table 9 SCS)**
cis-1,2-Dichloroethene	Volatile	27	28	1.6	40	0.5	40	5.1	3		**Included (Max > Table 9 SCS)**
Cobalt	Non-Volatile	28	29	52	60	1	60	8.5	1		**Included (Max > Table 9 SCS)**
Dibenzo(a,h)anthracene	Non-Volatile	28	29	0.4	1.88	0.02	1.88	0.33	3		**Included (Max > Table 9 SCS)**
Electrical Conductivity [e]	Non-Volatile	18	18	3.16	6.23		6.23	2.8			**Included (Max > Table 9 SCS)**
F1 (C6-C10) (max)	Volatile	28	29	420	3200	25	3200	550	2		**Included (Max > Table 9 SCS)**
F2 (C10-C16) (max)	Volatile	27	27	150	14000	100	14000	1700	5		**Included (Max > Table 9 SCS)**
F3 (C16-C34) (max)	Non-Volatile	28	29	500	2600	250	2600	550	3		**Included (Max > Table 9 SCS)**
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	28	29	0.2	2.7	0.5	2.7	0.44	7	1	**Included (Max > Table 9 SCS)**
Mercury	Non-Volatile	27	27	0.29	1.5	0.01	1.5	0.2	1		**Included (Max > Table 9 SCS)**
PCB, Total	Non-Volatile	1	2	0.2	142		142	940	2		**Included (Max > Table 9 SCS)**
Pyrene	Non-Volatile	28	29	5.7	11	0.02	11	2.5	3		**Included (Max > Table 9 SCS)**
Silver	Non-Volatile	28	29	1.2	4	0.5	4	0.66	1		**Included (Max > Table 9 SCS)**
Tetrachloroethene	Volatile	27	28	1.6	107	0.5	107	13	4		**Included (Max > Table 9 SCS)**
Tin	Non-Volatile	1	2		40.1		40.1	270			**Included (No SCS; known to be present)**
trans-1,2-Dichloroethene	Volatile	27	28	1.6	321	0.5	321	36	3		**Included (Max > Table 9 SCS)**
Trichloroethylene	Volatile	27	28	1.6	100	0.5	100	12	3		**Included (Max > Table 9 SCS)**
Vinyl Chloride	Volatile	27	28	0.5	39	0.5	39	5.8	7		**Included (Max > Table 9 SCS)**
1,1,1-Trichloroethane	Volatile	27	28	640	5	0.5	5	1.2			Excluded (Max < or = Table 9 SCS)
1,1-Dichloroethane	Volatile	27	28	320	5	0.5	5	1.2			Excluded (Max < or = Table 9 SCS)
1,2-Dichlorobenzene	Volatile	27	28	4600	10	0.5	10	2.1			Excluded (Max < or = Table 9 SCS)

TABLE B5

Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land Less Than 30 m From Lake Ontario/Don Rive

COC Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 [c] SCS (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
1,2-Dichloropropane	Volatile	27	28	16	5	0.5	5	1.2			Excluded (Max < or = Table 9 SCS)
1,3-Dichlorobenzene	Volatile	27	28	7600	10	0.5	10	2.1			Excluded (Max < or = Table 9 SCS)
1+2-Methylnaphthalenes (max)	Volatile	28	29	1500	170	0.09	170	19			Excluded (Max < or = Table 9 SCS)
2-Butanone	Volatile	27	28	470000	250	20	250	58			Excluded (Max < or = Table 9 SCS)
4-Methyl-2-Pentanone	Volatile	27	28	140000	250	20	250	58			Excluded (Max < or = Table 9 SCS)
Acenaphthene	Non-Volatile	28	29	600	15	0.09	15	2.3			Excluded (Max < or = Table 9 SCS)
Acetone	Volatile	27	28	100000	500	30	500	110			Excluded (Max < or = Table 9 SCS)
Aluminum	Non-Volatile	1	2	86.9	0.34	0.005	0.34	2.3			Excluded (Max < or = PGMIS background)
Antimony	Non-Volatile	28	29	16000	5	1	5	1.3			Excluded (Max < or = Table 9 SCS)
Arsenic	Non-Volatile	28	29	1500	13	1	13	4			Excluded (Max < or = Table 9 SCS)
Barium	Non-Volatile	28	29	23000	2690	0.5	2690	770			Excluded (Max < or = Table 9 SCS)
Beryllium	Non-Volatile	28	29	53	8.99	1	8.99	1.8			Excluded (Max < or = Table 9 SCS)
Boron	Non-Volatile	28	29	36000	2440	0.002	2440	640			Excluded (Max < or = Table 9 SCS)
Bromodichloromethane	Volatile	27	28	67000	12	2	12	3			Excluded (Max < or = Table 9 SCS)
Bromoform	Volatile	27	28	380	11	5	11	5.6			Excluded (Max < or = Table 9 SCS)
Calcium	Non-Volatile	1	2	431000	12	0.19	12	81			Excluded (Max < or = PGMIS background)
Chlorobenzene	Volatile	27	28	500	25	0.5	25	3.5			Excluded (Max < or = Table 9 SCS)
Chlorodibromomethane	Volatile	27	28	65000	10	2	10	3			Excluded (Max < or = Table 9 SCS)
Chromium	Non-Volatile	28	29	640	50	5	50	11			Excluded (Max < or = Table 9 SCS)
Chromium, Hexavalent (Cr6+)	Non-Volatile	27	27	110	7	10	10	9.4			Excluded (Max < or = Table 9 SCS)
Copper	Non-Volatile	28	29	69	10	2	10	3			Excluded (Max < or = Table 9 SCS)
Cyanide	Non-Volatile	27	27	52	2.8	2	2.8	2.1			Excluded (Max < or = Table 9 SCS)
Dichlorodifluoromethane	Volatile	18	18	3500		2	2	2			Excluded (Max < or = Table 9 SCS)
Dichloromethane	Volatile	27	28	610	65	5	65	12			Excluded (Max < or = Table 9 SCS)
Ethylbenzene	Volatile	28	30	1800	66	0.5	66	8.1			Excluded (Max < or = Table 9 SCS)
F4 (C34-C50)	Non-Volatile	27	27	500	370	250	370	240			Excluded (Max < or = Table 9 SCS)
Fluoranthene	Non-Volatile	28	29	73	11	0.5	11	1.9			Excluded (Max < or = Table 9 SCS)
Fluorene	Non-Volatile	28	29	290	20	0.5	20	2.6			Excluded (Max < or = Table 9 SCS)
Iron	Non-Volatile	1	2	4090		0.5	0.5	3.4			Excluded (Max < or = PGMIS background)
Lead	Non-Volatile	28	29	20	5	0.5	5	1.2			Excluded (Max < or = Table 9 SCS)
Magnesium	Non-Volatile	1	2	134000		0.5	0.5	3.4			Excluded (Max < or = PGMIS background)
Manganese	Non-Volatile	1	2	717		0.5	0.5	3.4			Excluded (Max < or = PGMIS background)
Methyl tert-butyl ether (MTBE)	Volatile	27	28	190	10	2	10	3.1			Excluded (Max < or = Table 9 SCS)
Molybdenum	Non-Volatile	28	29	7300	25	0.5	25	4.6			Excluded (Max < or = Table 9 SCS)
Naphthalene	Volatile	28	29	1400	23	0.09	23	2.6			Excluded (Max < or = Table 9 SCS)
n-Hexane	Volatile	18	18	51		0.5	0.5	0.5			Excluded (Max < or = Table 9 SCS)
Nickel	Non-Volatile	28	29	390	61	5	61	10			Excluded (Max < or = Table 9 SCS)
Nitrate (as N)	Non-Volatile	9	9	11500	550		550	200			Excluded (Max < or = PGMIS background)
Nitrate-Nitrite (as N)	Non-Volatile	9	9	11500	550		550	270			Excluded (Max < or = PGMIS background)
Nitrite (as N)	Non-Volatile	9	9	121	10		10	10			Excluded (Max < or = PGMIS background)
Phenanthrene	Non-Volatile	28	29	380	50	0.02	50	6.4			Excluded (Max < or = Table 9 SCS)
Phosphorus	Non-Volatile	1	2	7970	4	0.002	4	27			Excluded (Max < or = PGMIS background)
Potassium	Non-Volatile	1	2	20700	3	0.002	3	21			Excluded (Max < or = PGMIS background)
Selenium	Non-Volatile	28	29	50	20	0.5	20	4.5			Excluded (Max < or = Table 9 SCS)
Sodium	Non-Volatile	28	29	1800000	1500000	0.09	1500000	350000			Excluded (Max < or = Table 9 SCS)
Strontium	Non-Volatile	1	2	20200	3	0.09	3	20			Excluded (Max < or = PGMIS background)

TABLE B5

Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land Less Than 30 m From Lake Ontario/Don Rive

COC Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 [c] SCS (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Included/Excluded as COC (Rationale)
Styrene	Volatile	27	28	1300	106	0.5	106	13			Excluded (Max < or = Table 9 SCS)
Thallium	Non-Volatile	28	29	400	51.1	0.1	51.1	5.5			Excluded (Max < or = Table 9 SCS)
Titanium	Non-Volatile	1	2	4.8	0.0007		0.0007	0.0048			Excluded (Max < or = PGMIS background)
Toluene	Volatile	28	29	14000	14	0.5	14	2.4			Excluded (Max < or = Table 9 SCS)
Trichlorofluoromethane	Volatile	19	20	2000	106	5	106	20			Excluded (Max < or = Table 9 SCS)
Uranium (U)	Non-Volatile	19	20	330	14	0.1	14	2.8			Excluded (Max < or = Table 9 SCS)
Vanadium	Non-Volatile	28	29	200	10	5	10	3.8			Excluded (Max < or = Table 9 SCS)
Xylenes, Total (max)	Volatile	28	31	3300	57	0.5	57	7.8			Excluded (Max < or = Table 9 SCS)
Zinc	Non-Volatile	28	29	890	50	10	50	15			Excluded (Max < or = Table 9 SCS)

Notes:

[a] (max) Indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition (All land uses) (MoECC, 2011) for all COCs, for all COCs, except for aluminum, calcium, electrical conductivity, iron, manganese, magnesium, nitrate/nitrite, phosphorus, potassium, strontium, and titanium, for which the 97.5th percentile of the Provincial Groundwater Monitoring Information System (PGMIS) value (MOECC, 2011) is presented.

[d] Column lists the greater of the maximum concentration between Max Detected Concentration and Max Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm.

Bold parameters are identified as COCs

µg/L - microgram per litre

COC - contaminant of concern

Max - maximum concentration

MOECC - Ontario Ministry of the Environment and Climate Change

SCS - site condition standard

SDL - sample detection limit

mS/cm - milliSiemens per centimetre

TABLE B6

Revised Toxicity Reference Values for Use in the SLRA

Port Lands, Toronto, Ontario

Parameter	Toxicity Reference Value		Units	Effect/Basis	Study Population	Source	Originating Agency/Author [a,b,c]
Anthracene	RfC	5.0E-02	mg/m^3	Body weight reduction, hepatic, renal, and developmental effects (surrogate value from C9 - C18 Aromatic Fraction). [b,d]	Rats	MADEP, 2004	TPHCWG, 1997
Antimony (Sb)	RfD	6.0E-03	mg/kg/day	Decreased body weight and food intake.	Rats	Revised MOE, 2011 [a]	WHO DW, 2003; RIVM, 2009
Arsenic (As)	SF	9.5E+00	1/[mg/kg/day]	Lung and bladder cancers.	Humans	CalEPA DW, 2004	-
	URF	1.5E-01	$[mg/m^3]^{-1}$	Lung cancer.	Humans	TCEQ, 2012	-
Biphenyl, 1,1'-	RfC	4.0E-04	mg/m^3	Congestion and edema of the liver and kidneys	Mice	USEPA RSL, 2013	USEPA PPRTV, 2011
Bromodichloromethane	RfC	7.0E-02	mg/m^3	MADEP derived these values from RfD, (Renal cytomegaly).	-	MADEP, 2004	-
	URF	3.7E-02	$[mg/m^3]^{-1}$	Kidney cancers	Mice, Rats	USEPA RSL, 2013	CalEPA OEHHA, 2009
Bromoform	RfC	7.0E-02	mg/m^3	Hepatic lesions. MADEP derived these values from RfD.	Rats	MADEP, 2004	USEPA IRIS, 2003
Cadmium	RfD	1.0E-04	mg/kg/day	Renal toxicity.	Humans	ATSDR, 2012	-
	RfC	1.0E-05	mg/m^3	Kidney toxicity.	Humans	USEPA RSL, 2012	ATSDR, 2012
Carbon Tetrachloride	RfD	4.0E-03	mg/kg/day	Elevated serum SDH activity.	Rats	USEPA IRIS, 2010	-
	RfC	1.0E-01	mg/m^3	Fatty changes in the liver.	Rats	USEPA IRIS, 2010	-
	RfD Sub-chronic	1.3E-02	mg/kg/day	Elevated serum SDH activity.	Rats	USEPA IRIS, 2010	-
	SF	7.0E-02	1/[mg/kg/day]	Hepatocellular adenoma or carcinoma.	Mice	USEPA IRIS, 2010	-
	URF	6.00E-03	$[mg/m^3]^{-1}$	Pheochromocytoma.	Mice	USEPA IRIS, 2010	-
Copper (Cu)	RfD Sub-chronic	1.0E-02	mg/kg/day	Gastrointestinal effects.	Humans	ATSDR, 2004	-
Dichlorobenzene, 1,3-	RfC	2.0E-01	mg/m^3	RfC value for 1,2-dichlorobenzene (USEPA HEAST, 1997) used as a proxy. LOAEL based on decreased body weight gain in rats and decreased spleen weight in guinea pigs.	Guinea Pigs, Rats	MADEP, 2004	-
	URF	3.40E-01	mg/m^3	Mammary adenocarcinoma	-	USEPA RSL, 2013	CalEPA ATH, 2005; 2009; 2011
Dichloroethane, 1,1-	SF	5.7E-03	1/[mg/kg/day]	Mammary gland adenocarcinomas	Rats	CalEPA DW, 2003	-
	URF	1.6E-03	$[mg/m^3]^{-1}$	Mammary gland adenocarcinomas	Rats	USEPA RSL, 2013	CalEPA DW, 2003
Dichloroethylene, cis-1,2-	RfD	2.0E-03	mg/kg/day	Increased kidney and liver weights; decrease hematocrit.	Rats	USEPA IRIS, 2010	-
Dichloropropane, 1,2-	URF	1.0E-02	$[mg/m^3]^{-1}$	Calculated by CalEPA from oral SF.	Mice	USEPA RSL, 2013	CalEPA DW, 2002
Ethylbenzene	SF	1.1E-02	1/[mg/kg/day]	Renal tubular carcinoma and adenoma.	Rats	CalEPA ATH, 2007	-
	URF	2.5E-03	$[mg/m^3]^{-1}$	Renal tubular carcinoma and adenoma.	Rats	USEPA RSL, 2013	CalEPA ATH, 2008
Fluorene	RfC	5.0E-02	mg/m^3	CNS effects and increased liver and kidney weight.	Rats	MADEP, 2004	-
Hexachlorobenzene	RfD	7.0E-05	mg/kg/day	Liver effects.	Rats	Revised MOE, 2011 [a]	ATSDR, 2013
Hexachloroethane	RfD	7.0E-04	mg/kg/day	Atrophy and degeneration of renal tubules.	Rats	Revised MOE, 2011 [a]	USEPA IRIS, 2011
	RfC	3.0E-02	mg/m^3	Neurotoxicity.	-	USEPA IRIS, 2011	-

TABLE B6

Revised Toxicity Reference Values for Use in the SLRA

Port Lands, Toronto, Ontario

Parameter	Toxicity Reference Value		Units	Effect/Basis	Study Population	Source	Originating Agency/Author [a,b,c]
	SF	4.0E-02	1/[mg/kg/day]	Renal adenomas and carcinomas.	Rats	Revised MOE, 2011 [a]	USEPA IRIS, 2011
	URF	1.1E-02	$[mg/m^3]^{-1}$	Liver carcinomas	Mice, Rats	USEPA RSL, 2013	CalEPA OEHHA, 1995
Lead (Pb)	RfC	2.0E-04	mg/m^3	Neurological effects in children. [d]	-	MOE, 2007	-
Methylene Chloride (Dichloromethane)	RfD	6.0E-03	mg/kg/day	Liver toxicity (histological alterations).	Rats	USEPA IRIS, 2011	-
	RfC	6.0E-01	mg/m^3	Hepatic toxicity.	Rats	Revised MOE, 2011 [a]	USEPA, 2011
	RfC Sub-chronic	1.0E+00	mg/m^3	Hepatic toxicity.	Rats	ATSDR, 2000	-
	SF	2.0E-03	1/[mg/kg/day]	Hepatocellular adenomas or carcinomas, and neoplastic nodules.	Mice	USEPA IRIS, 2011	-
	URF	1.0E-05	$[mg/m^3]^{-1}$	Carcinogenic by mutagenic mode of action in early life. Lung and liver tumors.	Mice	USEPA IRIS, 2011	-
2-(1-)Methylnaphthalene	RfC	5.0E-02	mg/m^3	CNS effects and increased liver and kidney weight.	Rats	MADEP, 2003	-
	SF	2.9E-02	1/[mg/kg/day]	Carcinogenic by mutagenic mode of action for lung adenomas and carcinomas. 1-Methylnaphthalene only.	Mice	USEPA PPRTV, 2008	-
Naphthalene	URF	3.4E-02	$[mg/m^3]^{-1}$	Carcinogenicity; respiratory epithelial adenoma and olfactory epithelial neuroblastoma of the nose.	Mice, Rats	USEPA RSL, 2013	CalEPA ATH, 2005; 2009; 2011
n-Hexane	RfD	6.0E-02	mg/kg/day	Nervous system-neuropathy; Testicular atrophy.	Rats	USEPA RSL, 2013	USEPA HEAST, 1997
	RfC	7.0E-01	mg/m^3	Neurotoxic effects (functional impairment of the peripheral nervous system).	Rats	USEPA IRIS, 2005	-
	RfD Sub-chronic	6.0E-01	mg/kg/day	Nervous system-neuropathy; Testicular atrophy.	Rats	USEPA HEAST, 1997	-
Pentachlorophenol	SF	4.0E-01	1/[mg/kg/day]	Hepatocellular adenomas or carcinomas and adrenal benign or malignant pheochromocytomas.	Mice	Revised MOE, 2011 [a]	USEPA IRIS, 2011
Phenanthrene	RfD	4.0E-02	mg/kg/day	Applicable to the non-carcinogenic C9 to C16 aromatic total petroleum hydrocarbon fraction (or its constituents) and is based on decreased body weight and increased liver and kidney weight.	Mice, Rats	RIVM, 2001	-
	RfC	5.0E-02	mg/m^3	CNS effects and increased liver and kidney weight.	Rats	MADEP, 2004	-
Selenium	RfC	2.0E-02	mg/m^3	Based on oral RfD. Calculated using adult body weight of 70 kg and inhalation rate of 20 m^3/day. [c]	Humans	USEPA RSL, 2013	CalEPA ChREL, 2008
Silver	RfC	1.4E-04	mg/m^3	Route-to-route extrapolation by MADEP.	-	MADEP, 2004	-
Tetrachloroethane, 1,1,2,2-	RfD	2.0E-02	mg/kg/day	Increase in relative liver weight.	Rats	Revised MOE, 2011 [a]	USEPA IRIS, 2010
	RfD Sub-chronic	5.0E-02	mg/kg/day	Increase in relative liver weight.	Rats	Revised MOE, 2011 [a]	USEPA IRIS, 2010
Tetrachloroethylene	RfD	6.0E-03	mg/kg/day	Neurotoxicity - occupational exposures.	Humans	USEPA IRIS, 2012	-
	RfC	4.0E-02	mg/m^3	Neurotoxicity - occupational exposures.	Humans	USEPA IRIS, 2012	-
	SF	2.0E-03	1/[mg/kg/day]	Hepatocellular adenomas or carcinomas.	Mice	USEPA IRIS, 2012	-
	URF	2.6E-04	$[mg/m^3]^{-1}$	Hepatocellular adenomas or carcinomas.	Mice	USEPA IRIS, 2012	-
Trichloroethane, 1,1,1-	RfC	5.0E+00	mg/m^3	Liver histopatholgical changes.	Rats	USEPA IRIS, 2007	-
	RfC Sub-chronic	5.0E+00	mg/m^3	Liver histopatholgical changes.	Rats	USEPA IRIS, 2007	-

TABLE B6

Revised Toxicity Reference Values for Use in the SLRA

Port Lands, Toronto, Ontario

Parameter	Toxicity Reference Value		Units	Effect/Basis	Study Population	Source	Originating Agency/Author[a,b,c]
Trichloroethylene	RfD	4.8E-04	mg/kg/day	Multiple: Developmental immunotoxicity, decreased thymus weights in mice, and heart malformations in rats. [d]	Mice, Rats	USEPA IRIS, 2011	-
	RfC	2.0E-03	mg/m^3	Multiple: Decreased thymus weights in mice and heart malformations in rats. [d]	Mice, Rats	USEPA IRIS, 2011	-
	SF	4.6E-02	1/[mg/kg/day]	Kidney cancers (mutagenic mode of action) and liver cancers.	Humans, Mice	USEPA IRIS, 2011	-
	URF	4.1E-03	$[mg/m^3]^{-1}$	Kidney cancers (mutagenic mode of action) and liver cancers.	Humans, Mice	USEPA IRIS, 2011	-
Vinyl Chloride	RfC	6.0E-02	mg/m^3	Liver cell polymorphism.	Rats	TCEQ, 2009	-
	SF (continuous lifetime exposure during adulthood)	7.2E-01	1/[mg/kg/day]	Total of liver angiosarcoma, hepatocellular carcinoma, and neoplastic nodules.	Rats	USEPA IRIS, 2000	-
	SF (continuous lifetime exposure from birth)	1.5E+00	1/[mg/kg/day]	Total of liver angiosarcoma, hepatocellular carcinoma, and neoplastic nodules.	Rats	WHO DW, 2004; 2011	-
	URF (continuous lifetime exposure during adulthood)	4.4E-03	$[mg/m^3]^{-1}$	Liver angiosarcomas, angiomas, hepatomas, and neoplastic nodules.	Rats	USEPA IRIS, 2000	-
	URF (continuous lifetime exposure from birth)	8.4E-03	$[mg/m^3]^{-1}$	Liver angiosarcomas, angiomas, hepatomas, and neoplastic nodules.	Rats	TCEQ, 2009	-
Zinc	RfC	1.4E-03	mg/m^3	Route-to-route extrapolation by MADEP.	-	MADEP, 2004	-

Notes:

[a.] TRVs revised where source agency listed by MOE (2011) has updated the TRV.

[b.] Proxy/surrogate is chosen based on chemical's structural or functional similarity.

[c.] Adult body weight of 70 kilogram (kg) (USEPA, 1991) and inhalation rate of 20 m^3/day (USEPA, 1991) and absorption factor of 1 were used in the calculation.

[d.] Additional consideration for developmental effects required for this chemical/route of exposure.

ATSDR online database (http://www.atsdr.cdc.gov/). Reference date reflects the individual profiles which were prepared in different years.

CalEPA ATH. *Air Toxic Hotspots Program.* http://oehha.ca.gov/air/hot_spots/. Reference date reflects the individual profiles which were prepared in different years.

CalEPA ChREL. *Chronic Reference Exposure Levels.* Reference date reflects the individual profiles which were prepared in different years.

CalEPA DW online Public Health Goals (http://www.oehha.org/water/phg/allphgs.html)

CalEPA OEHHA. *Toxicity Criteria Database* (http://oehha.ca.gov/tcdb/index.asp). Reference date reflects the individual profiles which were prepared in different years.

MADEP, 2003. *Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology. November.*

MADEP, 2004. *Revisions to Dose-Response Values used in Human Health Risk Assessment*. Common Wealth of Massachusetts, Executive Office of Environmental Affairs, Department of Environmental Protection.

MOE, 2011 (Revised). Original MOE (2011) value has been updated by the source agency.

MOE, 2011. *Rationale for the Development of Soil and Ground Water Standards for Use at Contaminated sites in Ontario* . April.

RIVM, 2001. *Re-Evaluation of Human-Toxicological Maximum Permissible Risk Levels* . March.

RIVM, 2009. *Re-Evaluation of Some Human-Toxicological Maximum Permissible Risk Levels Earlier Evaluated in the Period 1991-2001.*

TCEQ online *Final Development Support Documents* (http://www.tceq.texas.gov/toxicology/dsd/final.html). Reference date reflects the individual profiles which were prepared in different years.

TPHCWG, 1997. *Development of Fraction-Specific Reference Doses (RfDs) and Reference Concentrations (RfCs) for Total Petroleum Hydrocarbons (TPH) Vol.4.*

USEPA HEAST, 1997. *Health Effects Assessment Summary Tables, FY 1997 Update* (http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=2877).

USEPA IRIS online database (http://www.epa.gov/IRIS/index.html). Reference date reflects the individual profiles which were prepared in different years.

USEPSA RSLs, 2013. *Regional Screening Level (RSL) Summary Table* . http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/docs/master_sl_table_run_NOV2013.pdf. November.

USEPA PPRTV. *Provisional Peer Reviewed Toxicity Value.* Accessed in July 2013. http://hhpprtv.ornl.gov/quickview/pprtv_papers.php. Reference date reflects the individual profiles which were prepared in different years.

WHO DW. *Guidelines for Drinking-Water Quality* . 2011. Reference date reflects the individual profiles which were prepared in different years.

ATSDR - Agency for Toxic Substances and Disease Register

CalEPA - California Environmental Protection Agency

CalEPA ATH - California Environmental Protection Agency Air Toxic Hotspots Program

CalEPA ChREL - California Environmental Protection Agency Chronic Reference Exposure Levels (REL)

CalEPA DW - California Department of Environmental Protection - Public Health Goals

CalEPA OEHHA - California Environmental Protection Agency Office of Environmental Health Hazard Assessment

TABLE B6

Revised Toxicity Reference Values for Use in the SLRA

Port Lands, Toronto, Ontario

Parameter	Toxicity Reference Value	Units	Effect/Basis	Study Population	Source	Originating Agency/Author[a,b,c]

CNS - Central Nervous System
kg - kilogram
LOAEL - Lowest Observed Adverse Effect Level
MADEP - Massachusetts Department of Environmental Protection
m^3/day - cubic metre(s) per day
mg/kg/day - milligrams per kilogram per day
mg/m^3 - milligrams per cubic metre
MOE - Ontario Ministry of the Environment
RfC - Reference Concentration
RfD - Reference Dose
RIVM - Netherlands National Institute of Public Health and Environmental Protection
SDH - sorbitol dehydrogenase
SF - Slope Factor
TCEQ - Texas Commission on Environmental Quality
TPHCWG - Total Petroleum Hydrocarbon Criteria Working Group
URF - unit risk factor
USEPA HEAST - Health Effects Assessment Summary Table
USEPA IRIS - United States Environmental Protection Agency Integrated Risk Information System
USEPA PPRTV - United States Environmental Protection Agency Provisional Peer Reviewed Toxicity Value
USEPA RSL - United States Environmental Protection Agency Regional Screening Levels
WHO - World Health Organization
WHO DW - World Health Organization Drinking Water

TABLE B7

Soil Component Values Applied in the Screening Level Risk Assessment

Port Lands, Toronto, Ontario

Parameter	S1 (mg/kg)	S3 (mg/kg)	S-GW3 (mg/kg)	Soil to Indoor Air (RPI) (mg/kg)	Soil to Outdoor Air (mg/kg)	Plants and Soil Organisms (RPI) (mg/kg)	Mammals and Birds (RPI) (mg/kg)
1,1,1,2-Tetrachloroethane	30	1600	37	0.058	5.1	--	--
1,1,1-Trichloroethane	42000	1500000	9.8	0.5	62000	18	820
1,1,2,2-Tetrachloroethane	4	210	48	0.0045	1.6	--	--
1,1,2-Trichloroethane	14	720	120	0.03	2.9	80	--
1,1'-Biphenyl	710	3400	190	0.16	53	--	--
1,1-Dichloroethane	140	7200	1600	0.071	30	8.4	--
1,1-Dichloroethene	1000	11000	11	0.004	1300	50	43
1,2,4-Trichlorobenzene	210	22000	43	0.36	290	13	--
1,2-Dibromoethane	0.22	11	86	0.0014	0.099	--	--
1,2-Dichlorobenzene	6300	130000	60	35	9200	3.4	--
1,2-Dichloroethane	8.7	450	180	0.025	1.4	48	29
1,2-Dichloropropane	22	1100	76	0.01	3.6	25	--
1,3-Dichlorobenzene	420	4400	59	--	--	4.8	--
1,3-Dichloropropene (max)	8.7	450	3.8	0.027	9	25	--
1,4-Dichlorobenzene	47	2400	59	0.083	18	3.6	--
1+2-Methylnaphthalenes (max)	20	560	76	6.1	3300	--	--
2,4&2,6-Dinitrotoluene (max)	0.92	43	15	--	--	--	--
2-Butanone	13000	64000	230	16	44000	35	9900
3,3`-Dichlorobenzidine	0.52	25	66	18000	65	--	--
4-Chloroaniline	38	320	0.45	--	--	20	--
4-Methyl-2-Pentanone	1700	85000	150	6.6	23000	--	--
Acenaphthene	78	3600	560	7.9	1300	--	6600
Acenaphthylene	7.8	360	0.15	0.45	96	--	--
Acetone	19000	660000	16	720	120000	--	56
Ammonia	--	--	--	--	--	--	--
Anthracene	5400	420000	0.67	1000	53000	2.5	38000
Antimony	110	950	--	--	--	20	25
Arsenic	0.15	7.4	--	--	--	20	51
Barium	3800	8600	--	--	--	750	390
Benzene	9.3	480	14	0.21	17	25	370
Benzo(a)anthracene	0.78	36	5.1E+11	65	330	0.5	--
Benzo(a)pyrene	0.078	3.6	3.8E+13	820	170	20	1600
Benzo(b&j)fluoranthene	0.78	36	7.7E+13	5500	2000	--	--
Benzo(g,h,i)perylene	7.8	360	1.2E+13	--	--	6.6	--
Benzo(k)fluoranthene	0.78	36	2.5E+13	6700	2100	7.6	--
Beryllium	38	60	--	--	--	4	13
Bis (2-chloroethyl) ether	0.32	16	92	--	--	--	--
bis (2-Chloroisopropyl) ether	840	8800	120	--	--	--	--
Boron (hot water extractable)	--	--	--	--	--	1.5	--
Bromide	--	--	--	--	--	--	--

TABLE B7

Soil Component Values Applied in the Screening Level Risk Assessment

Port Lands, Toronto, Ontario

Parameter	S1 (mg/kg)	S3 (mg/kg)	S-GW3 (mg/kg)	Soil to Indoor Air (RPI) (mg/kg)	Soil to Outdoor Air (mg/kg)	Plants and Soil Organisms (RPI) (mg/kg)	Mammals and Birds (RPI) (mg/kg)
Bromodichloromethane	13	660	50	0.0095	1	--	--
Bromoform	100	5200	21	0.27	91	--	--
Bromomethane	6.3	660	1.4	0.00034	68	--	--
Cadmium	2.2	25	--	--	--	12	1.9
Calcium	--	--	--	--	--	--	--
Carbon tetrachloride	11	590	2.3	0.0059	13	5.8	7.6
Chloride (Cl)	--	--	220	--	--	--	--
Chlorobenzene	1300	42000	2.4	91	8900	6	--
Chlorodibromomethane	9.4	490	48	8.2	700	--	--
Chloroethane	--	--	--	--	--	--	--
Chloroform	26	1300	9.5	0.032	8.9	34	81
Chloromethane	--	--	--	--	--	--	--
Chromium	28000	240000	--	--	--	310	160
Chromium, Hexavalent (Cr6+)	160	40	--	--	--	8	910
Chrysene	7.8	360	3.6E+11	1900	6600	7	--
cis-1,2-Dichloroethene	42	66000	130	3.4	1300	--	84
Cobalt	22	2500	--	--	--	40	180
Copper	600	1900	--	--	--	140	770
Cyanide	380	7900	0.022	--	--	0.9	0.11
Dibenzo(a,h)anthracene	0.078	3.6	2.4E+13	33000	430	--	--
Dichloromethane	130	1300	7.4	0.25	5000	0.78	350
Diethylphthalate	94000	1300000	0.07	--	--	11	85
Dimethylphthalate	94000	790000	0.023	--	--	17	--
Electrical Conductivity [a]	--	--	--	--	--	0.7	--
Ethylbenzene	72	3700	17	0.44	17	55	90
F1 (C6-C10) (max)	6900	100000	55	130	26000	210	--
F2 (C10-C16) (max)	3100	48000	230	98	25000	150	--
F3 (C16-C34) (max)	5800	260000	--	--	--	300	--
F4 (C34-C50) (max)	6100	400000	--	--	--	2800	--
Fluoranthene	7.8	360	40000	250	2500	50	0.69
Fluorene	720	56000	62	290	27000	--	--
Hexachlorobenzene	0.52	16	14	--	--	100	--
Hexachlorobutadiene	7.1	75	1.6	0.012	2.8	--	--
Hexachloroethane	15	1000	22	0.032	20	--	--
Indeno(1,2,3-Cd)Pyrene	0.78	36	8.6E+13	46000	4000	0.38	--
Lead	200	1000	--	--	--	250	32
Magnesium	--	--	--	--	--	--	--
Mercury	9.8	670	1.2E+14	0.25	36	10	20
Methyl tert-butyl ether (MTBE)	440	23000	220	0.75	170	25	--
Molybdenum	110	1200	--	--	--	40	6.9

TABLE B7

Soil Component Values Applied in the Screening Level Risk Assessment

Port Lands, Toronto, Ontario

Parameter	S1 (mg/kg)	S3 (mg/kg)	S-GW3 (mg/kg)	Soil to Indoor Air (RPI) (mg/kg)	Soil to Outdoor Air (mg/kg)	Plants and Soil Organisms (RPI) (mg/kg)	Mammals and Birds (RPI) (mg/kg)
Naphthalene	360	28000	200	0.028	11	0.6	380
n-Hexane	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--
PCB, Total	0.35	4.1	9.9E+11	3.1	120	33	1.1
Pentachlorophenol	1.1	46	2.9	--	--	17	0.013
Perchlorate	--	--	--	--	--	--	--
pH	--	--	--	--	--	--	--
Phenanthrene	720	5600	270	--	--	6.2	2700
Pyrene	78	3600	2600	1900	23000	--	4700
Selenium	110	1200	--	--	--	10	2.4
Silver	77	490	--	--	--	20	--
Sodium Adsorption Ratio [a]	0.29	33	--	--	--	1.4	3.9
Strontium	--	--	--	--	--	--	--
Styrene	2500	26000	66	16	3400	17	--
Tetrachloroethene	130	21000	18	0.28	190	3.8	4.5
Toluene	1700	180000	68	6.2	34000	150	140
trans-1,2-Dichloroethene	420	44000	220	0.084	700	--	84
Trichloroethylene	10	51	300	0.03	12	100	8.1
Trichlorofluoromethane	6300	66000	4	--	--	16	--
Vanadium	--	--	--	--	--	--	--
Vinyl Chloride	0.53	27	270	0.0022	15	3.4	12
Xylenes, Total	4200	88000	26	3.1	4900	95	96
Zinc	5600	12000	--	--	--	400	340

Notes:

[a] Units for electrical conductivity are mS/cm and units for sodium adsorption ratio are SAR.

S1 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a residential scenario.

S3 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a commercial/industrial scenario.

S-GW3 - Exposure pathway due to movement of a substance from soil to groundwater then to aquatic receptors in a surface water body.

RPI - Residential/Parkland/Institutional Land Use

TABLE B8

Groundwater Component Values Applied in the Screening Level Risk Assessment

Port Lands, Toronto, Ontario

Parameter	Residential GW2 (µg/L)	GW3 (µg/L)	1/2 Solubility (µg/L)
1,1,1,2-Tetrachloroethane	0.073	20000	540000
1,1,2,2-Tetrachloroethane	0.11	24000	1400000
1,1,2-Trichloroethane	0.17	94000	550000
1,1-Dichloroethane	0.23	2000000	2500000
1,1-Dichloroethene	0.075	12000	1200000
1,2-Dibromoethane	0.0033	96000	2000000
1,2-Dichloroethane	0.07	200000	2600000
1,2-Dichloropropane	0.077	57000	1400000
1,3-Dichloropropene (max)	0.16	2400	1400000
1,4-Dichlorobenzene	0.26	7600	41000
1+2-Methylnaphthalenes (max)	24	1500	12000
2-Hexanone	--	--	--
Acenaphthene	17	5200	2000
Acenaphthylene	0.96	1.4	8100
Anthracene	650	1	22
Barium	--	23000	27000000
Benzene	0.17	4600	900000
Benzo(a)anthracene	3.8	1.8	4.7
Benzo(a)pyrene	14	2.1	0.81
Benzo(b&j)fluoranthene	81	4.2	0.75
Benzo(g,h,i)perylene	--	0.2	0.13
Benzo(k)fluoranthene	100	1.4	0.4
Bismuth	--	--	--
Bromomethane	0.19	3200	7600000
Cadmium	--	2.1	62000000
Carbon tetrachloride	0.013	2000	400000
Chloride (Cl)	--	1800000	21000000
Chloroethane	--	--	--
Chloroform	0.1	12000	4000000
Chloromethane	--	--	--
Chrysene	95	0.7	1
cis-1,2-Dichloroethene	0.075	140000	1800000
Cobalt	--	52	44000000
Copper	--	69	210000000
Cyanide	--	52	500000000
Dibenzo(a,h)anthracene	140	0.4	0.52
Dichloromethane	61	13000	6500000
Electrical Conductivity [a]	--	--	--
Ethylbenzene	0.12	1800	85000
F1 (C6-C10) (max)	3.4	420	1900
F2 (C10-C16) (max)	5.7	170	150
F3 (C16-C34) (max)	--	--	0.000000049
F4 (C34-C50)	--	--	3.9E-12
Fluoranthene	44	73	130
Indeno(1,2,3-Cd)Pyrene	190	1.4	0.095
Lead	--	20	4800000
Mercury	0.0047	7.7	30
Methyl tert-butyl ether (MTBE)	8.6	1000000	26000000
Naphthalene	0.19	6200	16000
Nitrate (as N)	--	--	--
Nitrate-Nitrite (as N)	--	--	--
PCB, Total	0.11	0.14	140
Phenanthrene	--	380	580
Pyrene	340	5.7	68
Silver	--	1.2	35000000
Sodium	--	1800000	220000000

TABLE B8

Groundwater Component Values Applied in the Screening Level Risk Assessment

Port Lands, Toronto, Ontario

Parameter	Residential GW2 (µg/L)	GW3 (µg/L)	1/2 Solubility (µg/L)
Tetrachloroethene	0.075	8400	100000
Tin	--	--	--
Toluene	320	14000	260000
trans-1,2-Dichloroethene	0.075	220000	1800000
Trichloroethylene	0.053	220000	640000
Vinyl Chloride	0.0075	360000	4400000
Xylenes, Total (max)	26	3300	53000

Notes:

[a] Units for electrical conductivity are mS/cm.

GW2 - Exposure pathway due to inhalation of indoor air containing soil vapour from groundwater at water table (shallow soil scenario)

GW3 - Exposure pathway to aquatic biota via groundwater discharge to surface water (shallow soil scenario)

TABLE B9

95th Percentile Concentrations in Soil (Land Greater Than 30 m From Lake Ontario/Don River)

COCs Based on Table 3 Standards - RPI

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (RPI) SCS [c] (mg/kg)	Max Concentration [d] (mg/kg)	95th Percentile (mg/kg)	Count of Detects Above Table 3 (RPI) SCS	Count of Non-Detects Above Table 3 (RPI) SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
1,1,1,2-Tetrachloroethane	Volatile	170	405	0.058	180	1.6	32	48	9	5	14
1,1,1-Trichloroethane	Volatile	171	406	0.38	180	1.7	20	17	10	5	15
1,1,2,2-Tetrachloroethane	Volatile	171	406	0.05	180	1.6	32	60	9	6	15
1,1,2-Trichloroethane	Volatile	162	390	0.05	370	3.1	32	52	6	5	11
1,1'-Biphenyl	Non-Volatile	8	13	0.31	1	0.39		2		2	2
1,1-Dichloroethane	Volatile	170	406	3.5	180	1.6	6	3	9	5	14
1,1-Dichloroethene	Volatile	169	404	0.05	44	0.52	32	50	13	5	18
1,2,4-Trichlorobenzene	Volatile	13	13	0.36	2	0.78		2		2	2
1,2-Dibromoethane	Volatile	170	405	0.05	92	0.9	32	51	13	6	19
1,2-Dichlorobenzene	Volatile	170	408	3.4	180	1.5	6	3	9	5	14
1,2-Dichloroethane	Volatile	170	405	0.05	180	1.6	32	52	9	5	14
1,2-Dichloropropane	Volatile	170	405	0.05	180	1.6	32	52	9	5	14
1,3-Dichlorobenzene	Volatile	170	408	4.8	180	1.6	4	4	9	5	14
1,3-Dichloropropene (max)	Volatile	170	405	0.05	92	0.86	32	37	13	5	18
1,4-Dichlorobenzene	Volatile	170	408	0.083	180	1.5	32	44	9	5	14
1+2-Methylnaphthalenes (max)	Volatile	139	394	0.99	5100	53	72	2	16		16
2,4&2,6-Dinitrotoluene (max)	Non-Volatile	8	9	0.92	1	0.78		2		2	2
2-Butanone	Volatile	170	403	16	2800	24	9	5	9	4	13
3,3`-Dichlorobenzidine	Non-Volatile	8	9	1	9.99	11		8			
4-Chloroaniline	Non-Volatile	3	3	0.5	2	4		2			
4-Methyl-2-Pentanone	Volatile	165	399	1.7	1800	16	25	21	9	5	14
Acenaphthene	Non-Volatile	187	430	7.9	2100	18	18		12		12
Acenaphthylene	Non-Volatile	187	430	0.15	280	2.5	58	12	11		11
Acetone	Volatile	170	404	16	2800	29	20	9	15	3	18
Ammonia	Volatile	2	2		157	1000					
Anthracene	Non-Volatile	187	430	0.67	970	9.5	53	1	14		14
Antimony	Non-Volatile	176	426	7.5	33	1.3	3		41	2	43
Arsenic	Non-Volatile	188	438	18	86	4.8	17		92		92
Barium	Non-Volatile	193	443	390	930	66	3		136		136
Benzene	Volatile	193	565	0.21	460	3.5	80	12	19	3	22
Benzo(a)anthracene	Non-Volatile	187	426	0.5	460	4.9	88	1	18		18
Benzo(a)pyrene	Non-Volatile	187	430	0.3	330	3.6	102	3	19		19
Benzo(b&j)fluoranthene	Non-Volatile	187	430	0.78	260	3	59	1	22		22
Benzo(g,h,i)perylene	Non-Volatile	186	429	6.6	130	1.5	12		25		25
Benzo(k)fluoranthene	Non-Volatile	182	424	0.78	93	1.1	25	1	17		17
Bis (2-chloroethyl) ether	Volatile	3	3	0.5	2	4		2			
bis (2-Chloroisopropyl) ether	Non-Volatile	6	7	0.67	1	0.88		2		2	2
Boron (hot water extractable) [f]	Non-Volatile	126	361	1.5	7.38	0.73	37		100		100
Bromide	Non-Volatile	5	5		4.99	4.5			1		1
Bromodichloromethane	Volatile	170	405	13	180	1.6		1	9	9	18
Bromoform	Volatile	170	405	0.27	370	3	20	16	6	4	10
Bromomethane	Volatile	170	405	0.05	370	3.1	32	54	6	4	10
Cadmium	Non-Volatile	193	443	1.2	20	0.62	15		28		28
Calcium	Non-Volatile	13	13	49000	144000	75000			2		2
Carbon tetrachloride	Volatile	170	405	0.05	180	1.6	32	52	9	5	14
Chloride (Cl)	Non-Volatile	5	5	130	347	330				1	1
Chlorobenzene	Volatile	170	405	2.4	92	0.87	6	3	13	4	17

TABLE B9

95th Percentile Concentrations in Soil (Land Greater Than 30 m From Lake Ontario/Don River)

COCs Based on Table 3 Standards - RPI

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (RPI) SCS [c] (mg/kg)	Max Concentration [d] (mg/kg)	95th Percentile (mg/kg)	Count of Detects Above Table 3 (RPI) SCS	Count of Non-Detects Above Table 3 (RPI) SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
Chlorodibromomethane	Volatile	170	405	9.4	180	1.5	1	2	9	4	13
Chloroform	Volatile	170	405	0.05	180	1.6	32	64	9	8	17
Chromium	Non-Volatile	193	504	160	714	16	1		121		121
Chrysene	Non-Volatile	187	430	7	390	4.1	15		19		19
cis-1,2-Dichloroethene	Volatile	167	400	3.4	180	1.6	6	3	9	5	14
Cobalt	Non-Volatile	193	443	22	90.9	5.3	4		131		131
Copper	Non-Volatile	193	443	140	1200	35	10		63		63
Cyanide	Non-Volatile	146	393	0.051	1	0.066	48	8	17	8	25
Dibenzo(a,h)anthracene	Non-Volatile	187	430	0.1	35	0.44	57	21	20	8	28
Dichloromethane	Volatile	170	404	0.1	460	4.3	33	30	7	2	9
Diethylphthalate	Non-Volatile	8	9	0.5	2	1.2		2		2	2
Dimethylphthalate	Non-Volatile	8	9	0.5	2	1.3		2		2	2
Electrical Conductivity [e, f]	Non-Volatile	154	401	0.7	5.85	0.62	72		85		85
Ethylbenzene	Volatile	193	566	2	2700	23	68	2	26		26
F1 (C6-C10) (max)	Volatile	184	491	55	8840	300	83	1	54	1	55
F2 (C10-C16) (max)	Volatile	184	468	98	51000	980	104		50		50
F3 (C16-C34) (max)	Non-Volatile	184	469	300	48000	1200	113		52		52
F4 (C34-C50) (max)	Non-Volatile	184	466	2800	44000	10000	20		6		6
Fluoranthene	Non-Volatile	187	428	0.69	1000	10	108	1	19		19
Fluorene	Non-Volatile	187	428	62	1100	9.8	7		12		12
Hexachlorobenzene	Non-Volatile	8	9	0.52	2	1.3		2		2	2
Hexachlorobutadiene	Volatile	3	3	0.012	1	2		3			
Hexachloroethane	Volatile	3	3	0.089	1	2		3			
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	187	430	0.38	110	1.4	67	4	22		22
Lead	Non-Volatile	193	443	120	3700	100	52		58		58
Magnesium	Non-Volatile	13	13	15000	71599.99	22000			1		1
Mercury	Non-Volatile	186	437	0.27	9.1	0.27	41		41		41
Methyl tert-butyl ether (MTBE)	Volatile	170	405	0.75	370	3	13	16	6	7	13
Molybdenum	Non-Volatile	192	443	6.9	8.2	1.2	3		44	17	61
Naphthalene	Volatile	175	412	0.6	8700	75	68	2	9		9
n-Hexane	Volatile	85	274	2.8	17.6	0.37	3		9	1	10
Nickel	Non-Volatile	193	443	100	239.99	13	2		120		120
PCB, Total	Non-Volatile	36	48	0.35	0.6	0.097	2		3	2	5
Pentachlorophenol	Non-Volatile	3	3	0.1	2	4		3			
Perchlorate	Non-Volatile	4	4		0.82	0.99					
Phenanthrene	Non-Volatile	187	430	6.2	3100	29	36		15		15
Pyrene	Non-Volatile	187	429	78	1400	14	8		17		17
Selenium	Non-Volatile	188	438	2.4	12	0.98	5		21	271	292
Sodium Adsorption Ratio [e, f]	Non-Volatile	157	391	5	703940	9000	45		14		14
Strontium	Non-Volatile	13	13	77	109	82			2		2
Styrene	Volatile	170	405	0.7	180	1.7	13	8	9	5	14
Tetrachloroethene	Volatile	171	406	0.28	180	1.5	20	17	9	4	13
Thallium	Non-Volatile	184	434	1	2	0.47		12	2	291	293
Toluene	Volatile	194	567	2.3	1900	18	28		19		19
trans-1,2-Dichloroethene	Volatile	170	405	0.084	180	1.6	33	42	9	5	14
Trichloroethylene	Volatile	171	422	0.061	180	1.5	34	34	10	4	14

TABLE B9

95th Percentile Concentrations in Soil (Land Greater Than 30 m From Lake Ontario/Don River)

COCs Based on Table 3 Standards - RPI

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (RPI) SCS [c] (mg/kg)	Max Concentration [d] (mg/kg)	95th Percentile (mg/kg)	Count of Detects Above Table 3 (RPI) SCS	Count of Non-Detects Above Table 3 (RPI) SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
Trichlorofluoromethane	Volatile	104	300	4	18.99	0.27		1			
Vanadium	Non-Volatile	193	443	86	89.3	18	2		164		164
Vinyl Chloride	Volatile	171	405	0.02	55	0.57	38	50	14	4	18
Xylenes, Total (max)	Volatile	194	567	3.1	11000	82	61		22		22
Zinc	Non-Volatile	193	443	340	1800	89	19		73		73
2-Chloroethyl Vinyl Ether	Volatile	9	15		97	22				1	1
Chloroethane	Volatile	18	24		18.99	2.7				1	1
Chloromethane	Volatile	18	24		18.99	2.7				1	1

Notes:

[a] (max) indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition* (RPI land use) (MOECC, 2011), for all COCs, except for aluminum, calcium, chloride, fluoride, iron, manganese, magnesium, phosphorus, potassium, sodium, strontium, titanium and total Kjeldahl nitrogen, for which the *Ontario Typical Range* value (MOECC, 2011) is presented. The average soil concentration of zirconium in soil as reported by the United States Geological Survey in Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States (1984) has been presented for zirconium. The OTR value (MOECC, 1999) for nitrate+nitrate has been applied to nitrate and nitrite. The OTR (MOECC, 2011) value for phosphorus and sulphur has been applied to ortho-Phosphate and

[d] Column lists the greater of the Maximum Detected Concentration and the Maximum Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm and units for sodium adsorption ratio are SAR.

[f] Parameter is not applicable to human health.

Bold parameters are identified as COCs

mS/cm - milliSiemens per centimetre

COC - contaminant of concern

Max - maximum concentration

mg/kg - milligrams per kilogram

MOECC - Ontario Ministry of the Environment and Climate Change

NA - not applicable

SAR - sodium adsorption ratio

SCS - site condition standard

SDL - sample detection limit

PCB - polychlorinated biphenyls

RPI - residential/parkland/institutional

m - metres

TABLE B10

95th Percentile Concentrations in Soil (Land Greater than 30 m from Lake Ontario/Don River)

COCs Based on Table 3 Standards - ICC

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (ICC) SCS [c] (mg/kg)	Max Concentration [d] (mg/kg)	95th UCLM (mg/kg)	Count of Detects Above Table 3 (ICC) SCS	Count of Non-Detects Above Table 3 (ICC) SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
1,1,1,2-Tetrachloroethane	Volatile	170	405	0.087	180	1.6	32	38	9	5	14
1,1,1-Trichloroethane	Volatile	171	406	6.1	180	1.7	2	3	10	5	15
1,1,2,2-Tetrachloroethane	Volatile	171	406	0.05	180	1.6	32	60	9	6	15
1,1,2-Trichloroethane	Volatile	162	390	0.05	370	3.1	32	52	6	5	11
1,1-Dichloroethane	Volatile	170	406	17	180	1.6		1	9	5	14
1,1-Dichloroethene	Volatile	169	404	0.064	44	0.52	32	50	13	5	18
1,2-Dibromoethane	Volatile	170	405	0.05	92	0.9	32	51	13	6	19
1,2-Dichlorobenzene	Volatile	170	408	6.8	180	1.5	1	3	9	5	14
1,2-Dichloroethane	Volatile	170	405	0.05	180	1.6	32	52	9	5	14
1,2-Dichloropropane	Volatile	170	405	0.16	180	1.6	25	24	9	5	14
1,3-Dichlorobenzene	Volatile	170	408	9.6	180	1.6	1	3	9	5	14
1,3-Dichloropropene (max)	Volatile	170	405	0.18	92	0.86	25	19	13	5	18
1,4-Dichlorobenzene	Volatile	170	408	0.2	180	1.5	20	20	9	5	14
1+2-Methylnaphthalenes (max)	Volatile	139	394	76	5100	53	13		16		16
2-Butanone	Volatile	170	403	70	2800	24	1	3	9	4	13
3,3`-Dichlorobenzidine	Non-Volatile	8	9	1	9.99	11		8			
4-Chloroaniline	Non-Volatile	3	3	0.5	2	4		2			
4-Methyl-2-Pentanone	Volatile	165	399	31	1800	16	6	3	9	5	14
Acenaphthene	Non-Volatile	187	430	96	2100	18	7		12		12
Acenaphthylene	Non-Volatile	187	430	0.15	280	2.5	58	12	11		11
Acetone	Volatile	170	404	16	2800	29	20	9	15	3	18
Ammonia	Volatile	2	2		157	1000					
Anthracene	Non-Volatile	187	430	0.67	970	9.5	53	1	14		14
Arsenic	Non-Volatile	188	438	18	86	4.8	17		92		92
Barium	Non-Volatile	193	443	670	930	66	2		136		136
Benzene	Volatile	193	565	0.32	460	3.5	68	7	19	3	22
Benzo(a)anthracene	Non-Volatile	187	426	0.96	460	4.9	61	1	18		18
Benzo(a)pyrene	Non-Volatile	187	430	0.3	330	3.6	102	3	19		19
Benzo(b&j)fluoranthene	Non-Volatile	187	430	0.96	260	3	51	1	22		22
Benzo(g,h,i)perylene	Non-Volatile	186	429	9.6	130	1.5	7		25		25
Benzo(k)fluoranthene	Non-Volatile	182	424	0.96	93	1.1	21	1	17		17
Bis (2-chloroethyl) ether	Volatile	3	3	0.5	2	4		2			
Boron (hot water extractable) [f]	Non-Volatile	126	361	2	7.38	0.73	21		100		100
Bromide	Non-Volatile	5	5		4.99	4.5			1		1
Bromodichloromethane	Volatile	170	405	18	180	1.6		1	9	9	18
Bromoform	Volatile	170	405	0.61	370	3	13	12	6	4	10
Bromomethane	Volatile	170	405	0.05	370	3.1	32	54	6	4	10
Cadmium	Non-Volatile	193	443	1.9	20	0.62	7		28		28
Calcium	Non-Volatile	13	13	49000	144000	75000			2		2
Carbon tetrachloride	Volatile	170	405	0.21	180	1.6	20	19	9	5	14
Chloride (Cl)	Non-Volatile	5	5	130	347	330				1	1
Chlorobenzene	Volatile	170	405	2.4	92	0.87	6	3	13	4	17
Chlorodibromomethane	Volatile	170	405	13	180	1.5		1	9	4	13
Chloroform	Volatile	170	405	0.47	180	1.6	15	15	9	8	17
Chromium	Non-Volatile	193	504	160	714	16	1		121		121
Chrysene	Non-Volatile	187	430	9.6	390	4.1	12		19		19
cis-1,2-Dichloroethene	Volatile	167	400	55	180	1.6		1	9	5	14
Cobalt	Non-Volatile	193	443	80	90.9	5.3	1		131		131
Copper	Non-Volatile	193	443	230	1200	35	5		63		63
Cyanide	Non-Volatile	146	393	0.051	1	0.066	48	8	17	8	25
Dibenzo(a,h)anthracene	Non-Volatile	187	430	0.1	35	0.44	57	21	20	8	28
Dichloromethane	Volatile	170	404	1.6	460	4.3	14	4	7	2	9
Diethylphthalate	Non-Volatile	8	9	0.5	2	1.2		2		2	2
Dimethylphthalate	Non-Volatile	8	9	0.5	2	1.3		2		2	2
Electrical Conductivity [e, f]	Non-Volatile	154	401	1.4	5.85	0.62	32		85		85
Ethylbenzene	Volatile	193	566	9.5	2700	23	41	1	26		26

TABLE B10

95th Percentile Concentrations in Soil (Land Greater than 30 m from Lake Ontario/Don River)

COCs Based on Table 3 Standards - ICC

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 (ICC) SCS [c] (mg/kg)	Max Concentration [d] (mg/kg)	95th UCLM (mg/kg)	Count of Detects Above Table 3 (ICC) SCS	Count of Non-Detects Above Table 3 (ICC) SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
F1 (C6-C10) (max)	Volatile	184	491	55	8840	300	83	1	54	1	55
F2 (C10-C16) (max)	Volatile	184	468	230	51000	980	77		50		50
F3 (C16-C34) (max)	Non-Volatile	184	469	1700	48000	1200	41		52		52
F4 (C34-C50) (max)	Non-Volatile	184	466	3300	44000	10000	20		6		6
Fluoranthene	Non-Volatile	187	428	9.6	1000	10	19		19		19
Fluorene	Non-Volatile	187	428	62	1100	9.8	7		12		12
Hexachlorobenzene	Non-Volatile	8	9	0.66	2	1.3		2		2	2
Hexachlorobutadiene	Volatile	3	3	0.031	1	2		3			
Hexachloroethane	Volatile	3	3	0.21	1	2		2			
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	187	430	0.76	110	1.4	38	1	22		22
Lead	Non-Volatile	193	443	120	3700	100	52		58		58
Magnesium	Non-Volatile	13	13	15000	71599.99	22000			1		1
Mercury	Non-Volatile	186	437	3.9	9.1	0.27	5		41		41
Methyl tert-butyl ether (MTBE)	Volatile	170	405	11	370	3		3	6	7	13
Naphthalene	Volatile	175	412	9.6	8700	75	29		9		9
Perchlorate	Non-Volatile	4	4		0.82	0.99					
Phenanthrene	Non-Volatile	187	430	12	3100	29	24		15		15
Pyrene	Non-Volatile	187	429	96	1400	14	6		17		17
Selenium	Non-Volatile	188	438	5.5	12	0.98	2		21	271	292
Sodium Absorption Ratio [e, f]	Non-Volatile	157	391	12	703940	9000	32		14		14
Strontium	Non-Volatile	13	13	77	109	82			2		2
Styrene	Volatile	170	405	34	180	1.7		2	9	5	14
Tetrachloroethene	Volatile	171	406	4.5	180	1.5	4	3	9	4	13
Toluene	Volatile	194	567	68	1900	18	13		19		19
trans-1,2-Dichloroethene	Volatile	170	405	1.3	180	1.6	9	5	9	5	14
Trichloroethylene	Volatile	171	422	0.91	180	1.5	14	5	10	4	14
Trichlorofluoromethane	Volatile	104	300	4	18.99	0.27		1			
Vanadium	Non-Volatile	193	443	86	89.3	18	2		164		164
Vinyl Chloride	Volatile	171	405	0.032	55	0.57	37	36	14	4	18
Xylenes, Total	Volatile	194	567	26	11000	82	31		22		22
Zinc	Non-Volatile	193	443	340	1800	89	19		73		73
2-Chloroethyl Vinyl Ether	Volatile	9	15		97	22				1	1
Chloroethane	Volatile	18	24		18.99	2.7				1	1
Chloromethane	Volatile	18	24		18.99	2.7				1	1

Notes:

[a] (max) indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition* (ICC land use) (MOECC, 2011), for all COCs, except as noted in Table B-2.

[d] Column lists the greater of the Maximum Detected Concentration and the Maximum Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm and units for sodium adsorption ratio are SAR.

[f] Parameter is not applicable to human health.

Bold parameters are identified as COCs

mS/cm - milliSiemens per centimetre

COC - contaminant of concern

Max - maximum concentration

mg/kg - milligrams per kilogram

MOECC - Ontario Ministry of the Environment and Climate Change

PAH - polycyclic aromatic hydrocarbon

SAR - sodium adsorption ratio

SCS - site condition standard

SDL - sample detection limit

PCB - polychlorinated biphenyls

ICC - industrial/commercial/community

m - metres

TABLE B11

95th Percentile Concentrations in Soil (Land Less Than 30 m From Lake Ontario/Don River)

COCs Based on Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 SCS [c] (mg/kg)	Max Concentration [d] (mg/kg)	95th UCLM (mg/kg)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
1,1,1,2-Tetrachloroethane	Volatile	18	41	0.05	2	0.22	4		3		3
1,1,1-Trichloroethane	Volatile	18	41	0.05	8.39	0.77	4	1	3	1	4
1,1,2,2-Tetrachloroethane	Volatile	18	41	0.05	9.39	0.84	5		3		3
1,1,2-Trichloroethane	Volatile	18	41	0.05	2	0.21	3	1	2		2
1,1-Dichloroethane	Volatile	18	41	0.05	3.68	0.41	5		3		3
1,1-Dichloroethene	Volatile	18	41	0.05	2	0.21	3		2		2
1,2-Dibromoethane	Volatile	18	41	0.05	17600	1300	4		1		1
1,2-Dichlorobenzene	Volatile	18	41	0.05	2	0.21	4		2		2
1,2-Dichloroethane	Volatile	18	41	0.05	2	0.26	5		3		3
1,2-Dichloropropane	Volatile	18	41	0.05	2	0.22	3	2	2	2	4
1,3-Dichlorobenzene	Volatile	18	41	0.05	2	0.21	3	1	2		2
1,3-Dichloropropene (max)	Volatile	17	39	0.05	2	0.21	3	1	2		2
1,4-Dichlorobenzene	Volatile	18	41	0.05	2	0.21	3		2		2
1+2-Methylnaphthalenes (max)	Volatile	25	29	0.59	57	3.1	5		2		2
2-Butanone	Volatile	18	41	0.5	8550	630	4		1		1
2-Hexanone	Volatile	1	2		0.04	0.26					
4-Methyl-2-Pentanone	Volatile	18	41	0.5	12600	930	4		1		1
Acenaphthene	Non-Volatile	25	59	0.072	46.99	2.5	21	2	1		1
Acenaphthylene	Non-Volatile	25	59	0.093	8.99	0.71	9	1	2		2
Acetone	Volatile	18	41	0.5	100	9.2	3	1	2		2
Anthracene	Non-Volatile	25	59	0.22	24.4	1.6	14		3		3
Antimony	Non-Volatile	26	75	1.3	669	29	13		2		2
Arsenic	Non-Volatile	26	75	18	220	17	5		5		5
Barium	Non-Volatile	26	75	220	330	64	3		21		21
Benzene	Volatile	25	75	0.02	35900	1400	13	3	1		1
Benzo(a)anthracene	Non-Volatile	25	59	0.36	113	6.1	10		2		2
Benzo(a)pyrene	Non-Volatile	25	59	0.3	86.9	4.6	10		1		1
Benzo(b&j)fluoranthene	Non-Volatile	25	59	0.47	105	5.6	8		1		1
Benzo(g,h,i)perylene	Non-Volatile	25	59	0.68	33.7	1.8	3		2		2
Benzo(k)fluoranthene	Non-Volatile	25	59	0.48	37.8	2.2	3	1	1	1	2
Beryllium	Non-Volatile	26	75	2.5	50	2.5	1	1	1	1	2
Boron (hot water extractable) [f]	Non-Volatile	24	71	1.5	3.23	0.62	6		13		13
Bromodichloromethane	Volatile	18	41	0.05	2	0.22	4	2	3		3
Bromoform	Volatile	18	41	0.05	2	0.21	3		2		2
Bromomethane	Volatile	18	41	0.05	3	0.29	3		2		2
Cadmium	Non-Volatile	26	75	1.2	50	2.8	4		2		2
Carbon tetrachloride	Volatile	18	41	0.05	2	0.21	4		2		2
Chlorobenzene	Volatile	18	41	0.05	2	0.22	3	1	2	1	3
Chlorodibromomethane	Volatile	18	41	0.05	81599.99	6000	4		1		1
Chloroethane	Volatile	1	2		0.19	1.3					
Chloroform	Volatile	18	41	0.05	2	0.21	3	1	2		2
Chromium, Hexavalent (Cr6+)	Non-Volatile	24	74	0.66	6	0.52	7		7		7
Chrysene	Non-Volatile	25	59	2.8	103	6.2	3		3		3
cis-1,2-Dichloroethene	Volatile	18	41	0.05	2.9	0.35	4		3		3
Cobalt	Non-Volatile	26	75	22	71	8	2		9	1	10
Copper	Non-Volatile	26	75	92	420	45	4		12		12
Cyanide	Non-Volatile	25	74	0.051	0.09	0.032		1		1	1
Dibenzo(a,h)anthracene	Non-Volatile	25	59	0.1	13.8	1	4	1	2	1	3
Dichloromethane	Volatile	18	41	0.05	12800	940	5		1		1
Electrical Conductivity [e, f]	NA	24	72	0.7	2.8	0.81	26		23		23
Ethylbenzene	Volatile	25	76	0.05	16799.99	660	10	2	1		1
F1 (C6-C10) (max)	Volatile	25	66	25	830	60	7		3		3

TABLE B11

95th Percentile Concentrations in Soil (Land Less Than 30 m From Lake Ontario/Don River)

COCs Based on Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 SCS [c] (mg/kg)	Max Concentration [d] (mg/kg)	95th UCLM (mg/kg)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
F2 (C10-C16) (max)	Volatile	25	69	10	4200	300	21		5		5
F3 (C16-C34) (max)	Non-Volatile	25	69	240	6700	520	12		9		9
F4 (C34-C50) (max)	Non-Volatile	25	69	120	2300	190	11		9		9
Fluoranthene	Non-Volatile	25	59	0.69	205	11	10	1	2		2
Fluorene	Non-Volatile	25	59	0.19	9.99	0.84	11	1	2	1	3
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	25	59	0.23	43.4	3	7		2		2
Lead	Non-Volatile	26	75	120	1200	110	13		13		13
Mercury	Non-Volatile	25	73	0.27	0.93	0.13	7		14		14
Methyl tert-butyl ether (MTBE)	Volatile	18	41	0.05	13000	960	4	1	1		1
Molybdenum	Non-Volatile	26	75	2	250	12	6	1	1	1	2
Naphthalene	Volatile	25	59	0.09	59.99	3.2	8		1		1
n-Hexane	Volatile	8	29	0.05	0.83	0.14	2		2		2
PCB, Total	Non-Volatile	7	7	0.3	9.99	4.9		1		1	1
Phenanthrene	Non-Volatile	25	59	0.69	83	5.8	11	1	2	1	3
Pyrene	Non-Volatile	25	59	1	171	11	9		3		3
Selenium	Non-Volatile	26	75	1.5	270	18	4	1	1	1	2
Silver	Non-Volatile	26	75	0.5	39.99	1.8	3	1	1		1
Sodium Adsorption Ratio [e, f]	NA	25	71	5	42	4.5	9		9		9
Styrene	Volatile	18	41	0.05	13500	990	4		1		1
Tetrachloroethene	Volatile	18	41	0.05	13300	980	4		1		1
Toluene	Volatile	25	75	0.2	71500	2900	7		1		1
trans-1,2-Dichloroethene	Volatile	18	41	0.05	60099.99	4400	4		1		1
Trichloroethylene	Volatile	18	41	0.05	13300	980	4	1	1		1
Trichlorofluoromethane	Volatile	9	31	0.25	12500	1200	1				
Vinyl Chloride	Volatile	18	41	0.02	8540	630	4	1	1		1
Xylenes, Total (max)	Volatile	25	76	0.05	116000	4600	15	1	1		1

Notes:

[a] (max) indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition* (MOECC, 2011), for all COCs, except as noted in Table B-3.

[d] Column lists the greater of the Maximum Detected Concentration and the Maximum Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm and units for sodium adsorption ratio are SAR.

[f] Parameter is not applicable to human health.

Bold parameters are identified as COCs

mS/cm - milliSiemens per centimetre

COC - contaminant of concern

Max - maximum concentration

mg/kg - milligrams per kilogram

MOECC - Ontario Ministry of the Environment and Climate Change

NA - not applicable

SAR - sodium adsorption ratio

SCS - site condition standard

SDL - sample detection limit

PCB - polychlorinated biphenyls

TABLE B12

95th Percentile Concentrations in Groundwater (Land Greater Than 30 m From Lake Ontario/Don River)

COCs Based on Table 3 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 [c] SCS (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 3 SCS	Count of Non-Detects Above Table 3 SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
1,1,1,2-Tetrachloroethane	Volatile	140	162	3.3	440	20	9	9	1	5	6
1,1,2,2-Tetrachloroethane	Volatile	139	161	3.2	870	38	15	7	1	5	6
1,1,2-Trichloroethane	Volatile	139	153	4.7	440	22	13	8	1	5	6
1,1-Dichloroethane	Volatile	140	164	320	349.99	16		2	1	5	6
1,1-Dichloroethene	Volatile	137	159	1.6	440	20	15	9	1	5	6
1,2-Dibromoethane	Volatile	140	162	0.25	440	20	30	40	1	5	6
1,2-Dichloroethane	Volatile	139	161	1.6	440	21	19	9	2	5	7
1,2-Dichloropropane	Volatile	139	161	16	440	20	1	5	1	5	6
1,3-Dichloropropene (max)	Volatile	136	161	5.2	120	7.2	11	5	9	5	14
1,4-Dichlorobenzene	Volatile	139	165	8	440	20	9	7	1	5	6
1+2-Methylnaphthalenes (max)	Volatile	96	113	1800	2610	200	2		4		4
2-Hexanone	Volatile	11	19		3	1				5	5
Acenaphthene	Non-Volatile	142	165	600	823	33	1		10	1	11
Acenaphthylene	Non-Volatile	142	167	1.8	300	9.5	9	5	5	1	6
Anthracene	Non-Volatile	142	166	2.4	377	15	20	1	5		5
Barium	Non-Volatile	139	158	29000	42300	1800	2		6		6
Benzene	Volatile	150	238	44	4700	160	49	3	29	3	32
Benzo(a)anthracene	Non-Volatile	142	167	4.7	319.99	9.7	8	1	5	1	6
Benzo(a)pyrene	Non-Volatile	142	166	0.81	209.99	6.2	25		7		7
Benzo(b&j)fluoranthene	Non-Volatile	141	181	0.75	259.99	6.9	25	2	6	2	8
Benzo(g,h,i)perylene	Non-Volatile	142	167	0.2	190	4.8	42	9	5	1	6
Benzo(k)fluoranthene	Non-Volatile	142	167	0.4	100	2.5	24	7	5	1	6
Bromomethane	Volatile	139	161	5.6	2599.99	110	15	8	1	5	6
Carbon tetrachloride	Volatile	140	162	0.79	440	19	19	12	1	5	6
Chloride (Cl)	Non-Volatile	92	101	2300000	14000000	1100000	5		9		9
Chloroethane	Volatile	11	19		5.9	2.4			4		4
Chloroform	Volatile	140	162	2.4	170	8.5	13	9	8	6	14
Chloromethane	Volatile	11	19		4	1.2				5	5
Chrysene	Non-Volatile	142	167	1	280	7.7	24	1	4	1	5
cis-1,2-Dichloroethene	Volatile	134	155	1.6	9699.99	290	22	6	4	3	7
Copper	Non-Volatile	145	164	87	138	7.2	2		13	5	18
Cyanide	Non-Volatile	103	120	66	180	7.5	1		5	7	12
Dibenzo(a,h)anthracene	Non-Volatile	142	167	0.52	90	2.3	9	11	5	1	6
Dichloromethane	Volatile	140	162	610	870	49	1	2	9	6	15
Electrical Conductivity [e]	Non-Volatile	61	75	3.16	36	4.7			6		6
Ethylbenzene	Volatile	151	243	2300	9520	470	11		19	1	20
F1 (C6-C10) (max)	Volatile	145	215	750	103000	4200	61	3	18	2	20
F2 (C10-C16) (max)	Volatile	145	200	150	76000	3700	94	2	20	1	21
F3 (C16-C34) (max)	Non-Volatile	145	190	500	120000	3600	57		26		26
F4 (C34-C50)	Non-Volatile	144	183	500	6200	470	20		20	9	29
Fluoranthene	Non-Volatile	136	159	130	248	10	3		9	1	10
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	142	167	0.2	190	4.8	38	10	4	1	5
Lead	Non-Volatile	145	164	25	1140	26	6		6		6
Mercury	Non-Volatile	141	160	0.29	17.1	0.77	21		13		13
Methyl tert-butyl ether (MTBE)	Volatile	140	162	190	1700	75		5		5	5
Naphthalene	Volatile	133	153	1400	4310	190	3	1	9	1	10

TABLE B12

95th Percentile Concentrations in Groundwater (Land Greater Than 30 m From Lake Ontario/Don River)

COCs Based on Table 3 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 3 [c] SCS (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 3 SCS	Count of Non-Detects Above Table 3 SCS (Using Max SDL)	Count of Detects Above 95th Percentile	Count of Non-Detects Above 95th Percentile (Using Max SDL)	Location Count (Above 95th Percentile)
Nitrate (as N)	Non-Volatile	37	38	11500	128000	0.04					
Nitrate-Nitrite (as N)	Non-Volatile	37	38	11500	128000	10000			1		1
Phenanthrene	Non-Volatile	142	166	580	1300	53	4		8	1	9
Pyrene	Non-Volatile	137	160	68	720	24	4	1	4	1	5
Silver	Non-Volatile	139	158	1.5	5	0.54		3	5	26	31
Sodium	Non-Volatile	122	135	2300000	7330000	460000	4		11	2	13
Tetrachloroethene	Volatile	139	161	1.6	440	20	15	9	1	5	6
Toluene	Volatile	151	240	18000	46299.99	1400	4		8		8
trans-1,2-Dichloroethene	Volatile	140	162	1.6	870	32	18	9		5	5
Trichloroethylene	Volatile	138	168	1.6	440	19	15	9	1	5	6
Vinyl Chloride	Volatile	139	161	0.5	870	35	35	10	6	3	9
Xylenes, Total (max)	Volatile	151	240	4200	37000	1700	11		15		15

Notes:

[a] (max) Indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, *Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition* (All land uses) (MOECC, 2011) for all COCs, for all COCs, except as noted in Table B-4.

[d] Column lists the greater of the maximum concentration between Max Detected Concentration and Max Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm.

Bold parameters are identified as COCs

µg/L - microgram per litre

COC - contaminant of concern

Max - maximum concentration

MOECC - Ontario Ministry of the Environment and Climate Change

SCS - site condition standard

SDL - sample detection limit

mS/cm - milliSiemens per centimetre

TABLE B-13

95th Percentile Concentrations in Groundwater (Land Less Than 30 m From Lake Ontario/Don River)

COCs Based on Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	Volatility Designation [b]	No. of Stations	No. of Samples	Table 9 [c] SCS (µg/L)	Max Concentration [d] (µg/L)	95th UCLM (µg/L)	Count of Detects Above Table 9 SCS	Count of Non-Detects Above Table 9 SCS (Using Max SDL)	Count of Detects Above 95th UCLM	Count of Non-Detects Above 95th UCLM (Using Max SDL)	Location Count
1,1,1,2-Tetrachloroethane	Volatile	27	28	3.3	5	1.2	2		2		2
1,1,2,2-Tetrachloroethane	Volatile	27	28	3.2	10	2.1	2		2		2
1,1,2-Trichloroethane	Volatile	27	28	4.7	10	2.1	2		2		2
1,1-Dichloroethene	Volatile	27	28	1.6	5	1.2	2		2		2
1,2-Dibromoethane	Volatile	27	28	0.25	10	2	7	1	2		2
1,2-Dichloroethane	Volatile	27	28	1.6	10	2.1	2		2		2
1,3-Dichloropropene (max)	Volatile	26	26	5.2	10	2.2	2		2		2
1,4-Dichlorobenzene	Volatile	27	28	8	10	2.1	2		2		2
2-Hexanone	Volatile	1	2		0.09	0.61					
Acenaphthylene	Non-Volatile	28	29	1.4	4	0.65	3		3		3
Anthracene	Non-Volatile	28	29	1	7.1	1.1	3		3		3
Benzene	Volatile	28	29	44	420	56	2		2		2
Benzo(a)anthracene	Non-Volatile	28	29	1.8	24	2.9	2		2		2
Benzo(a)pyrene	Non-Volatile	28	29	0.81	28	3.3	5		2		2
Benzo(b&j)fluoranthene	Non-Volatile	28	29	0.75	16	2.1	5		2		2
Benzo(g,h,i)perylene	Non-Volatile	28	29	0.2	16	1.9	8		2		2
Benzo(k)fluoranthene	Non-Volatile	28	29	0.4	6	0.77	4		2		2
Bismuth	Non-Volatile	1	2		11	75					
Bromomethane	Volatile	27	28	5.6	25	6.2	3		3		3
Cadmium	Non-Volatile	28	29	2.1	23	2.5	1		1		1
Carbon tetrachloride	Volatile	27	28	0.79	27	3.5	3		3		3
Chloride (Cl)	Non-Volatile	28	29	1800000	2500000	680000	2		5		5
Chloroethane	Volatile	1	2		21	140					
Chloroform	Volatile	27	28	2.4	5	1.5	2		2		2
Chloromethane	Volatile	1	2		0.5	3.4					
Chrysene	Non-Volatile	28	29	0.7	3.2	0.66	4		4		4
cis-1,2-Dichloroethene	Volatile	27	28	1.6	40	5.1	3		1		1
Cobalt	Non-Volatile	28	29	52	60	8.5	1		3		3
Dibenzo(a,h)anthracene	Non-Volatile	28	29	0.4	1.88	0.33	3		3		3
Electrical Conductivity [e]	Non-Volatile	18	18	3.16	6.23	2.8			3		3
F1 (C6-C10) (max)	Volatile	28	29	420	3200	550	2		2		2
F2 (C10-C16) (max)	Volatile	27	27	150	14000	1700	5		1		1
F3 (C16-C34) (max)	Non-Volatile	28	29	500	2600	550	3		3		2
Indeno(1,2,3-Cd)Pyrene	Non-Volatile	28	29	0.2	2.7	0.44	7	1	4	1	5
Mercury	Non-Volatile	27	27	0.29	1.5	0.2	1		1		1
PCB, Total	Non-Volatile	1	2	0.2	142	940	2				
Pyrene	Non-Volatile	28	29	5.7	11	2.5	3		4		4
Silver	Non-Volatile	28	29	1.2	4	0.66	1		3		3
Tetrachloroethene	Volatile	27	28	1.6	107	13	4		1		1
Tin	Non-Volatile	1	2		40.1	270					
trans-1,2-Dichloroethene	Volatile	27	28	1.6	321	36	3		1		1
Trichloroethylene	Volatile	27	28	1.6	100	12	3		1		1
Vinyl Chloride	Volatile	27	28	0.5	39	5.8	7		4		4

Notes:

[a] (max) Indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria

[c] Ontario Regulation 153/04, Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition (All land uses) (MOECC, 2011) for all COCs, for all COCs, except as noted in Table B-

[d] Column lists the greater of the maximum concentration between Max Detected Concentration and Max Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm.

Bold parameters are identified as COCs

µg/L - microgram per litre

COC - contaminant of concern

Max - maximum concentration

MOECC - Ontario Ministry of the Environment and Climate Change

SCS - site condition standard

SDL - sample detection limit

mS/cm - milliSiemens per centimetre

TABLE B14

Risk-Based Target Concentrations for Soil - Fill Cap; Within 30 m of a Building, and More Than 30 m From Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil Reporting Limit (µg/g)	Ontario Soil Background (µg/g)	Plants & Soil Organisms - RPI (µg/g)	Mammals & Birds - RPI (µg/g)	S1 (µg/g)	Soil to Indoor Air - RPI (µg/g)	Soil to Outdoor Air - RPI (µg/g)	S-GW3 (µg/g)	Free Phase Threshold (µg/g)	Overall RBC[1] (µg/g)
1,1,1,2-Tetrachloroethane	0.05	0.05	NA	NA	30	0.05	5.1	37	4400	0.05
1,1,1-Trichloroethane	0.05	0.05	18	820	42000	0.50	62000	9.8	3700	0.50
1,1,2,2-Tetrachloroethane	0.05	0.05	NA	NA	4	0.0045	1.6	48	6700	0.05
1,1,2-Trichloroethane	0.05	0.05	80	NA	14	0.03	2.9	120	3900	0.05
1,1-Dichloroethane	0.05	0.05	8.4	NA	140	0.071	30	1600	4800	0.071
1,1-Dichloroethene	0.05	0.05	50	43	1000	0.004	1300	11	3900	0.05
1,2-Dibromoethane	0.05	0.05	NA	NA	0.22	0.0014	0.09	86	2000	0.05
1,2-Dichlorobenzene	0.05	0.05	3.4	NA	6300	35	9200	60	3100	3.4
1,2-Dichloroethane	0.05	0.05	48	29	8.7	0.02	1.4	180	5300	0.05
1,2-Dichloropropane	0.05	0.05	25	NA	22	0.01	3.6	76	2100	0.05
1,3-Dichlorobenzene	0.05	0.05	4.8	NA	420	NA	NA	59	3300	4.8
1,3-Dichloropropene	0.05	0.05	25	NA	8.7	0.02	9	3.8	5000	0.05
1,4-Dichlorobenzene	0.05	0.05	3.6	NA	47	0.08	18	59	3000	0.08
1+2-Methylnaphthalenes	0.05	0.05	NA	NA	72	NA	NA	76	3600	72
2-Butanone	0.5	0.5	35	9900	13000	16	44000	230	26000	16
4-Methyl-2-Pentanone	0.5	0.5	NA	NA	21000	6.6	23000	150	5100	6.6
Acenaphthene	0.05	0.05	NA	6600	78	8	1301	560	2800	7.9
Acenaphthylene	0.05	0.093	NA	NA	7.8	0.45	96	0.15	2900	0.15
Acetone	0.5	0.5	NA	56	19000	720	120000	16	92000	16
Anthracene	0.05	0.05	2.5	38000	5400	13000000	640000000	0.67	2700	0.67
Antimony	1	1	20	25	110	NA	NA	NA	8000	20
Arsenic	1	11	20	51	0.15	NA	NA	NA	12000	11
Barium	5	210	750	390	3800	NA	NA	NA	7700	390
Benzene	0.02	0.02	25	370	9.3	0.21	17	14	5000	0.21
Benzo(a)anthracene	0.05	0.095	0.5	NA	0.78	65	326	5.1E+11	7600	0.5
Benzo(a)pyrene	0.05	0.05	20	1600	0.07	823	165	3.8E+13	7600	0.07
Benzo(b&j)fluoranthene	0.05	0.3	NA	NA	0.78	5502	2049	7.7E+13	7600	0.78
Benzo(g,h,i)perylene	0.1	0.2	6.6	NA	7.8	NA	NA	1.2E+13	7600	6.6
Benzo(k)fluoranthene	0.05	0.05	7.6	NA	0.78	6716	2072	2.5E+13	7600	0.78
Beryllium	2	2.5	4	13	38	NA	NA	NA	3900	4
Boron (hot water extractable)	0.5	0.5	1.5	NA	NA	NA	NA	NA	5000	1.5
Bromodichloromethane	0.05	0.05	NA	NA	13	0.01	1	50	5500	0.05
Bromoform	0.05	0.05	NA	NA	100	0.27	91	21	11000	0.27
Bromomethane	0.05	0.05	NA	NA	6.3	0.00034	68	1.4	7300	0.05
Cadmium	1	1	12	1.9	2.2	NA	NA	NA	18000	1.9
Carbon tetrachloride	0.05	0.05	5.8	7.6	11	0.0059	13	2.3	3900	0.05
Chlorobenzene	0.05	0.05	6	NA	1300	91	8900	2.4	3700	2.4
Chlorodibromomethane	0.05	0.05	NA	NA	9.4	8.2	700	48	10000	8.2
Chloroethane	NV	NV	NA	NA	NA	TBD	TBD	TBD	NA	TBD
Chloroform	0.05	0.05	34	81	26	0.03	8.9	9.5	6600	0.05
Chromium, Hexavalent (Cr6+)	0.2	0.66	8	910	160	NA	NA	NA	NA	8
Chrysene	0.05	0.18	7	NA	7.8	1867	6589	3.6E+11	7700	7
cis-1,2-Dichloroethene	0.05	0.05	NA	84	630	3.4	1300	130	4600	3.4
Cobalt	2	19	40	180	22	NA	NA	NA	19000	22
Copper	5	62	140	770	600	NA	NA	NA	NA	140
Cyanide	0.05	0.051	0.9	0.11	376	NA	NA	0.02	240000	0.051
Dibenzo(a,h)anthracene	0.1	0.1	NA	NA	0.07	32777	429	2.4E+13	7600	0.1
Dichloromethane	0.05	0.05	0.78	350	110	0.1	2200	7.4	6400	0.1
Electrical Conductivity	NV	0.47	0.7	NA	NA	NA	NA	NA	NA	0.7
Ethylbenzene	0.05	0.05	55	90	72	0.44	17	17	2700	0.44
F1 (C6-C10)	10	17	210	NA	6900	130	26000	55	1700	55
F2 (C10-C16)	10	10	150	NA	3100	98	25000	230	2700	98

TABLE B14

Risk-Based Target Concentrations for Soil - Fill Cap; Within 30 m of a Building, and More Than 30 m From Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil Reporting Limit (µg/g)	Ontario Soil Background (µg/g)	Plants & Soil Organisms - RPI (µg/g)	Mammals & Birds - RPI (µg/g)	S1 (µg/g)	Soil to Indoor Air - RPI (µg/g)	Soil to Outdoor Air - RPI (µg/g)	S-GW3 (µg/g)	Free Phase Threshold (µg/g)	Overall RBC[1] (µg/g)
F3 (C16-C34)	50	240	300	NA	5800	NA	NA	NA	5800	300
F4 (C34-C50)	50	120	2800	NA	6100	NA	NA	NA	6900	2800
Fluoranthene	0.05	0.24	50	0.69	7.8	247	2463	40000	7600	0.69
Fluorene	0.05	0.05	NA	NA	720	290	26997	62	2800	62
Indeno(1,2,3-Cd)Pyrene	0.1	0.11	0.38	NA	0.78	46015	3997	8.6E+13	7600	0.38
Lead	10	45	250	32	200	NA	NA	NA	24000	32
Mercury	0.1	0.16	10	20	9.8	0.25	36	1.2E+14	34000	0.25
Methyl tert-butyl ether (MTBE)	0.05	0.05	25	NA	440	0.75	170	220	8000	0.75
Molybdenum	2	2	40	6.9	110	NA	NA	NA	22000	6.9
Naphthalene	0.05	0.05	0.6	380	360	0.03	11	200	2800	0.05
n-Hexane	0.05	0.05	NA	NA	482	2.8	130000	54	1500	2.8
PCB, Total	0.3	0.3	33	1.1	0.35	3	121	9.88E+11	5000	0.35
Phenanthrene	0.05	0.19	6.2	2700	720	NA	NA	270	2300	6.2
Pyrene	0.05	0.19	NA	4700	78	1901	22573	2600	7700	78
Selenium	1	1.2	10	2.4	110	NA	NA	NA	NA	2.4
Silver	0.5	0.5	20	NA	77	NA	NA	NA	22000	20
Sodium Adsorption Ratio	NV	NV	5	NA	NA	NA	NA	NA	NA	5
Styrene	0.05	0.05	17	NA	NA	16	3400	66	3500	16
Tetrachloroethene	0.05	0.05	3.8	4.5	130	0.28	190	18	3700	0.28
Toluene	0.2	0.2	150	140	1700	6.2	34000	68	3300	6.2
trans-1,2-Dichloroethene	0.05	0.05	NA	84	420	0.08	700	220	4600	0.08
Trichloroethylene	0.05	0.05	100	8.1	10	0.03	12	300	4100	0.05
Trichlorofluoromethane	0.05	0.05	NA	NA	6300	NA	NA	4	4400	4
Vinyl Chloride	0.02	0.02	3.4	12	0.53	0.0022	15	270	6100	0.02
Xylenes, Total	0.05	0.05	95	96	4200	3.1	4900	26	2300	3.1
Zinc	30	290	400	340	5600	NA	NA	NA	15000	340

Notes:

[1.] RBCs determined by comparing the lower of the component values to the higher of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d).
If the lowest component value was less than the background concentration/MDL, the RBC was set to the higher of the the background concentration/MDL.
COC - contaminant of concern
ug/g - micrograms per gram
NA - No toxicity data available for this pathway
PHC - petroleum hydrocarbon
RBC - risk-based concentration
NV-No value available
TBD-To be determined
RPI - Residential/Parkland/Institutional
S1 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a residential scenario.
S3 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a commercial/industrial scenario.
S-GW3 - Exposure pathway due to movement of a substance from soil to groundwater then to aquatic receptors in a surface water body.
MOECC - Ontario Ministry of the Environment and Climate Change

TABLE B15

Risk-Based Target Concentrations for Soil - Fill Cap; More Than 30 m From Buildings, and Less Than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil Reporting Limit (ug/g)	Ontario Soil Background (ug/g)	Plants & Soil Organisms - RPI (ug/g)	Mammals & Birds - RPI (ug/g)	S1 (ug/g)	Soil to Outdoor Air (ug/g)	S-GW3 (ug/g)	T9-RPI (ug/g)	Free Phase Threshold (µg/g)	Overall RBC[1] (ug/g)
1,1,1,2-Tetrachloroethane	0.05	0.05	NA	NA	30	5.1	37	0.05	4400	0.05
1,1,1-Trichloroethane	0.05	0.05	18	820	42000	62000	9.8	0.05	3700	0.05
1,1,2,2-Tetrachloroethane	0.05	0.05	NA	NA	4	1.6	48	0.05	6700	0.05
1,1,2-Trichloroethane	0.05	0.05	80	NA	14	2.9	120	0.05	3900	0.05
1,1'-Biphenyl	0.05	0.05	NA	NA	710	53	190	0.05	2600	0.05
1,1-Dichloroethane	0.05	0.05	8.4	NA	140	30	1600	0.05	4800	0.05
1,1-Dichloroethene	0.05	0.05	50	43	1000	1300	11	0.05	3900	0.05
1,2,4-Trichlorobenzene	0.05	0.05	13	NA	210	290	43	0.05	3400	0.05
1,2-Dibromoethane	0.05	0.05	NA	NA	0.22	0.09	86	0.05	2000	0.05
1,2-Dichlorobenzene	0.05	0.05	3.4	NA	6300	9200	60	0.05	3100	0.05
1,2-Dichloroethane	0.05	0.05	48	29	8.7	1.4	180	0.05	5300	0.05
1,2-Dichloropropane	0.05	0.05	25	NA	22	3.6	76	0.05	2100	0.05
1,3-Dichlorobenzene	0.05	0.05	4.8	NA	420	NA	59	0.05	3300	0.05
1,3-Dichloropropene	0.05	0.05	25	NA	8.7	9	3.8	0.05	5000	0.05
1,4-Dichlorobenzene	0.05	0.05	3.6	NA	47	18	59	0.05	3000	0.05
1+2-Methylnaphthalenes	0.05	0.05	NA	NA	72	NA	76	0.59	3600	0.59
2,4&2,6-Dinitrotoluene	0.5	0.5	NA	NA	0.92	NA	15	0.5	3800	0.5
2-Butanone	0.5	0.5	35	9900	13000	44000	230	0.5	26000	0.5
3,3`-Dichlorobenzidine	1	1	NA	NA	0.52	65	66	1	5000	1
4-Chloroaniline	0.5	0.5	20	NA	38	NA	0.45	0.5	6100	0.5
4-Methyl-2-Pentanone	0.5	0.5	NA	NA	21000	23000	150	0.5	5100	0.5
Acenaphthene	0.05	0.05	NA	6600	78	1301	560	0.072	2800	0.1
Acenaphthylene	0.05	0.093	NA	NA	7.8	96	0.15	0.093	2900	0.093
Acetone	0.5	0.5	NA	56	19000	120000	16	0.5	92000	0.5
Ammonia	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Anthracene	0.05	0.05	2.5	38000	5400	640000000	0.67	0.22	2700	0.22
Antimony	1	1	20	25	110	NA	NA	1.3	8000	1.3
Arsenic	1	11	20	51	0.15	NA	NA	18	12000	11
Barium	5	210	750	390	3800	NA	NA	220	7700	220
Benzene	0.02	0.02	25	370	9.3	17	14	0.02	5000	0.02
Benzo(a)anthracene	0.05	0.095	0.5	NA	0.78	326	5.1E+11	0.36	7600	0.36
Benzo(a)pyrene	0.05	0.05	20	1600	0.07	165	3.8E+13	0.3	7600	0.07
Benzo(b&j)fluoranthene	0.05	0.3	NA	NA	0.78	2049	7.7E+13	0.47	7600	0.47
Benzo(g,h,i)perylene	0.1	0.2	6.6	NA	7.8	NA	1.2E+13	0.68	7600	0.68
Benzo(k)fluoranthene	0.05	0.05	7.6	NA	0.78	2072	2.5E+13	0.48	7600	0.48
Bis (2-chloroethyl) ether	0.5	0.5	NA	NA	0.32	NA	92	0.5	6400	0.5
bis (2-Chloroisopropyl) ether	TBD	TBD	NA	NA	840	NA	120	TBD	TBD	TBD
Boron (hot water extractable)	0.5	0.5	1.5	NA	NA	NA	NA	1.5	5000	1.5
Bromide	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Bromodichloromethane	0.05	0.05	NA	NA	13	1	50	0.05	5500	0.05
Bromoform	0.05	0.05	NA	NA	100	91	21	0.05	11000	0.05
Bromomethane	0.05	0.05	NA	NA	6.3	68	1.4	0.05	7300	0.05
Cadmium	1	1	12	1.9	2.2	NA	NA	1.8	18000	1.8
Calcium	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Carbon tetrachloride	0.05	0.05	5.8	7.6	11	13	2.3	0.05	3900	0.05
Chloride (Cl)	5	52	NA	NA	NA	NA	221	NA	3000	221
Chlorobenzene	0.05	0.05	6	NA	1300	8900	2.4	0.05	3700	0.05
Chlorodibromomethane	0.05	0.05	NA	NA	9.4	700	48	0.05	10000	0.05
Chloroethane	TBD	TBD	NA	NA	NA	TBD	TBD	TBD	TBD	TBD
Chloroform	0.05	0.05	34	81	26	8.9	9.5	0.05	6600	0.05
Chromium	5	67	310	160	28000	NA	NA	70	11000	70
Chrysene	0.05	0.18	7	NA	7.8	6589	3.6E+11	2.8	7700	2.8
cis-1,2-Dichloroethene	0.05	0.05	NA	84	630	1300	130	0.05	4600	0.05
Cobalt	2	19	40	180	22	NA	NA	22	19000	22
Copper	5	62	140	770	600	NA	NA	92	TBD	92
Cyanide	0.05	0.051	0.9	0.11	376	NA	0.02	0.051	240000	0.05
Dibenzo(a,h)anthracene	0.1	0.1	NA	NA	0.07	429	2.4E+13	0.1	7600	0.1
Dichloromethane	0.05	0.05	0.78	350	110	2200	7.4	0.05	6400	0.05
Diethylphthalate	0.5	0.5	11	85	94000	NA	0.07	0.5	7600	0.5
Dimethylphthalate	0.5	0.5	17	NA	NA	NA	0.02	0.5	1800	0.5

TABLE B15

Risk-Based Target Concentrations for Soil - Fill Cap; More Than 30 m From Buildings, and Less Than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil Reporting Limit (ug/g)	Ontario Soil Background (ug/g)	Plants & Soil Organisms - RPI (ug/g)	Mammals & Birds - RPI (ug/g)	S1 (ug/g)	Soil to Outdoor Air (ug/g)	S-GW3 (ug/g)	T9-RPI (ug/g)	Free Phase Threshold (µg/g)	Overall RBC[1] (ug/g)
Electrical Conductivity	NV	0.47	0.7	NA	NA	NA	NA	0.7	NA	0.7
Ethylbenzene	0.05	0.05	55	90	72	17	17	0.05	2700	0.05
F1 (C6-C10)	10	17	210	NA	6900	26000	55	25	1700	25
F2 (C10-C16)	10	10	150	NA	3100	25000	230	10	2700	10
F3 (C16-C34)	50	240	300	NA	5800	NA	NA	240	5800	240
F4 (C34-C50)	50	120	2800	NA	6100	NA	NA	120	6900	120
Fluoranthene	0.05	0.24	50	0.69	7.8	2463	40000	0.69	7600	0.69
Fluorene	0.05	0.05	NA	NA	720	26997	62	0.19	2800	0.19
Hexachlorobenzene	0.01	0.01	100	NA	0.52	NA	14	0.02	9300	0.02
Hexachlorobutadiene	0.01	0.01	NA	NA	7.1	2.8	1.6	0.01	8300	0.01
Hexachloroethane	0.01	0.01	NA	NA	21	54	22	0.01	9400	0.01
Indeno(1,2,3-Cd)Pyrene	0.1	0.11	0.38	NA	0.78	3997	8.6E+13	0.23	7600	0.23
Lead	10	45	250	32	200	NA	NA	120	24000	32
Magnesium	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Mercury	0.1	0.16	10	20	9.8	36	1.2E+14	0.27	34000	0.27
Methyl tert-butyl ether (MTBE)	0.05	0.05	25	NA	440	170	220	0.05	8000	0.05
Molybdenum	2	2	40	6.9	110	NA	NA	2	22000	2
Naphthalene	0.05	0.05	0.6	380	360	11	200	0.075	2800	0.075
n-Hexane	0.05	0.05	NA	NA	482	130000	54	0.05	1500	0.05
Nickel	5	37	100	5000	330	NA	NA	82	TBD	82
PCB, Total	0.3	0.3	33	1.1	0.35	121	9.88E+11	0.3	5000	0.3
Pentachlorophenol	0.1	0.1	17	NA	1.1	NA	2.9	0.1	9200	0.1
Perchlorate	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Phenanthrene	0.05	0.19	6.2	2700	720	NA	270	0.69	2300	0.69
Pyrene	0.05	0.19	NA	4700	78	22573	2600	1	7700	1
Selenium	1	1.2	10	2.4	110	NA	NA	1.5	TBD	1.5
Sodium Adsorption Ratio	NV	TBD	5	NA	NA	NA	NA	NA	NA	5
Strontium	TBD	TBD	NA	NA	NA	TBD	TBD	TBD	TBD	TBD
Styrene	0.05	0.05	17	NA	NA	3400	66	0.05	3500	0.05
Tetrachloroethene	0.05	0.05	3.8	4.5	130	190	18	0.05	3700	0.05
Thallium	1	1	1.4	3.9	0.29	NA	NA	1	22000	1
Toluene	0.2	0.2	150	140	1700	34000	68	0.2	3300	0.2
trans-1,2-Dichloroethene	0.05	0.05	NA	84	420	700	220	0.05	4600	0.05
Trichloroethylene	0.05	0.05	100	8.1	10	12	300	0.05	4100	0.05
Trichlorofluoromethane	0.05	0.05	NA	NA	6300	NA	4	0.25	4400	0
Vanadium	10	86	200	18	39	NA	NA	86	7100	18
Vinyl Chloride	0.02	0.02	3.4	12	0.53	15	270	0.02	6100	0.02
Xylenes, Total	0.05	0.05	95	96	4200	4900	26	0.05	2300	0.05
Zinc	30	290	400	340	5600	NA	NA	290	15000	290
2-Chloroethyl Vinyl Ether	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Chloromethane	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Notes:

[1.] RBCs determined by comparing the lower of the component values to the higher of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d).
If the lowest component value was less than the background concentration/MDL, the RBC was set to the higher of the the background concentration/MDL.
COC - contaminant of concern
ug/g - micrograms per gram
NA - No toxicity data available for this pathway
PHC - petroleum hydrocarbon
RBC - risk-based concentration
NV-No value available
TBD-To be determined
RPI - Residential/Parkland/Institutional
S1 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a residential scenario.
S3 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a commercial/industrial scenario.
S-GW3 - Exposure pathway due to movement of a substance from soil to groundwater then to aquatic receptors in a surface water body.
MOECC - Ontario Ministry of the Environment and Climate Change

TABLE B16

Risk-Based Target Concentrations for Soil - Under Roads and Under Cap

Port Lands, Toronto, Ontario

Parameter	MOECC Soil Reporting Limit (ug/g)	Ontario Soil Background (ug/g)	Residential Soil to Indoor Air (ug/g)	Residential Soil to Outdoor Air (ug/g)	S-GW3 (ug/g)	Industrial S3 (ug/g)	Free Phase Threshold (µg/g)	Overall RBC[1] (ug/g)
1,1,1,2-Tetrachloroethane	0.05	0.05	0.05	5.1	37	1600	4400	0.05
1,1,1-Trichloroethane	0.05	0.05	0.5	62000	9.8	1500000	3700	0.5
1,1,2,2-Tetrachloroethane	0.05	0.05	0.0045	1.6	48	210	6700	0.05
1,1,2-Trichloroethane	0.05	0.05	0.03	2.9	120	720	3900	0.05
1,1'-Biphenyl	0.05	0.05	0.16	53	190	3400	2600	0.16
1,1-Dichloroethane	0.05	0.05	0.071	30	1600	7200	4800	0.071
1,1-Dichloroethene	0.05	0.05	0.004	1300	11	11000	3900	0.05
1,2,4-Trichlorobenzene	0.05	0.05	0.36	290	43	22000	3400	0.36
1,2-Dibromoethane	0.05	0.05	0.0014	0.09	86	11	2000	0.05
1,2-Dichlorobenzene	0.05	0.05	35	9200	60	130000	3100	35
1,2-Dichloroethane	0.05	0.05	0.02	1.4	180	450	5300	0.05
1,2-Dichloropropane	0.05	0.05	0.01	3.6	76	1100	2100	0.05
1,3-Dichlorobenzene	0.05	0.05	NA	NA	59	4400	3300	59
1,3-Dichloropropene	0.05	0.05	0.02	9	3.8	450	5000	0.05
1,4-Dichlorobenzene	0.05	0.05	0.08	18	59	2400	3000	0.08
1+2-Methylnaphthalenes	0.05	0.05	NA	NA	76	560	3600	76
2,4&2,6-Dinitrotoluene	0.5	0.5	NA	NA	15	43	3800	15
2-Butanone	0.5	0.5	16	44000	230	64000	26000	16
2-Chloroethyl Vinyl Ether	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
2-Hexanone	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
3,3`-Dichlorobenzidine	1	1	17817	65	66	25	5000	25
4-Chloroaniline	0.5	0.5	NA	NA	0.45	320	6100	0.5
4-Methyl-2-Pentanone	0.5	0.5	6.6	23000	150	110000	5100	6.6
Acenaphthene	0.05	0.05	8	1301	560	3600	2800	7.9
Acenaphthylene	0.05	0.093	0.45	96	0.15	360	2900	0.15
Acetone	0.5	0.5	720	120000	16	660000	92000	16
Ammonia	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Anthracene	0.05	0.05	13000000	640000000	0.67	420000	2700	0.67
Antimony	1	1	NA	NA	NA	950	8000	950
Arsenic	1	11	NA	NA	NA	7	12000	7.4
Barium	5	210	NA	NA	NA	8600	7700	7700
Benzene	0.02	0.02	0.21	17	14	480	5000	0.21
Benzo(a)anthracene	0.05	0.095	65	326	5.1E+11	36	7600	36
Benzo(a)pyrene	0.05	0.05	823	165	3.8E+13	3.6	7600	3.6
Benzo(b&j)fluoranthene	0.05	0.3	5502	2049	7.7E+13	36	7600	36
Benzo(g,h,i)perylene	0.1	0.2	NA	NA	1.2E+13	360	7600	360
Benzo(k)fluoranthene	0.05	0.05	6716	2072	2.5E+13	36	7600	36
Beryllium	2	2.5	NA	NA	NA	60	3900	60
Bis (2-chloroethyl) ether	0.5	0.5	NA	NA	92	16	6400	16
bis (2-Chloroisopropyl) ether	0.5	TBD	NA	NA	120	8800	TBD	120
Boron (hot water extractable)	0.5	0.5	NA	NA	NA	NA	5000	5000
Bromide	TBD	TBD	TBD	TBD	TBD	TBD	TBD	0

TABLE B16

Risk-Based Target Concentrations for Soil - Under Roads and Under Cap

Port Lands, Toronto, Ontario

Parameter	MOECC Soil Reporting Limit (ug/g)	Ontario Soil Background (ug/g)	Residential Soil to Indoor Air (ug/g)	Residential Soil to Outdoor Air (ug/g)	S-GW3 (ug/g)	Industrial S3 (ug/g)	Free Phase Threshold (µg/g)	Overall RBC[1] (ug/g)
Bromodichloromethane	0.05	0.05	0.01	1.00	50	660	5500	0.05
Bromoform	0.05	0.05	0.27	91	21	5200	11000	0.27
Bromomethane	0.05	0.05	0.0003	68	1.4	660	7300	0.05
Cadmium	1	1	NA	NA	NA	25	18000	25
Calcium	TBD	TBD	TBD	TBD	TBD	TBD	TBD	0
Carbon tetrachloride	0.05	0.05	0.0059	13	2.3	590	3900	0.05
Chloride (Cl)	5	52	NA	NA	221	TBD	3000	221
Chlorobenzene	0.05	0.05	91	8900	2.4	42000	3700	2.4
Chlorodibromomethane	0.05	0.05	8	700	48	490	10000	8.2
Chloroethane	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Chloroform	0.05	0.05	0.03	8.9	9.5	1300	6600	0.05
Chromium	5	67	NA	NA	NA	240000	11000	11000
Chromium, Hexavalent (Cr6+)	0.2	0.66	NA	NA	NA	40	TBD	40
Chrysene	0.05	0.18	1867	6589	3.6E+11	360	7700	360
cis-1,2-Dichloroethene	0.05	0.05	3.4	1300	130	66000	4600	3.4
Cobalt	2	19	NA	NA	NA	2500	19000	2500
Copper	5	62	NA	NA	NA	1990	TBD	1990
Cyanide	0.05	0.051	NA	NA	0.022	NA	240000	0.051
Dibenzo(a,h)anthracene	0.1	0.1	32777	429	2.4E+13	3.6	7600	3.6
Dichloromethane	0.05	0.05	0.1	2200	7.4	5500	6400	0.1
Diethylphthalate	0.5	0.5	NA	NA	0.07	1300000	7600	0.5
Dimethylphthalate	0.5	0.5	NA	NA	0.02	790000	1800	0.5
Electrical Conductivity	NV	0.47	NA	NA	NA	NA	TBD	0.47
Ethylbenzene	0.05	0.05	0.44	17	17	3700	2700	0.44
F1 (C6-C10)	10	17	130	26000	55	100000	1700	55
F2 (C10-C16)	10	10	98	25000	230	48000	2700	98
F3 (C16-C34)	50	240	NA	NA	NA	260000	5800	5800
F4 (C34-C50)	50	120	NA	NA	NA	400000	6900	6900
Fluoranthene	0.05	0.24	247	2463	40000	360	7600	247
Fluorene	0.05	0.05	290	26997	62	56000	2800	62
Hexachlorobenzene	0.01	0.01	NA	NA	14	16	9300	14
Hexachlorobutadiene	0.01	0.01	0.01	2.8	1.6	75	8300	0.01
Hexachloroethane	0.01	0.01	0.08	54	22	2200	9400	0.08
Indeno(1,2,3-Cd)Pyrene	0.1	0.11	46015	3997	8.6E+13	36	7600	36
Lead	10	45	NA	NA	NA	1000	24000	1000
Magnesium	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Mercury	0.1	0.16	0.25	36	1.2E+14	670	34000	0.25
Methyl tert-butyl ether (MTBE)	0.05	0.05	0.75	170	220	23000	8000	0.75
Molybdenum	2	2	NA	NA	NA	1200	22000	1200
Naphthalene	0.05	0.05	0.028	11	200	28000	2800	0.05
n-Hexane	0.05	0.05	2.8	130000	54	21000000	1500	2.8
Nickel	5	37	NA	NA	NA	510	TBD	510

TABLE B16

Risk-Based Target Concentrations for Soil - Under Roads and Under Cap

Port Lands, Toronto, Ontario

Parameter	MOECC Soil Reporting Limit (ug/g)	Ontario Soil Background (ug/g)	Residential Soil to Indoor Air (ug/g)	Residential Soil to Outdoor Air (ug/g)	S-GW3 (ug/g)	Industrial S3 (ug/g)	Free Phase Threshold (µg/g)	Overall RBC[1] (ug/g)
PCB, Total	0.3	0.3	3	121	9.88E+11	NA	5000	3.1
Pentachlorophenol	0.1	0.1	NA	NA	2.9	46	9200	2.9
Perchlorate	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Phenanthrene	0.05	0.19	NA	NA	270	5600	2300	270
Pyrene	0.05	0.19	1901	22573	2600	3600	7700	1901
Selenium	1	1.2	NA	NA	NA	1200	TBD	1200
Silver	0.5	0.5	NA	NA	NA	490	22000	490
Sodium Adsorption Ratio	NV	TBD	NA	NA	NA	NA	TBD	TBD
Strontium	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Styrene	0.05	0.05	16	3400	66	26000	3500	16
Tetrachloroethene	0.05	0.05	0.28	190	18	21000	3700	0.28
Thallium	1	1	NA	NA	NA	33	22000	33
Toluene	0.2	0.2	6.2	34000	68	180000	3300	6.2
trans-1,2-Dichloroethene	0.05	0.05	0.08	700	220	44000	4600	0.08
Trichloroethylene	0.05	0.05	0.03	12	300	51	4100	0.05
Trichlorofluoromethane	0.05	0.05	NA	NA	4	NA	4400	4
Vanadium	10	86	NA	NA	NA	160	7100	160
Vinyl Chloride	0.02	0.02	0.002	15	270	27	6100	0.02
Xylenes, Total	0.05	0.05	3.1	4900	26	88000	2300	3.1
Zinc	30	290	NA	NA	NA	12000	15000	12000

Notes:

[1.] RBCs determined by comparing the lower of the component values to the higher of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lowest component value was less than the background concentration/MDL, the RBC was set to the higher of the the background concentration/MDL.

COC - contaminant of concern

ug/g - micrograms per gram

NA - No toxicity data available for this pathway

PHC - petroleum hydrocarbon

RBC - risk-based concentration

NV-No value available

TBD-To be determined

S3 - Component for direct exposure to soil via soil ingestion and dermal contact appropriate for a commercial/industrial scenario.

S-GW3 - Exposure pathway due to movement of a substance from soil to groundwater then to aquatic receptors in a surface water body.

MOECC - Ontario Ministry of the Environment and Climate Change

TABLE B17

Risk-Based Concentrations for Groundwater Water More Than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Water Reporting Limit (µg/L)	Ontario Groundwater Background (µg/L)	GW1 (µg/L)	Table 6 Residential GW2 (µg/L)	Table 6 GW3 (µg/L)	1/2 Solubility (µg/L)	Final RBC (µg/L)
1,1,1,2-Tetrachloroethane	0.5	1.1	1.1	0.073	20000	540000	1.1
1,1,2,2-Tetrachloroethane	0.5	0.5	1	0.11	24000	1400000	0.5
1,1,2-Trichloroethane	0.5	0.5	5	0.17	94000	550000	0.5
1,1-Dichloroethane	0.5	0.5	5	0.23	2000000	2500000	0.5
1,1-Dichloroethene	0.5	0.5	14	0.075	12000	1200000	0.5
1,2-Dibromoethane	0.2	0.2	0.05	0.0033	96000	2000000	0.2
1,2-Dichloroethane	0.5	0.5	5	0.07	200000	2600000	0.5
1,2-Dichloropropane	0.5	0.5	5	0.077	57000	1400000	0.5
1,3-Dichloropropene (max)	0.5	0.5	0.5	0.16	2400	1400000	0.5
1,4-Dichlorobenzene	0.5	0.5	1	0.26	7600	41000	0.5
1+2-Methylnaphthalenes (max)	2	2	1	24	1500	12000	2
2-Hexanone	--	--	--	--	--	--	TBD
Acenaphthene	1	4.1	4.1	17	5200	2000	4.1
Acenaphthylene	1	1	0.45	0.96	1.4	8100	1
Anthracene	0.1	0.1	890	650	1	22	1
Barium	2	610	1000	--	23000	27000000	1000
Benzene	0.5	0.5	5	0.17	4600	900000	0.5
Benzo(a)anthracene	0.2	0.2	1	3.8	1.8	4.7	1
Benzo(a)pyrene	0.01	0.01	0.01	14	2.1	0.81	0.01
Benzo(b&j)fluoranthene	0.1	0.1	0.1	81	4.2	0.75	0.1
Benzo(g,h,i)perylene	0.2	0.2	1	--	0.2	0.13	0.2
Benzo(k)fluoranthene	0.1	0.1	0.1	100	1.4	0.4	0.1
Bromomethane	0.5	0.89	0.89	0.19	3200	7600000	0.89
Carbon tetrachloride	0.2	0.2	5	0.013	2000	400000	0.2
Chloride (Cl)	1000	790000	250000	--	1800000	21000000	250000
Chloroethane	--	--	--	--	--	--	TBD
Chloroform	1	2	25	0.1	12000	4000000	2
Chloromethane	--	--	--	--	--	--	0
Chrysene	0.1	0.1	0.1	95	0.7	1	0.1
cis-1,2-Dichloroethene	0.5	1.7	20	0.075	140000	1800000	1.7
Copper	5	5	1000	--	69	210000000	69
Cyanide	5	5	200	--	52	500000000	52
Dibenzo(a,h)anthracene	0.2	0.2	0.01	140	0.4	0.52	0.2
Dichloromethane	5	5	50	61	13000	6500000	50
Electrical Conductivity [b]	0.005	0.005	--	--	--	--	0.005
Ethylbenzene	0.5	0.5	2.4	0.12	1800	85000	0.5

TABLE B17

Risk-Based Concentrations for Groundwater Water More Than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Water Reporting Limit (µg/L)	Ontario Groundwater Background (µg/L)	GW1 (µg/L)	Table 6 Residential GW2 (µg/L)	Table 6 GW3 (µg/L)	1/2 Solubility (µg/L)	Final RBC (µg/L)
F1 (C6-C10) (max)	25	420	820	3.4	420	1900	420
F2 (C10-C16) (max)	100	150	300	5.7	170	150	150
F3 (C16-C34) (max)	500	500	1000	--	--	0.000000049	500
F4 (C34-C50)	500	500	1100	--	--	3.9E-12	500
Fluoranthene	0.4	0.4	0.41	44	73	130	0.41
Indeno(1,2,3-Cd)Pyrene	0.2	0.2	0.1	190	1.4	0.095	0.2
Lead	1	1.9	10	--	20	4800000	10
Mercury	0.1	0.1	1	0.0047	7.7	30	0.1
Methyl tert-butyl ether (MTBE)	2	15	15	8.6	1000000	26000000	8.6
Naphthalene	2	7	59	0.19	6200	16000	7
Nitrate (as N)	--	--	--	--	--	--	TBD
Nitrate-Nitrite (as N)	--	--	--	--	--	--	TBD
Phenanthrene	0.1	0.1	1	--	380	580	1
Pyrene	0.2	0.2	4.1	340	5.7	68	4.1
Silver	0.3	0.3	100	--	1.2	35000000	1.2
Sodium	5000	490000	200000	--	1800000	220000000	200000
Tetrachloroethene	0.5	0.5	20	0.075	8400	100000	0.5
Toluene	0.5	0.8	24	320	14000	260000	24
trans-1,2-Dichloroethene	0.5	1.7	20	0.075	220000	1800000	1.7
Trichloroethylene	0.5	0.5	5	0.053	220000	640000	0.5
Vinyl Chloride	0.5	0.5	2	0.0075	360000	4400000	0.5
Xylenes, Total (max)	0.5	72	300	26	3300	53000	26

Notes:

TBD - to be determined; component values unavailable

[a] RBCs determined by comparing the lower of the estimated maximum concentration and the half solubility limit to the higher of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of the estimated maximum and half solubility limit was less than the background concentration/MDL, the RBC was set to the higher of the the background concentration/MDL.

[b] Units for electrical conductivity are mS/cm.

GW1 - Exposure pathway due to ingestion of potable groundwater

GW2 - Exposure pathway due to inhalation of indoor air containing soil vapour from groundwater at water table

GW3 - Exposure pathway to aquatic biota via groundwater discharge to surface water

MOECC - Ontario Ministry of the Environment and Climate Change

TABLE B18

Risk-Based Concentrations for Groundwater Water More Than 30 m from Lake Ontario/Don River (HSP In Place)

Port Lands, Toronto, Ontario

Parameter	MOECC Water Reporting Limit (µg/L)	Ontario Groundwater Background (µg/L)	Table 7 GW2 (µg/L)	Table 7 GW3 (µg/L)	1/2 Solubility (µg/L)	Final RBC (µg/L)
1,1,1,2-Tetrachloroethane	0.5	1.1	0.073	20000	540000	1.1
1,1,2,2-Tetrachloroethane	0.5	0.5	0.11	24000	1400000	0.5
1,1,2-Trichloroethane	0.5	0.5	0.17	94000	550000	0.5
1,1-Dichloroethane	0.5	0.5	0.23	2000000	2500000	0.5
1,1-Dichloroethene	0.5	0.5	0.075	12000	1200000	0.5
1,2-Dibromoethane	0.2	0.2	0.0033	96000	2000000	0.2
1,2-Dichloroethane	0.5	0.5	0.07	200000	2600000	0.5
1,2-Dichloropropane	0.5	0.5	0.077	57000	1400000	0.5
1,3-Dichloropropene (max)	0.5	0.5	0.16	2400	1400000	0.5
1,4-Dichlorobenzene	0.5	0.5	0.26	7600	41000	0.5
1+2-Methylnaphthalenes (max)	2	2	24	1500	12000	24
2-Hexanone	--	--	--	--	--	TBD
Acenaphthene	1	4.1	17	5200	2000	17
Acenaphthylene	1	1	0.96	1.4	8100	1
Anthracene	0.1	0.1	650	1	22	1
Barium	2	610	--	23000	27000000	23000
Benzene	0.5	0.5	0.17	4600	900000	0.5
Benzo(a)anthracene	0.2	0.2	3.8	1.8	4.7	1.8
Benzo(a)pyrene	0.01	0.01	14	2.1	0.81	0.81
Benzo(b&j)fluoranthene	0.1	0.1	81	4.2	0.75	0.75
Benzo(g,h,i)perylene	0.2	0.2	--	0.2	0.13	0.2
Benzo(k)fluoranthene	0.1	0.1	100	1.4	0.4	0.4
Bromomethane	0.5	0.89	0.19	3200	7600000	0.89
Carbon tetrachloride	0.2	0.2	0.013	2000	400000	0.2
Chloride (Cl)	1000	790000	--	1800000	21000000	1800000
Chloroethane	--	--	--	--	--	TBD
Chloroform	1	2	0.1	12000	4000000	2
Chloromethane	--	--	--	--	--	TBD
Chrysene	0.1	0.1	95	0.7	1	0.7
cis-1,2-Dichloroethene	0.5	1.7	0.075	140000	1800000	1.7
Copper	5	5	--	69	210000000	69
Cyanide	5	5	--	52	500000000	52
Dibenzo(a,h)anthracene	0.2	0.2	140	0.4	0.52	0.4
Dichloromethane	5	5	61	13000	6500000	61
Electrical Conductivity [b]	0.005	0.005	--	--	--	0.005
Ethylbenzene	0.5	0.5	0.12	1800	85000	0.5
F1 (C6-C10) (max)	25	420	3.4	420	1900	420
F2 (C10-C16) (max)	100	150	5.7	170	150	150
F3 (C16-C34) (max)	500	500	--	--	0.000000049	500
F4 (C34-C50)	500	500	--	--	3.9E-12	500
Fluoranthene	0.4	0.4	44	73	130	44
Indeno(1,2,3-Cd)Pyrene	0.2	0.2	190	1.4	0.095	0.2
Lead	1	1.9	--	20	4800000	20
Mercury	0.1	0.1	0.0047	7.7	30	0.1
Methyl tert-butyl ether (MTBE)	2	15	8.6	1000000	26000000	8.6
Naphthalene	2	7	0.19	6200	16000	7
Nitrate (as N)	--	--	--	--	--	NA
Nitrate-Nitrite (as N)	--	--	--	--	--	NA
Phenanthrene	0.1	0.1	--	380	580	380
Pyrene	0.2	0.2	340	5.7	68	5.7
Silver	0.3	0.3	--	1.2	35000000	1.2
Sodium	5000	490000	--	1800000	220000000	1800000
Tetrachloroethene	0.5	0.5	0.075	8400	100000	0.5
Toluene	0.5	0.8	320	14000	260000	320
trans-1,2-Dichloroethene	0.5	1.7	0.075	220000	1800000	1.7
Trichloroethylene	0.5	0.5	0.053	220000	640000	0.5

TABLE B18

Risk-Based Concentrations for Groundwater Water More Than 30 m from Lake Ontario/Don River (HSP In Place)

Port Lands, Toronto, Ontario

Parameter	MOECC Water Reporting Limit (µg/L)	Ontario Groundwater Background (µg/L)	Table 7 GW2 (µg/L)	Table 7 GW3 (µg/L)	1/2 Solubility (µg/L)	Final RBC (µg/L)
Vinyl Chloride	0.5	0.5	0.0075	360000	4400000	0.5
Xylenes, Total (max)	0.5	72	26	3300	53000	26

Notes:

TBD - to be determined; component values unavailable

[a] RBCs determined by comparing the lower of the estimated maximum concentration and the half solubility limit to the higher of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of the estimated maximum and half solubility limit was less than the background concentration/MDL, the RBC was set to the higher of the the background concentration/MDL.

[b] Units for electrical conductivity are mS/cm.

GW2 - Exposure pathway due to inhalation of indoor air containing soil vapour from groundwater at water table

GW3 - Exposure pathway to aquatic biota via groundwater discharge to surface water

MOECC - Ontario Ministry of the Environment and Climate Change

TABLE B-19

Risk-Based Concentrations for Groundwater Water Less Than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Water Reporting Limit (µg/L)	Ontario Groundwater Background (µg/L)	GW1 (µg/L)	Table 8 GW3 (10xAPV) (µg/L)	1/2 Solubility (µg/L)	Final RBC (µg/L)
1,1,1,2-Tetrachloroethane	0.5	1.1	1.1	20000	540000	1.1
1,1,2,2-Tetrachloroethane	0.5	0.5	1	24000	1400000	1
1,1,2-Trichloroethane	0.5	0.5	5	94000	550000	5
1,1-Dichloroethene	0.5	0.5	14	12000	1200000	14
1,2-Dibromoethane	0.2	0.2	0.05	96000	2000000	0.2
1,2-Dichloroethane	0.5	0.5	5	200000	2600000	5
1,2-Dichloropropane	0.5	0.5	5	57000	1400000	5
1,3-Dichloropropene (max)	0.5	0.5	0.5	2400	1400000	0.5
1,4-Dichlorobenzene	0.5	0.5	1	7600	41000	1
2-Hexanone	--	--	--	--	--	TBD
Acenaphthylene	1	1	0.45	1.4	8100	1
Anthracene	0.1	0.1	890	1	22	1
Benzene	0.5	0.5	5	4600	900000	5
Benzo(a)anthracene	0.2	0.2	1	1.8	4.7	1
Benzo(a)pyrene	0.01	0.01	0.01	2.1	0.81	0.01
Benzo(b&j)fluoranthene	0.1	0.1	0.1	4.2	0.75	0.1
Benzo(g,h,i)perylene	0.2	0.2	1	0.2	0.13	0.2
Benzo(k)fluoranthene	0.1	0.1	0.1	1.4	0.4	0.1
Bismuth	--	--	--	--	--	0
Bromomethane	0.5	0.89	0.89	3200	7600000	0.89
Cadmium	0.5	0.5	5	2.1	62000000	2.1
Carbon tetrachloride	0.2	0.2	5	2000	400000	5
Chloride (Cl)	1000	790000	250000	1800000	21000000	250000
Chloroethane	--	--	--	--	--	TBD
Chloroform	1	2	25	12000	4000000	25
Chloromethane	--	--	--	--	--	TBD
Chrysene	0.1	0.1	0.1	0.7	1	0.1
cis-1,2-Dichloroethene	0.5	1.7	20	140000	1800000	20
Cobalt	1	3.8	3	52	44000000	3
Dibenzo(a,h)anthracene	0.2	0.2	0.01	0.4	0.52	0.2
Electrical Conductivity [b]	0.005	0.005	--	--	--	0.005
F1 (C6-C10) (max)	25	420	820	420	1900	420
F2 (C10-C16) (max)	100	150	300	170	150	150
F3 (C16-C34) (max)	500	500	1000	--	0.000000049	500
Indeno(1,2,3-Cd)Pyrene	0.2	0.2	0.1	1.4	0.095	0.2
Mercury	0.1	0.1	1	7.7	30	1
PCB, Total	0.2	0.2	3	0.14	140	0.2
Pyrene	0.2	0.2	4.1	5.7	68	4.1
Silver	0.3	0.3	100	1.2	35000000	1.2
Tetrachloroethene	0.5	0.5	20	8400	100000	20
Tin	--	--	--	--	--	TBD
trans-1,2-Dichloroethene	0.5	1.7	20	220000	1800000	20
Trichloroethylene	0.5	0.5	5	220000	640000	5
Vinyl Chloride	0.5	0.5	2	360000	4400000	2

Notes:

TBD - to be determined; component values unavailable

[a] RBCs determined by comparing the lower of the estimated maximum concentration and the half solubility limit to the higher of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of the estimated maximum and half solubility limit was less than the background concentration/MDL, the RBC was set to the higher of the the background concentration/MDL.

[b] Units for electrical conductivity are mS/cm.

RBC - Risk-Based Concentration

APV - Aquatic Protection Value

GW1 - Exposure pathway due to ingestion of potable groundwater

GW3 - Exposure pathway to aquatic biota via groundwater discharge to surface water

MOECC - Ontario Ministry of the Environment and Climate Change

TABLE B20

Risk-Based Concentrations for Groundwater Water Less Than 30 m from Lake Ontario/Don River (HSP In Place)

Port Lands, Toronto, Ontario

Parameter	MOECC Water Reporting Limit (µg/L)	Ontario Groundwater Background (µg/L)	Table 9 GW3 (10xAPV) (µg/L)	1/2 Solubility (µg/L)	Final RBC (µg/L)
1,1,1,2-Tetrachloroethane	0.5	1.1	20000	540000	20000
1,1,2,2-Tetrachloroethane	0.5	0.5	24000	1400000	24000
1,1,2-Trichloroethane	0.5	0.5	94000	550000	94000
1,1-Dichloroethene	0.5	0.5	12000	1200000	12000
1,2-Dibromoethane	0.2	0.2	96000	2000000	96000
1,2-Dichloroethane	0.5	0.5	200000	2600000	200000
1,3-Dichloropropene (max)	0.5	0.5	2400	1400000	2400
1,4-Dichlorobenzene	0.5	0.5	7600	41000	7600
2-Hexanone	--	--	--	--	TBD
Acenaphthylene	1	1	1.4	8100	1.4
Anthracene	0.1	0.1	1	22	1
Benzene	0.5	0.5	4600	900000	4600
Benzo(a)anthracene	0.2	0.2	1.8	4.7	1.8
Benzo(a)pyrene	0.01	0.01	2.1	0.81	0.81
Benzo(b&j)fluoranthene	0.1	0.1	4.2	0.75	0.75
Benzo(g,h,i)perylene	0.2	0.2	0.2	0.13	0.2
Benzo(k)fluoranthene	0.1	0.1	1.4	0.4	0.4
Bismuth	--	--	--	--	TBD
Bromomethane	0.5	0.89	3200	7600000	3200
Cadmium	0.5	0.5	2.1	62000000	2.1
Carbon tetrachloride	0.2	0.2	2000	400000	2000
Chloride (Cl)	1000	790000	1800000	21000000	1800000
Chloroethane	--	--	--	--	TBD
Chloroform	1	2	12000	4000000	12000
Chloromethane	--	--	--	--	TBD
Chrysene	0.1	0.1	0.7	1	0.7
cis-1,2-Dichloroethene	0.5	1.7	140000	1800000	140000
Cobalt	1	3.8	52	44000000	52
Dibenzo(a,h)anthracene	0.2	0.2	0.4	0.52	0.4
Electrical Conductivity [b]	0.005	0.005	--	--	0.005
F1 (C6-C10) (max)	25	420	420	1900	420
F2 (C10-C16) (max)	100	150	170	150	150
F3 (C16-C34) (max)	500	500	--	0.000000049	500
Indeno(1,2,3-Cd)Pyrene	0.2	0.2	1.4	0.095	0.2
Mercury	0.1	0.1	7.7	30	7.7
PCB, Total	0.2	0.2	0.14	140	0.2
Pyrene	0.2	0.2	5.7	68	5.7
Silver	0.3	0.3	1.2	35000000	1.2
Tetrachloroethene	0.5	0.5	8400	100000	8400
Tin	--	--	--	--	TBD
trans-1,2-Dichloroethene	0.5	1.7	220000	1800000	220000
Trichloroethylene	0.5	0.5	220000	640000	220000
Vinyl Chloride	0.5	0.5	360000	4400000	360000

Notes:

TBD - to be determined; component values unavailable

[a] RBCs determined by comparing the lower of the estimated maximum concentration and the half solubility limit to the higher of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of th estimated maximum and half solubility limit was less than the background concentration/MDL, the RBC was set to the higher of the the background concentration/MDL.

[b] Units for electrical conductivity are mS/cm.

RBC - Risk-Based Concentration

APV - Aquatic Protection Value

GW3 - Exposure pathway to aquatic biota via groundwater discharge to surface water

MOECC - Ontario Ministry of the Environment and Climate Change

TABLE B21

Interim Target Levels for Soil in Land Greater than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil RL (µg/g)	Ontario Soil Background (µg/g)	Maximum Concentration [a] (µg/g)	Estimated Maximum Concentration [b] (µg/g)	Free Phase Threshold (µg/g)	Estimated Max > Free Phase Threshold?	S-OA	Estimated Max > S-OA?	Interim Target Level (µg/g) [c]
1,1,1,2-Tetrachloroethane	0.05	0.05	180	180	4400	No	5.1	Yes	180
1,1,1-Trichloroethane	0.05	0.05	180	180	3700	No	62000	No	180
1,1,2,2-Tetrachloroethane	0.05	0.05	180	180	6700	No	1.6	Yes	180
1,1,2-Trichloroethane	0.05	0.05	370	370	3900	No	2.9	Yes	370
1,1'-Biphenyl	0.05	0.05	1	1	2600	No	53	No	1
1,1-Dichloroethane	0.05	0.05	180	180	4800	No	30	Yes	180
1,1-Dichloroethene	0.05	0.05	44	44	3900	No	1300	No	44
1,2,4-Trichlorobenzene	0.05	0.05	2	2	3400	No	290	No	2
1,2-Dibromoethane	0.05	0.05	92	92	2000	No	0.099	Yes	92
1,2-Dichlorobenzene	0.05	0.05	180	180	3100	No	9200	No	180
1,2-Dichloroethane	0.05	0.05	180	180	5300	No	1.4	Yes	180
1,2-Dichloropropane	0.05	0.05	180	180	2100	No	3.6	Yes	180
1,3-Dichlorobenzene	0.05	0.05	180	180	3300	No	--	NA	180
1,3-Dichloropropene	0.05	0.05	92	92	5000	No	9	Yes	92
1,4-Dichlorobenzene	0.05	0.05	180	180	3000	No	18	Yes	180
1+2-Methylnaphthalenes	0.05	0.05	5100	6100	3600	Yes	3300	Yes	3600
2,4&2,6-Dinitrotoluene	0.5	0.5	1	1	3800	No	--	NA	1
2-Butanone	0.5	0.5	2800	2800	26000	No	44000	No	2800
4-Chloroaniline	0.5	0.5	2	2	6100	No	--	NA	2
4-Methyl-2-Pentanone	0.5	0.5	1800	1800	5100	No	23000	No	1800
Acenaphthene	0.05	0.05	2100	2500	2800	No	1300	Yes	2500
Acenaphthylene	0.05	0.093	280	330	2900	No	96	Yes	330
Acetone	0.5	0.5	2800	2800	92000	No	120000	No	2800
Ammonia	--	--	157	180	--	NA	--	NA	180
Anthracene	0.05	0.05	970	1100	2700	No	53000	No	1100
Antimony	1	1	33	39	8000	No	--	NA	39
Arsenic	1	11	86	100	12000	No	--	NA	100
Barium	5	210	930	1100	7700	No	--	NA	1100
Benzene	0.02	0.02	460	550	5000	No	17	Yes	550
Benzo(a)anthracene	0.05	0.095	460	550	7600	No	330	Yes	550

TABLE B21

Interim Target Levels for Soil in Land Greater than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil RL (µg/g)	Ontario Soil Background (µg/g)	Maximum Concentration [a] (µg/g)	Estimated Maximum Concentration [b] (µg/g)	Free Phase Threshold (µg/g)	Estimated Max > Free Phase Threshold?	S-OA	Estimated Max > S-OA?	Interim Target Level (µg/g) [c]
Benzo(a)pyrene	0.05	0.05	330	390	7600	No	170	Yes	390
Benzo(b&j)fluoranthene	0.05	0.3	260	310	7600	No	2000	No	310
Benzo(g,h,i)perylene	0.1	0.2	130	150	7600	No	--	NA	150
Benzo(k)fluoranthene	0.05	0.05	93	110	7600	No	2100	No	110
Bis (2-chloroethyl) ether	0.5	0.5	2	2	6400	No	--	NA	2
Bis (2-chloroisopropyl) ether	0.5	0.5	1	1	11	No	--	NA	1
Boron (hot water extractable)	0.5	0.5	7.38	8.8	5000	No	--	NA	8.8
Bromide	--	--	4.99	5.9	--	NA	--	NA	5.9
Bromodichloromethane	0.05	0.05	180	180	5500	No	1	Yes	180
Bromoform	0.05	0.05	370	370	11000	No	91	Yes	370
Bromomethane	0.05	0.05	370	370	7300	No	68	Yes	370
Cadmium	1	1	20	24	18000	No	--	NA	24
Calcium	--	--	144000	170000	--	NA	--	NA	170000
Carbon tetrachloride	0.05	0.05	180	180	3900	No	13	Yes	180
Chloride (Cl)	5	52	347	347	3000	No	--	NA	347
Chlorobenzene	0.05	0.05	92	92	3700	No	8900	No	92
Chlorodibromomethane	0.05	0.05	180	180	10000	No	700	No	180
Chloroform	0.05	0.05	180	180	6600	No	8.9	Yes	180
Chromium	5	67	714	850	11000	No	--	NA	850
Chrysene	0.05	0.18	390	460	7700	No	6600	No	460
cis-1,2-Dichloroethene	0.05	0.05	180	180	4600	No	1300	No	180
Cobalt	2	19	90.9	100	19000	No	--	NA	100
Copper	5	62	1200	1400	--	NA	--	NA	1400
Cyanide	0.05	0.051	1	1.2	240000	No	--	NA	1.2
Dibenzo(a,h)anthracene	0.1	0.1	35	42	7600	No	430	No	42
Dichloromethane	0.05	0.05	460	550	6400	No	5000	No	550
Diethylphthalate	0.5	0.5	2	2	7600	No	--	NA	2
Dimethylphthalate	0.5	0.5	2	2	1800	No	--	NA	2
Electrical Conductivity	--	0.47	5.85	7	--	NA	--	NA	7
Ethylbenzene	0.05	0.05	2700	3200	2700	Yes	17	Yes	2700

TABLE B21

Interim Target Levels for Soil in Land Greater than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil RL (µg/g)	Ontario Soil Background (µg/g)	Maximum Concentration [a] (µg/g)	Estimated Maximum Concentration [b] (µg/g)	Free Phase Threshold (µg/g)	Estimated Max > Free Phase Threshold?	S-OA	Estimated Max > S-OA?	Interim Target Level (µg/g) [c]
F1 (C6-C10)	10	17	8840	10000	1700	Yes	26000	No	1700
F2 (C10-C16)	10	10	51000	61000	2700	Yes	25000	Yes	2700
F3 (C16-C34)	50	240	48000	57000	5800	Yes	--	NA	5800
F4 (C34-C50)	50	120	44000	52000	6900	Yes	--	NA	6900
Fluoranthene	0.05	0.24	1000	1200	7600	No	2500	No	1200
Fluorene	0.05	0.05	1100	1300	2800	No	27000	No	1300
Hexachlorobenzene	0.01	0.01	2	2	9300	No	--	NA	2
Hexachlorobutadiene	0.01	0.01	1	1	8300	No	2.8	No	1
Hexachloroethane	0.01	0.01	1	1	9400	No	20	No	1
Indeno(1,2,3-Cd)Pyrene	0.1	0.11	110	130	7600	No	4000	No	130
Lead	10	45	3700	4400	24000	No	--	NA	4400
Magnesium	--	--	71599.99	85000	--	NA	--	NA	85000
Mercury	0.1	0.16	9.1	10	34000	No	36	No	10
Methyl tert-butyl ether (MTBE)	0.05	0.05	370	370	8000	No	170	Yes	370
Molybdenum	2	2	8.2	9.8	22000	No	--	NA	9.8
Naphthalene	0.05	0.05	8700	10000	2800	Yes	11	Yes	2800
n-Hexane	0.05	0.05	17.6	21	1500	No	38000	No	21
Nickel	--	--	239.99	280	--	NA	--	NA	280
PCB	0.3	0.3	0.6	0.72	5000	No	120	No	0.72
Pentachlorophenol	0.1	0.1	2	2	9200	No	--	NA	2
Perchlorate	--	--	0.98	0.98	--	NA	--	NA	0.98
Phenanthrene	0.05	0.19	3100	3700	2300	Yes	--	NA	2300
Pyrene	0.05	0.19	1400	1600	7700	No	23000	No	1600
Selenium	1	1.2	12	14	--	NA	--	NA	14
Sodium Adsorption Ratio	--	--	703940	840000	--	NA	--	NA	840000
Strontium	--	--	109	130	--	NA	--	NA	130
Styrene	0.05	0.05	180	180	3500	No	3400	No	180
Tetrachloroethene	0.05	0.05	180	180	3700	No	190	No	180
Thallium	1	1	2	2	22000	No	--	NA	2
Toluene	0.2	0.2	1900	2200	3300	No	34000	No	2200

TABLE B21

Interim Target Levels for Soil in Land Greater than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil RL (µg/g)	Ontario Soil Background (µg/g)	Maximum Concentration [a] (µg/g)	Estimated Maximum Concentration [b] (µg/g)	Free Phase Threshold (µg/g)	Estimated Max > Free Phase Threshold?	S-OA	Estimated Max > S-OA?	Interim Target Level (µg/g) [c]
trans-1,2-Dichloroethene	0.05	0.05	180	180	4600	No	700	No	180
Trichloroethylene	0.05	0.05	180	180	4100	No	12	Yes	180
Trichlorofluoromethane	0.05	0.05	18.99	18.99	4400	No	--	NA	18.99
Vanadium	10	86	89.3	100	7100	No	--	NA	100
Vinyl Chloride	0.02	0.02	55	55	6100	No	15	Yes	55
Xylenes, Total	0.05	0.05	11000	13000	2300	Yes	4900	Yes	2300
Zinc	30	290	1800	2100	15000	No	--	NA	2100
2-Chloroethyl Vinyl Ether	--	--	97	97	--	NA	--	NA	97
Chloroethane	--	--	18.99	18.99	--	NA	--	NA	18.99
Chloromethane	--	--	18.99	18.99	--	NA	--	NA	18.99
3,3`-Dichlorobenzidine	1	1	9.99	9.99	5000	No	65	No	9.99

Notes:

NA - not applicable; component value not available.

[a.] The maximum concentration is the greater of the maximum detected concentration and the maximum detection limit of each parameter.

[b.] Estimated maximum concentration is the maximum detected concentration plus 20% (according to MOECC, 2011d), or the maximum detection limit.

[c.] Interim target level determined by comparing the lower of the estimated maximum concentration and the free phase threshold to the higher value of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of the estimated maximum and free phase threshold was less than the background concentration/MDL, the interim target level was set to the higher of the background concentration/MDL.

TABLE B22

Interim Target Levels for Soil in Land Less than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil RL (µg/g)	Ontario Soil Background (µg/g)	Maximum Concentration [a] (µg/g)	Estimated Maximum Concentration [b] (µg/g)	Free Phase Threshold (µg/g)	Estimated Max > Free Phase Threshold?	S-OA	Estimated Max > S-OA?	Interim Target Level (µg/g) [c]
1,1,1,2-Tetrachloroethane	0.05	0.05	2	2.4	4400	No	5.1	No	2.4
1,1,1-Trichloroethane	0.05	0.05	8.39	10	3700	No	62000	No	10
1,1,2,2-Tetrachloroethane	0.05	0.05	9.39	11	6700	No	1.6	Yes	11
1,1,2-Trichloroethane	0.05	0.05	2	2.4	3900	No	2.9	No	2.4
1,1-Dichloroethane	0.05	0.05	3.68	4.4	4800	No	30	No	4.4
1,1-Dichloroethene	0.05	0.05	2	2.4	3900	No	1300	No	2.4
1,2-Dibromoethane	0.05	0.05	17600	21000	2000	Yes	0.099	Yes	2000
1,2-Dichlorobenzene	0.05	0.05	2	2.4	3100	No	9200	No	2.4
1,2-Dichloroethane	0.05	0.05	2	2.4	5300	No	1.4	Yes	2.4
1,2-Dichloropropane	0.05	0.05	2	2.4	2100	No	3.6	No	2.4
1,3-Dichlorobenzene	0.05	0.05	2	2.4	3300	No	--	NA	2.4
1,3-Dichloropropene	0.05	0.05	2	2.4	5000	No	9	No	2.4
1,4-Dichlorobenzene	0.05	0.05	2	2.4	3000	No	18	No	2.4
1+2-Methylnaphthalenes	0.05	0.05	57	68	3600	No	3300	No	68
2-Butanone	0.5	0.5	8550	10000	26000	No	44000	No	10000
2-Hexanone	--	--	< 0.04	0.04	--	NA	--	NA	0.04
4-Methyl-2-Pentanone	0.5	0.5	12600	15000	5100	Yes	23000	No	5100
Acenaphthene	0.05	0.05	46.99	56	2800	No	1300	No	56
Acenaphthylene	0.05	0.093	8.99	10	2900	No	96	No	10
Acetone	0.5	0.5	100	120	92000	No	120000	No	120
Anthracene	0.05	0.05	24.4	29	2700	No	53000	No	29
Antimony	1	1	669	800	8000	No	--	NA	800
Arsenic	1	11	220	260	12000	No	--	NA	260
Barium	5	210	330	390	7700	No	--	NA	390
Benzene	0.02	0.02	35900	43000	5000	Yes	17	Yes	5000
Benzo(a)anthracene	0.05	0.095	113	130	7600	No	330	No	130
Benzo(a)pyrene	0.05	0.05	86.9	100	7600	No	170	No	100
Benzo(b&j)fluoranthene	0.05	0.3	105	120	7600	No	2000	No	120
Benzo(g,h,i)perylene	0.1	0.2	33.7	40	7600	No	--	NA	40
Benzo(k)fluoranthene	0.05	0.05	37.8	45	7600	No	2100	No	45
Beryllium	2	2.5	50	60	3900	No	--	NA	60
Boron (hot water extractable)	0.5	0.5	3.23	3.8	5000	No	--	NA	3.8
Bromodichloromethane	0.05	0.05	2	2.4	5500	No	1	Yes	2.4
Bromoform	0.05	0.05	2	2.4	11000	No	91	No	2.4

TABLE B22

Interim Target Levels for Soil in Land Less than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil RL (µg/g)	Ontario Soil Background (µg/g)	Maximum Concentration [a] (µg/g)	Estimated Maximum Concentration [b] (µg/g)	Free Phase Threshold (µg/g)	Estimated Max > Free Phase Threshold?	S-OA	Estimated Max > S-OA?	Interim Target Level (µg/g) [c]
Bromomethane	0.05	0.05	3	3.6	7300	No	68	No	3.6
Cadmium	1	1	50	60	18000	No	--	NA	60
Carbon tetrachloride	0.05	0.05	2	2.4	3900	No	13	No	2.4
Chlorobenzene	0.05	0.05	2	2.4	3700	No	8900	No	2.4
Chlorodibromomethane	0.05	0.05	81599.99	97000	10000	Yes	700	Yes	10000
Chloroethane	--	--	< 0.19	0.19	--	NA	--	NA	0.19
Chloroform	0.05	0.05	2	2.4	6600	No	8.9	No	2.4
Chromium, Hexavalent (Cr6+)	0.2	0.66	6	7.2	--	NA	--	NA	7.2
Chrysene	0.05	0.18	103	120	7700	No	6600	No	120
cis-1,2-Dichloroethene	0.05	0.05	2.9	3.4	4600	No	1300	No	3.4
Cobalt	2	19	71	85	19000	No	--	NA	85
Copper	5	62	420	500	--	NA	--	NA	500
Cyanide	0.05	0.051	< 0.09	0.09	240000	Yes	--	NA	0.09
Dibenzo(a,h)anthracene	0.1	0.1	13.8	16	7600	No	430	No	16
Dichloromethane	0.05	0.05	12800	15000	6400	Yes	5000	Yes	6400
Electrical Conductivity	--	0.47	2.8	3.3	--	NA	--	NA	3.3
Ethylbenzene	0.05	0.05	16799.99	20000	2700	Yes	17	Yes	2700
F1 (C6-C10)	10	17	830	990	1700	No	26000	No	990
F2 (C10-C16)	10	10	4200	5000	2700	Yes	25000	No	2700
F3 (C16-C34)	50	240	6700	8000	5800	Yes	--	NA	5800
F4 (C34-C50)	50	120	2300	2700	6900	No	--	NA	2700
Fluoranthene	0.05	0.24	205	240	7600	No	2500	No	240
Fluorene	0.05	0.05	< 9.99	9.99	2800	Yes	27000	No	9.99
Indeno(1,2,3-Cd)Pyrene	0.1	0.11	43.4	52	7600	No	4000	No	52
Lead	10	45	1200	1400	24000	No	--	NA	1400
Mercury	0.1	0.16	0.93	1.1	34000	No	36	No	1.1
Methyl tert-butyl ether (MTBE)	0.05	0.05	13000	15000	8000	Yes	170	Yes	8000
Molybdenum	2	2	250	300	22000	No	--	NA	300
Naphthalene	0.05	0.05	59.99	71	2800	No	11	Yes	71
n-Hexane	0.05	0.05	0.83	0.99	1500	No	38000	No	0.99
PCB, Total	0.3	0.3	< 9.99	9.99	5000	Yes	120	No	9.99
Phenanthrene	0.05	0.19	83	99	2300	No	--	NA	99
Pyrene	0.05	0.19	171	200	7700	No	23000	No	200
Selenium	1	1.2	< 270	300	--	NA	--	NA	300

TABLE B22

Interim Target Levels for Soil in Land Less than 30 m from Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC Soil RL (µg/g)	Ontario Soil Background (µg/g)	Maximum Concentration [a] (µg/g)	Estimated Maximum Concentration [b] (µg/g)	Free Phase Threshold (µg/g)	Estimated Max > Free Phase Threshold?	S-OA	Estimated Max > S-OA?	Interim Target Level (µg/g) [c]
Silver	0.5	0.5	39.99	47	22000	No	--	NA	47
Sodium Adsorption Ratio	--	--	42	50	--	NA	--	NA	50
Styrene	0.05	0.05	13500	16000	3500	Yes	3400	Yes	3500
Tetrachloroethene	0.05	0.05	13300	15000	3700	Yes	190	Yes	3700
Toluene	0.2	0.2	71500	85000	3300	Yes	34000	Yes	3300
trans-1,2-Dichloroethene	0.05	0.05	60099.99	72000	4600	Yes	700	Yes	4600
Trichloroethylene	0.05	0.05	13300	15000	4100	Yes	12	Yes	4100
Trichlorofluoromethane	0.05	0.05	12500	15000	4400	Yes	--	NA	4400
Vinyl Chloride	0.02	0.02	8540	10000	6100	Yes	15	Yes	6100
Xylenes, Total	0.05	0.05	116000	130000	2300	Yes	4900	Yes	2300
Zinc	30	290	480	570	15000	No	--	NA	570

Notes:

NA - not applicable; component value not available.

[a.] The maximum concentration is the greater of the maximum detected concentration and the maximum detection limit of each parameter.

[b.] Estimated maximum concentration is the maximum detected concentration plus 20% (according to MOECC, 2011d), or the maximum detection limit.

[c.] Interim target level determined by comparing the lower of the estimated maximum concentration and the free phase threshold to the higher value of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of the estimated maximum and free phase threshold was less than the background concentration/MDL, the interim target level was set to the higher of the background concentration/MDL.

TABLE B23

Interim Target Levels for Groundwater in Land Greater than 30 m From Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC GW RL (µg/L)	Ontario Groundwater Background (µg/L)	Maximum Concentration [a] (µg/L)	Estimated Maximum Concentration [b] (µg/L)	Half Solubility (µg/L)	Estimated Max > Half Solubility?	Interim Target Level [c] (µg/L)
1,1,1,2-Tetrachloroethane	0.5	1.1	< 440	440	540000	No	over
1,1,2,2-Tetrachloroethane	0.5	0.5	< 870	870	1400000	No	870
1,1,2-Trichloroethane	0.5	0.5	< 440	440	550000	No	440
1,1-Dichloroethane	0.5	0.5	< 349.99	349.99	2500000	No	349.99
1,1-Dichloroethene	t	0.5	< 440	440	1200000	No	440
1,2-Dibromoethane	0.2	0.2	< 440	440	2000000	No	440
1,2-Dichloroethane	0.5	0.5	< 440	440	2600000	No	440
1,2-Dichloropropane	0.5	0.5	< 440	440	1400000	No	440
1,3-Dichloropropene	0.5	0.5	< 120	120	1400000	No	120
1,4-Dichlorobenzene	0.5	0.5	< 440	440	41000	No	440
1+2-Methylnaphthalenes	2	2	2610	3100	12000	No	3100
2-Hexanone	--	--	< 3	3	--	No	3
Acenaphthene	1	4.1	823	980	2000	No	980
Acenaphthylene	1	1	< 300	300	8100	No	300
Anthracene	0.1	0.1	377	450	22	Yes	450
Barium	2	610	42300	50000	27000000	No	50000
Benzene	0.5	0.5	< 4700	4700	900000	No	4700
Benzo(a)anthracene	0.2	0.2	319.99	380	4.7	Yes	380
Benzo(a)pyrene	0.01	0.01	209.99	250	0.81	Yes	250
Benzo(b&j)fluoranthene	0.1	0.1	259.99	310	0.75	Yes	310
Benzo(g,h,i)perylene	0.2	0.2	< 190	190	0.13	Yes	190
Benzo(k)fluoranthene	0.1	0.1	100	120	0.4	Yes	120
Bromomethane	0.5	0.89	< 2599.99	2599.99	7600000	No	2599.99
Carbon tetrachloride	0.2	0.2	< 440	440	400000	No	440
Chloride (Cl)	1000	790000	14000000	16000000	21000000	No	16000000
Chloroethane	--	--	5.9	7	--	No	7
Chloroform	1	2	< 170	170	4000000	No	170
Chloromethane	--	--	< 4	4	--	No	4
Chrysene	0.1	0.1	280	330	1	Yes	330
cis-1,2-Dichloroethene	0.5	1.7	9699.99	11000	1800000	No	11000
Copper	5	5	138	160	210000000	No	160
Cyanide	5	5	180	210	500000000	No	210
Dibenzo(a,h)anthracene	0.2	0.2	< 90	90	0.52	Yes	90

TABLE B23

Interim Target Levels for Groundwater in Land Greater than 30 m From Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC GW RL (µg/L)	Ontario Groundwater Background (µg/L)	Maximum Concentration [a] (µg/L)	Estimated Maximum Concentration [b] (µg/L)	Half Solubility (µg/L)	Estimated Max > Half Solubility?	Interim Target Level [c] (µg/L)
Dichloromethane	5	5	< 870	870	6500000	No	870
Electrical Conductivity [d]	0.005	0.005	36	43	--	No	43
Ethylbenzene	0.5	0.5	9520	11000	85000	No	11000
F1 (C6-C10)	25	420	103000	120000	1900	Yes	120000
F2 (C10-C16)	100	150	76000	91000	150	Yes	91000
F3 (C16-C34)	500	500	120000	140000	0.000000049	Yes	140000
F4 (C34-C50)	500	500	6200	7400	3.9E-12	Yes	7400
Fluoranthene	0.4	0.4	248	290	130	Yes	290
Indeno(1,2,3-Cd)Pyrene	0.2	0.2	< 190	190	0.095	Yes	190
Lead	1	1.9	1140	1300	4800000	No	1300
Mercury	0.1	0.1	17.1	20	30	No	20
Methyl tert-butyl ether (MTBE)	2	15	< 1700	1700	26000000	No	1700
Naphthalene	2	7	4310	5100	16000	No	5100
Nitrate (as N)	--	--	128000	150000	--	No	150000
Nitrate-Nitrite (as N)	--	--	128000	150000	--	No	150000
Phenanthrene	0.1	0.1	1300	1500	580	Yes	1500
Pyrene	0.2	0.2	720	860	68	Yes	860
Silver	0.3	0.3	< 5	5	35000000	No	5
Sodium	5000	490000	7330000	8700000	220000000	No	8700000
Tetrachloroethene	0.5	0.5	< 440	440	100000	No	440
Toluene	0.5	0.8	46299.99	55000	260000	No	55000
trans-1,2-Dichloroethene	0.5	1.7	< 870	870	1800000	No	870
Trichloroethylene	0.5	0.5	< 440	440	640000	No	440
Vinyl Chloride	0.5	0.5	870	1000	4400000	No	1000
Xylenes, Total	0.5	72	37000	44000	53000	No	44000

Notes:

NA - not applicable; component value not available.

[a.] The maximum concentration is the greater of the maximum detected concentration and the maximum detection limit of each parameter.

[b.] Estimated maximum concentration is the maximum detected concentration plus 20% (according to MOECC, 2011d), or the maximum detection limit.

[c.] Interim target level determined by comparing the lower of the estimated maximum concentration and the half solubility limit to the higher value of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of the estimated maximum and half solubility limit was less than the background concentration/MDL, the interim target level was set to the higher of the background concentration/MDL.

[d] Units for electrical conductivity are mS/cm.

TABLE B24

Interim Target Levels for Groundwater in Land Less than 30 m From Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC GW RL (µg/L)	Ontario Groundwater Background (µg/L)	Maximum Concentration [a] (µg/L)	Estimated Maximum Concentration [b] (µg/L)	Half Solubility (µg/L)	Estimated Max > Half Solubility?	Interim Target Level [c] (µg/L)
1,1,1,2-Tetrachloroethane	0.5	1.1	5	6	540000	No	6
1,1,2,2-Tetrachloroethane	0.5	0.5	10	12	1400000	No	12
1,1,2-Trichloroethane	0.5	0.5	10	12	550000	No	12
1,1-Dichloroethene	0.5	0.5	5	6	1200000	No	6
1,2-Dibromoethane	t	0.2	10	12	2000000	No	12
1,2-Dichloroethane	0.5	0.5	10	12	2600000	No	12
1,3-Dichloropropene (max)	--	--	10	12	--	NA	12
1,4-Dichlorobenzene	0.5	0.5	10	12	41000	No	12
2-Hexanone	--	--	< 0.09	0.09	--	NA	0.09
Acenaphthylene	1	1	4	4.8	8100	No	4.8
Anthracene	0.1	0.1	7.1	8.5	22	No	8.5
Benzene	0.5	0.5	420	500	900000	No	500
Benzo(a)anthracene	0.2	0.2	24	28	4.7	Yes	28
Benzo(a)pyrene	0.01	0.01	28	33	0.81	Yes	33
Benzo(b&j)fluoranthene	0.1	0.1	16	19	0.75	Yes	19
Benzo(g,h,i)perylene	0.2	0.2	16	19	0.13	Yes	19
Benzo(k)fluoranthene	0.1	0.1	6	7.2	0.4	Yes	7.2
Bismuth	--	--	11	13	--	NA	13
Bromomethane	0.5	0.89	25	30	7600000	No	30
Cadmium	0.5	0.5	23	27	62000000	No	27
Carbon tetrachloride	0.2	0.2	27	32	400000	No	32
Chloride (Cl)	1000	790000	2500000	3000000	21000000	No	3000000
Chloroethane	--	--	21	25	--	NA	25
Chloroform	1	2	5	6	4000000	No	6
Chloromethane	--	--	< 0.5	0.5	--	NA	0.5
Chrysene	0.1	0.1	3.2	3.8	1	Yes	3.8
cis-1,2-Dichloroethene	0.5	1.7	40	48	1800000	No	48
Cobalt	1	3.8	60	72	44000000	No	72
Dibenzo(a,h)anthracene	0.2	0.2	1.88	2.2	0.52	Yes	2.2
Electrical Conductivity [d]	0.005	0.005	6.23	7.4	--	NA	7.4

TABLE B24

Interim Target Levels for Groundwater in Land Less than 30 m From Lake Ontario/Don River

Port Lands, Toronto, Ontario

Parameter	MOECC GW RL (µg/L)	Ontario Groundwater Background (µg/L)	Maximum Concentration [a] (µg/L)	Estimated Maximum Concentration [b] (µg/L)	Half Solubility (µg/L)	Estimated Max > Half Solubility?	Interim Target Level [c] (µg/L)
F1 (C6-C10) (max)	25	420	3200	3800	1900	Yes	3800
F2 (C10-C16) (max)	100	150	14000	16000	150	Yes	16000
F3 (C16-C34) (max)	500	500	2600	3100	0.000000049	Yes	3100
Indeno(1,2,3-Cd)Pyrene	500	500	2.7	3.2	3.9E-12	Yes	500
Mercury	0.1	0.1	1.5	1.8	30	No	1.8
PCB, Total	0.2	0.2	142	170	140	Yes	170
Pyrene	0.2	0.2	11	13	68	No	13
Silver	0.3	0.3	4	4.8	35000000	No	4.8
Tetrachloroethene	0.5	0.5	107	120	100000	No	120
Tin	--	--	40.1	48	--	NA	48
trans-1,2-Dichloroethene	0.5	1.7	321	380	1800000	No	380
Trichloroethylene	0.5	0.5	100	120	640000	No	120
Vinyl Chloride	0.5	0.5	39	46	4400000	No	46

Notes:

NA - not applicable; component value not available.

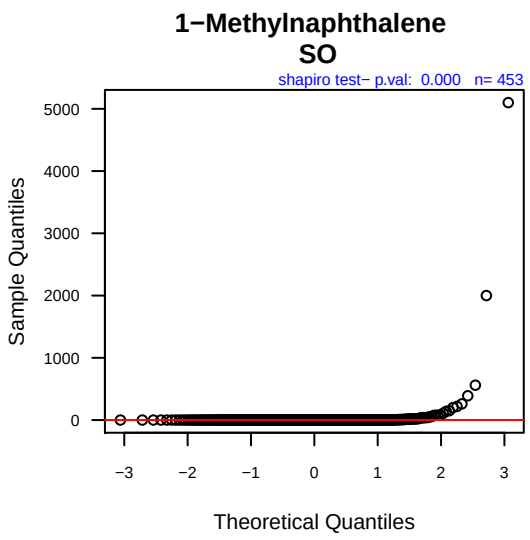
[a.] The maximum concentration is the greater of the maximum detected concentration and the maximum detection limit of each parameter.

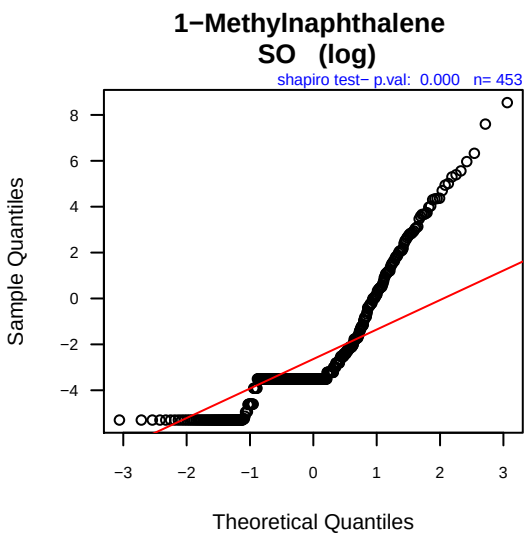
[b.] Estimated maximum concentration is the maximum detected concentration plus 20% (according to MOECC, 2011d), or the maximum detection limit.

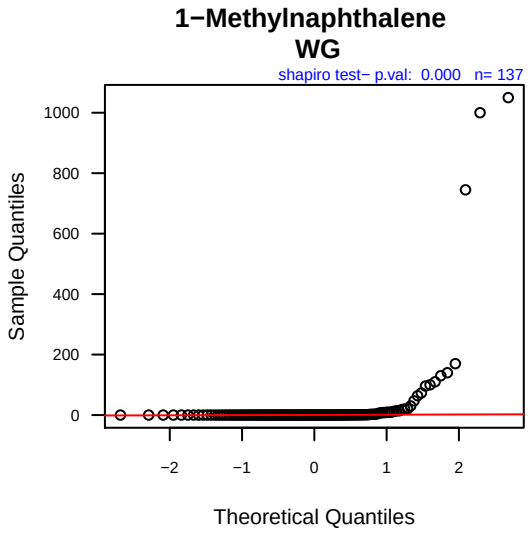
[c.] Interim target level determined by comparing the lower of the estimated maximum concentration and the half solubility limit to the higher value of the background concentrations and maximum detection limits (MDLs) as included in the MGRA Tier 2 model (MOECC, 2011d). If the lower of the estimated maximum and half solubility limit was less than the background concentration/MDL, the interim target level was set to the higher of the background concentration/MDL.

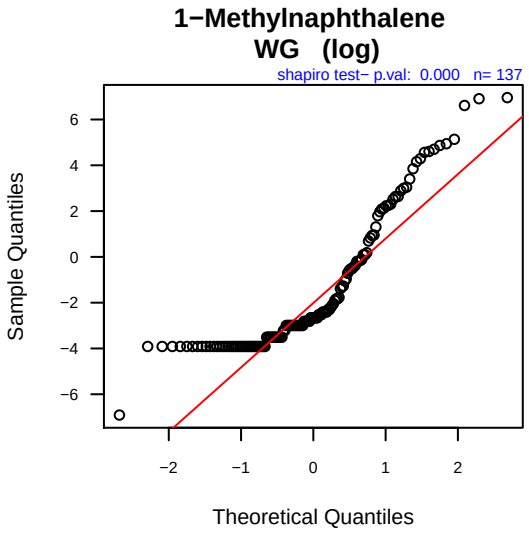
[d] Units for electrical conductivity are mS/cm.

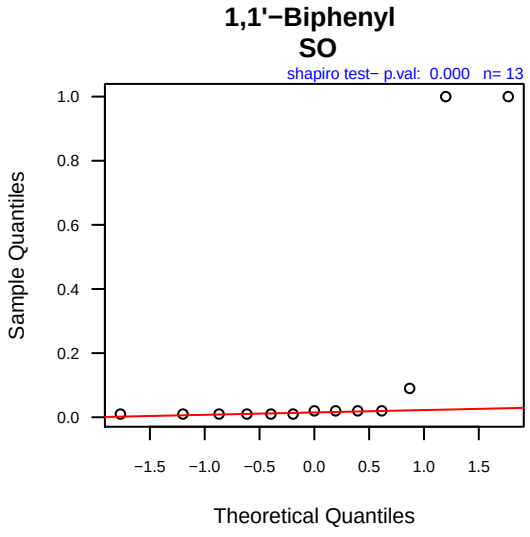
Appendix B1
Statistical Plots

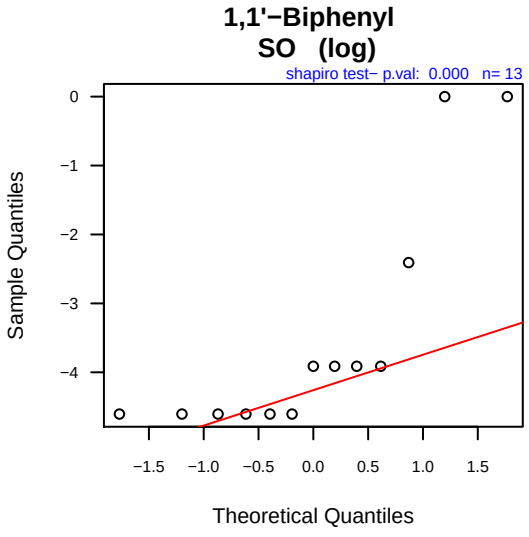

1−Methylnaphthalene
SO
shapiro test− p.val: 0.000 n= 453
Sample Quantiles
Theoretical Quantiles

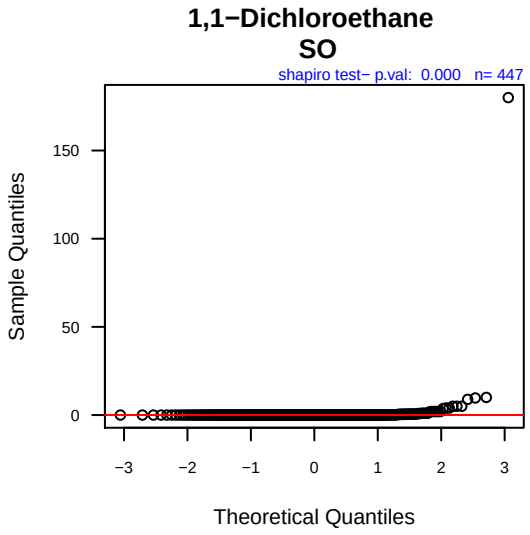

1−Methylnaphthalene
SO (log)
shapiro test− p.val: 0.000 n= 453
Sample Quantiles
Theoretical Quantiles

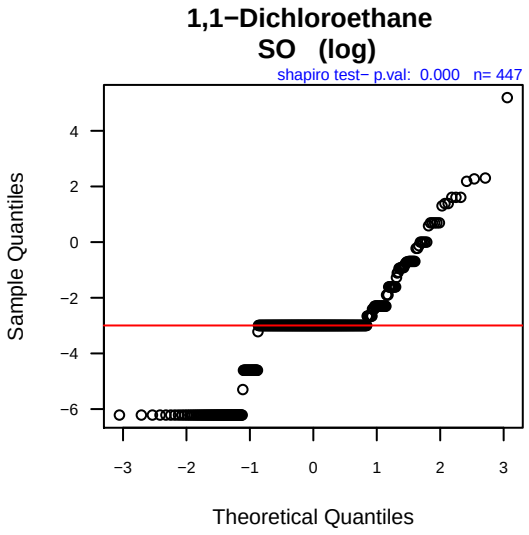

1−Methylnaphthalene
WG
shapiro test− p.val: 0.000 n= 137
Sample Quantiles
Theoretical Quantiles

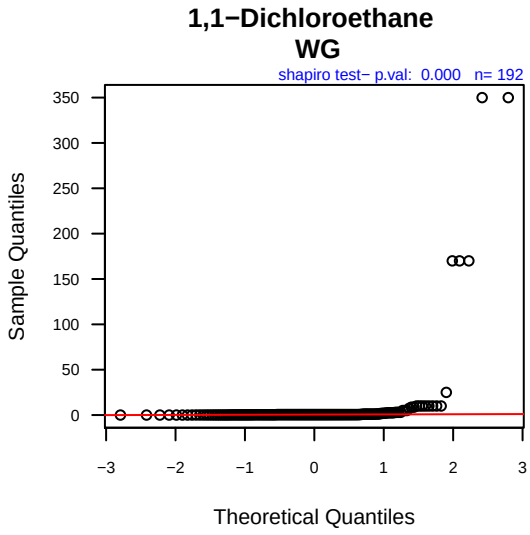

1−Methylnaphthalene
WG (log)
shapiro test− p.val: 0.000 n= 137
Sample Quantiles
Theoretical Quantiles

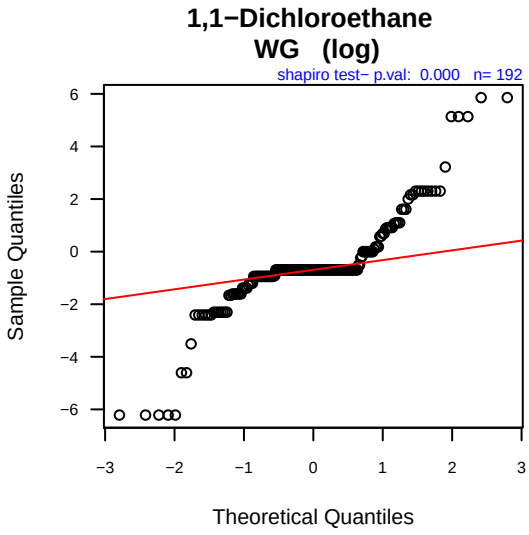

1,1'−Biphenyl
SO
shapiro test− p.val: 0.000 n= 13
Sample Quantiles
Theoretical Quantiles

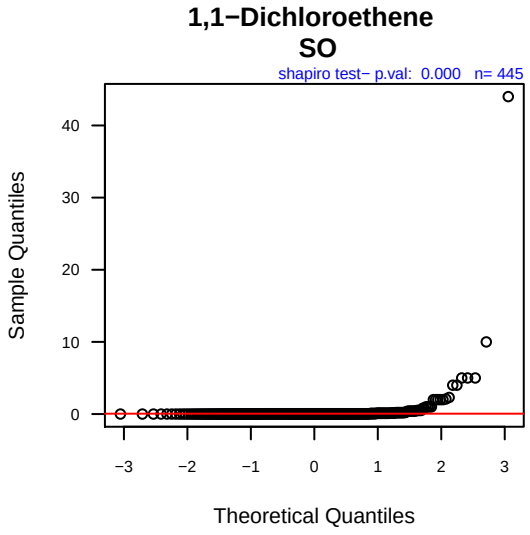

1,1'−Biphenyl
SO (log)
shapiro test− p.val: 0.000 n= 13
Sample Quantiles
Theoretical Quantiles

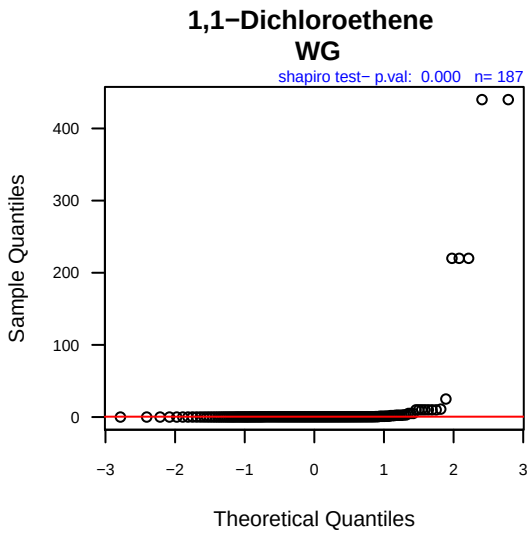

1,1−Dichloroethane
SO
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles


1,1−Dichloroethane
SO (log)
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles


1,1−Dichloroethane
WG
shapiro test− p.val: 0.000 n= 192
Sample Quantiles
Theoretical Quantiles


1,1−Dichloroethane
WG (log)
shapiro test− p.val: 0.000 n= 192
Sample Quantiles
Theoretical Quantiles


1,1−Dichloroethene
SO
shapiro test− p.val: 0.000 n= 445
Sample Quantiles
Theoretical Quantiles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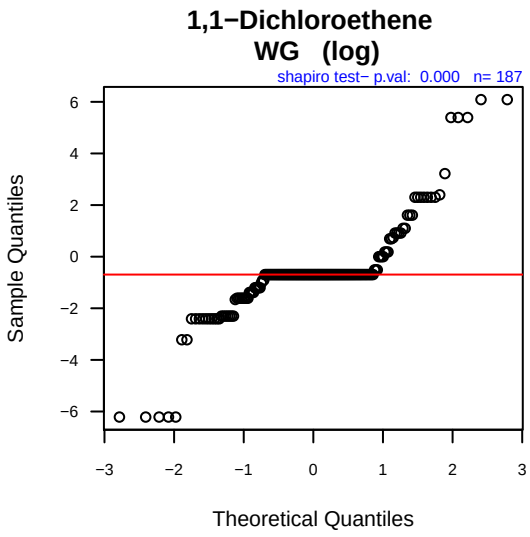
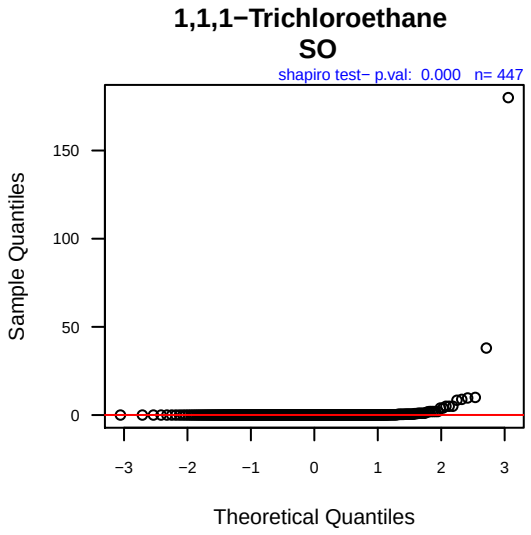
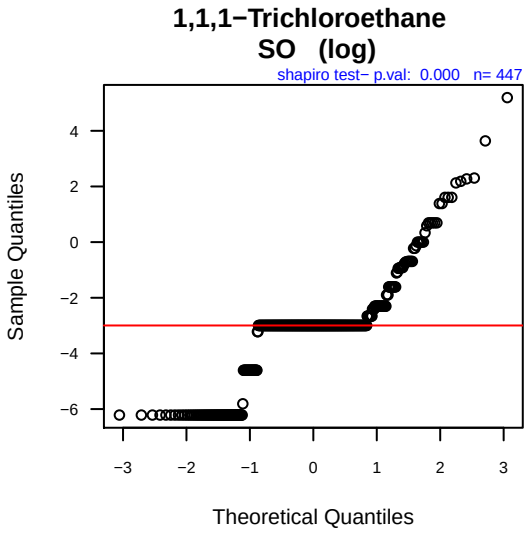
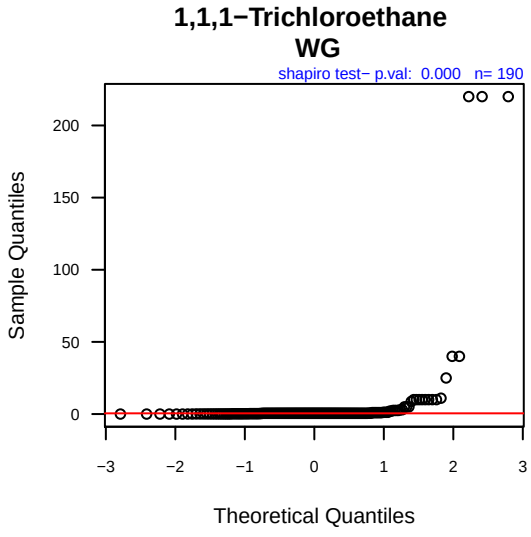
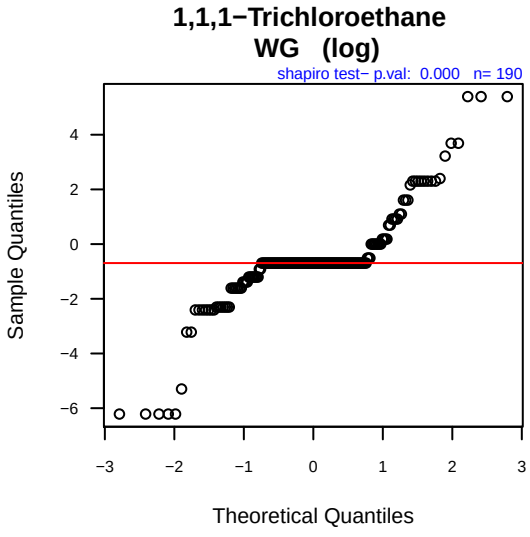
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

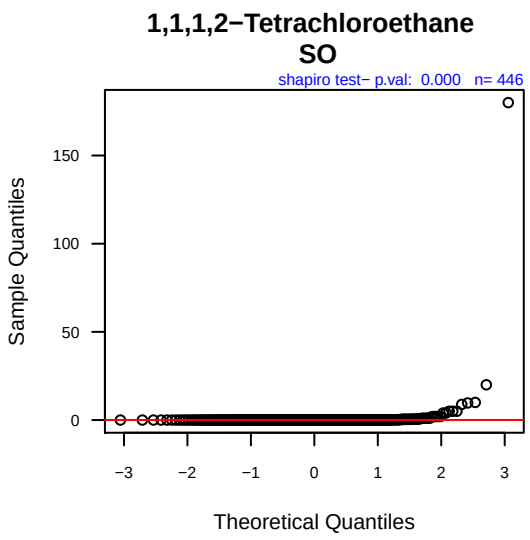

1,1−Dichloroethene
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

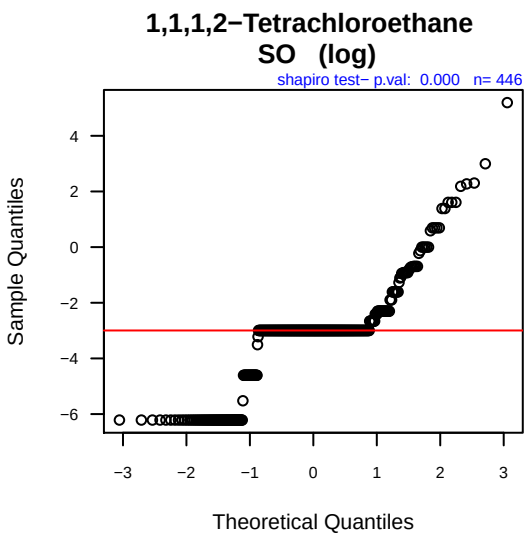

1,1,1−Trichloroethane
SO
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles

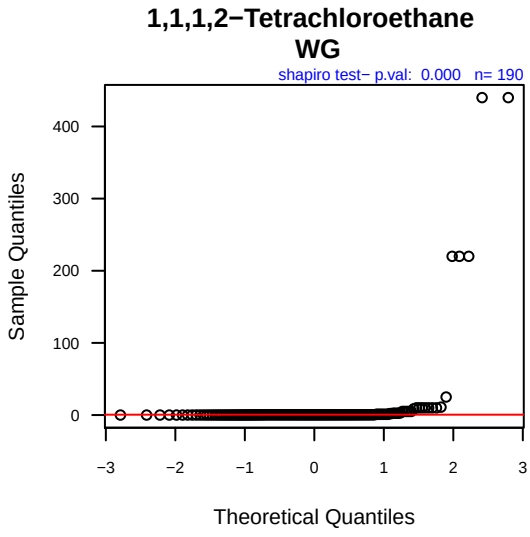

1,1,1−Trichloroethane
SO (log)
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles

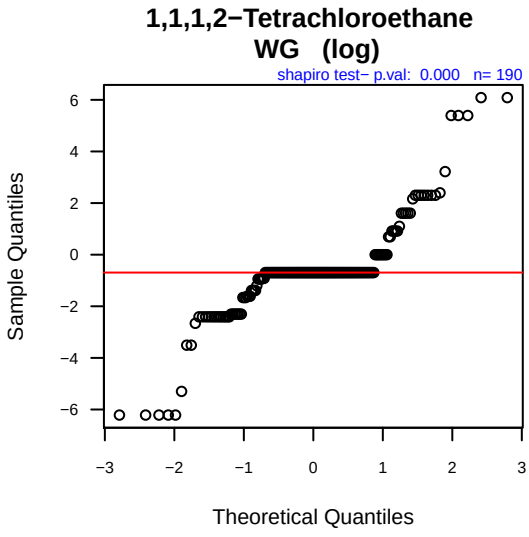

1,1,1−Trichloroethane
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

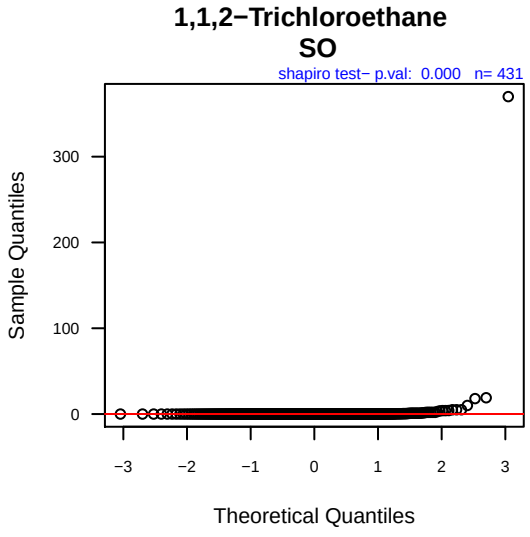

1,1,1−Trichloroethane
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

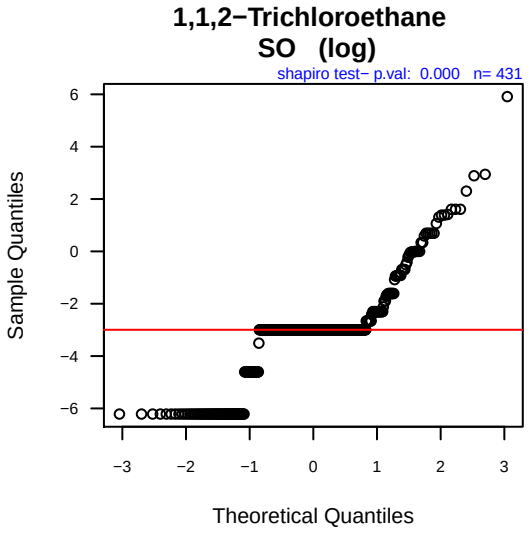

1,1,1,2−Tetrachloroethane
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

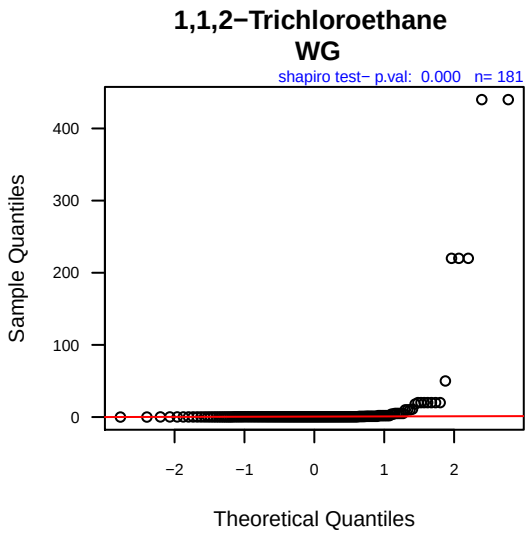

1,1,1,2−Tetrachloroethane
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

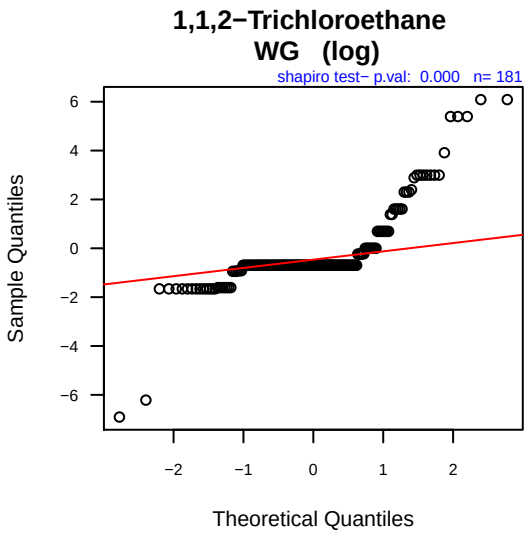

1,1,1,2−Tetrachloroethane
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

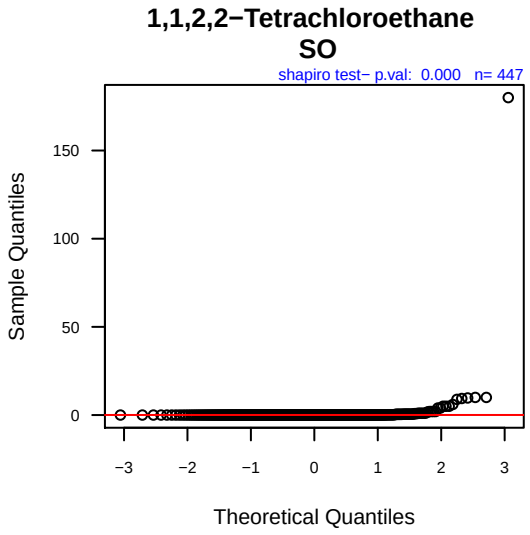

1,1,1,2−Tetrachloroethane
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

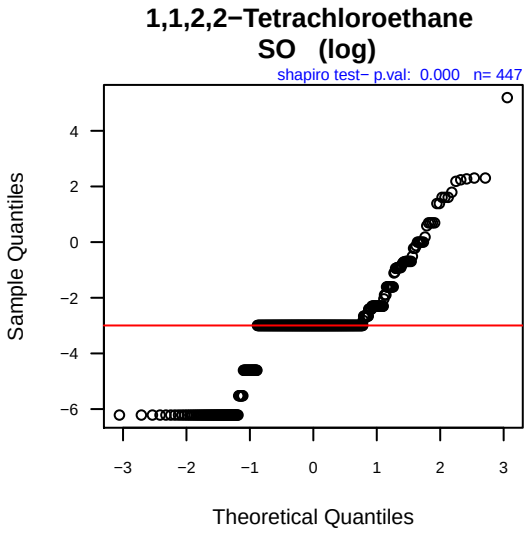

1,1,2−Trichloroethane
SO
shapiro test− p.val: 0.000 n= 431
Sample Quantiles
Theoretical Quantiles

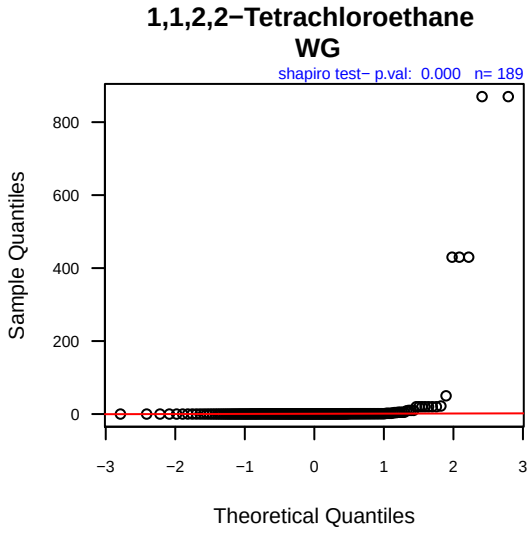

1,1,2−Trichloroethane
SO (log)
shapiro test− p.val: 0.000 n= 431
Sample Quantiles
Theoretical Quantiles

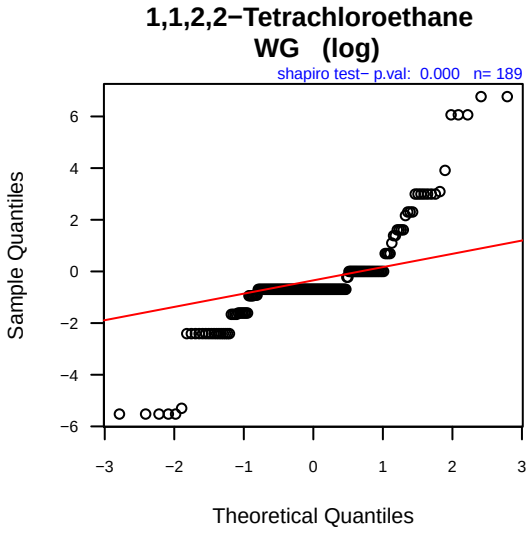

1,1,2−Trichloroethane
WG
shapiro test− p.val: 0.000 n= 181
Sample Quantiles
Theoretical Quantiles

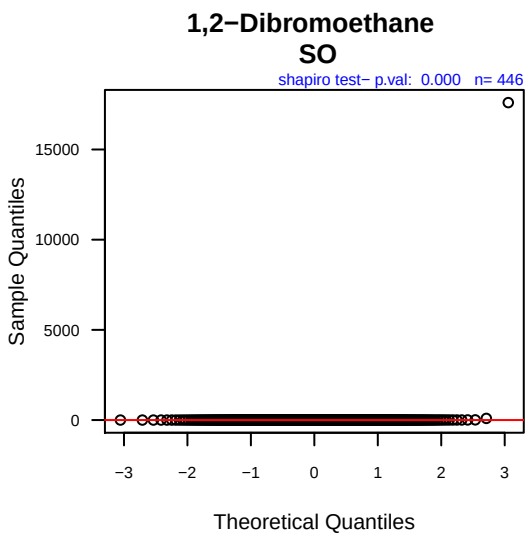

1,1,2−Trichloroethane
WG (log)
shapiro test− p.val: 0.000 n= 181
Sample Quantiles
Theoretical Quantiles

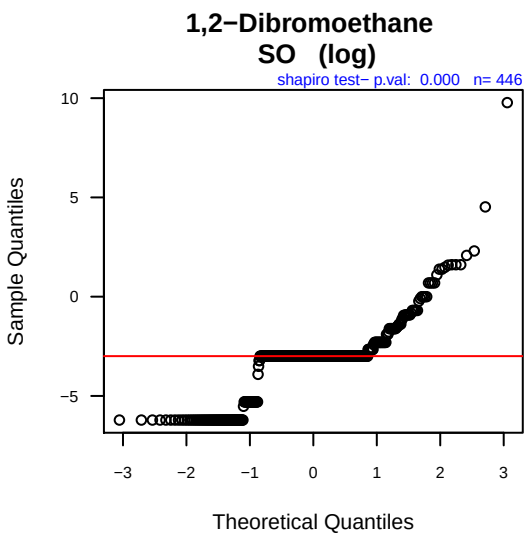

1,1,2,2−Tetrachloroethane
SO
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles

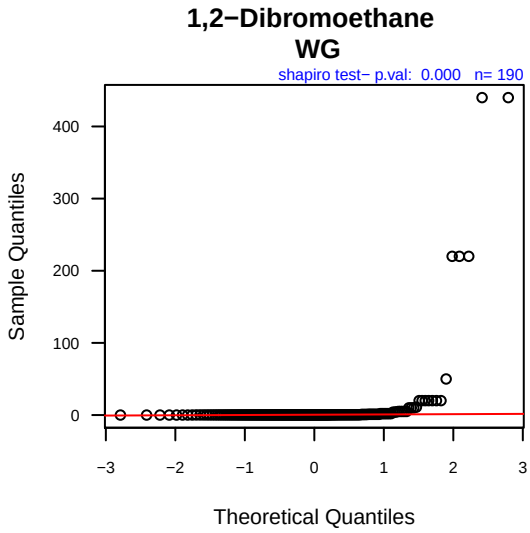

1,1,2,2−Tetrachloroethane
SO (log)
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles

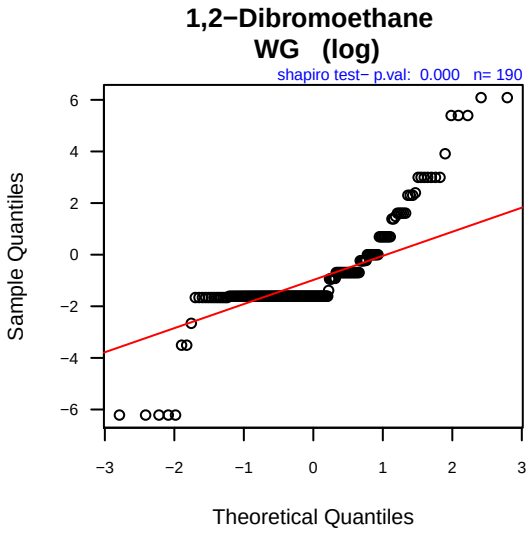

1,1,2,2−Tetrachloroethane
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

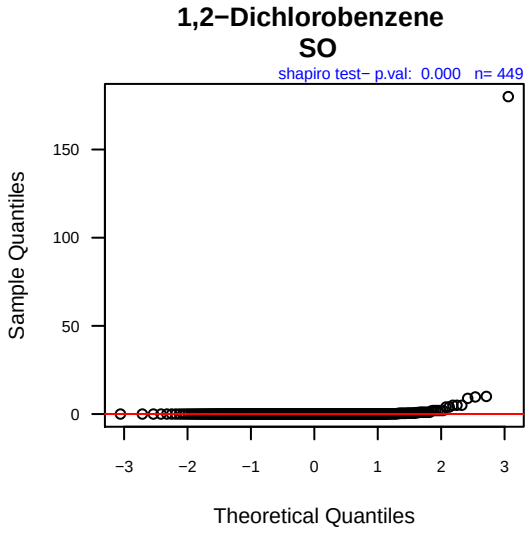

1,1,2,2−Tetrachloroethane
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

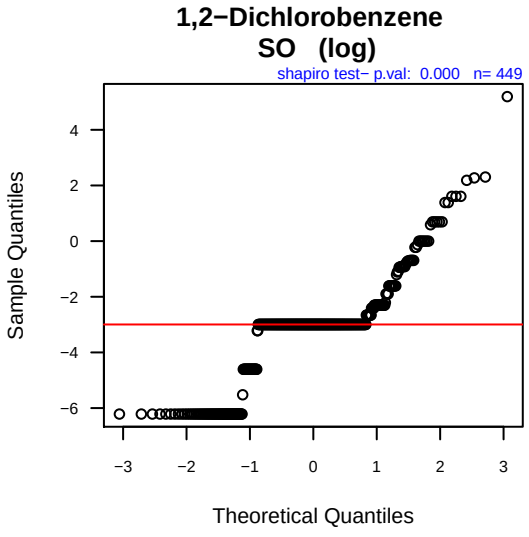

1,2−Dibromoethane
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

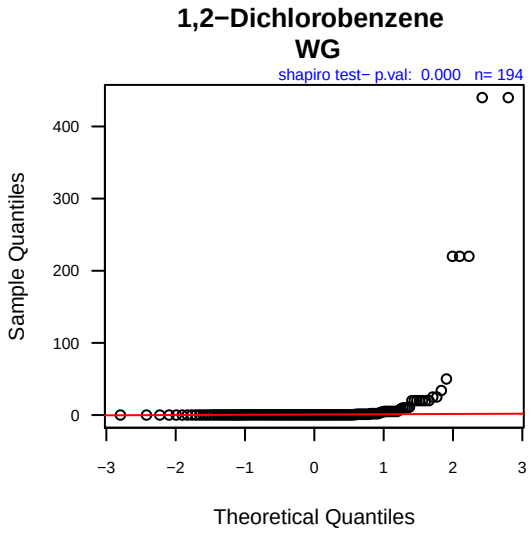

1,2−Dibromoethane
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

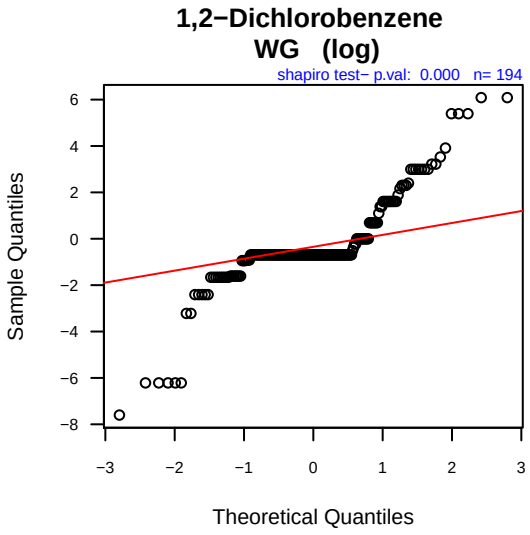

1,2−Dibromoethane
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

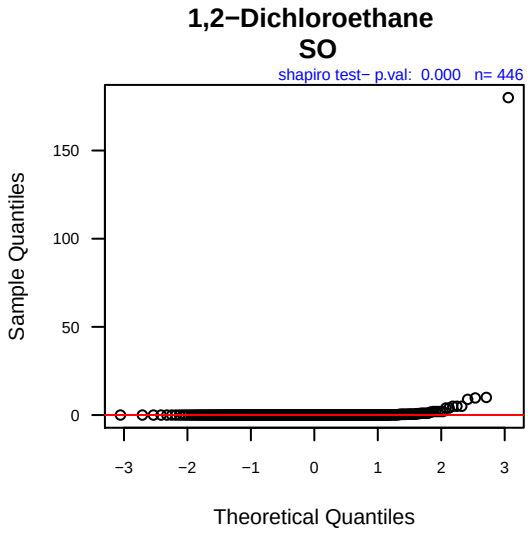

1,2−Dibromoethane
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

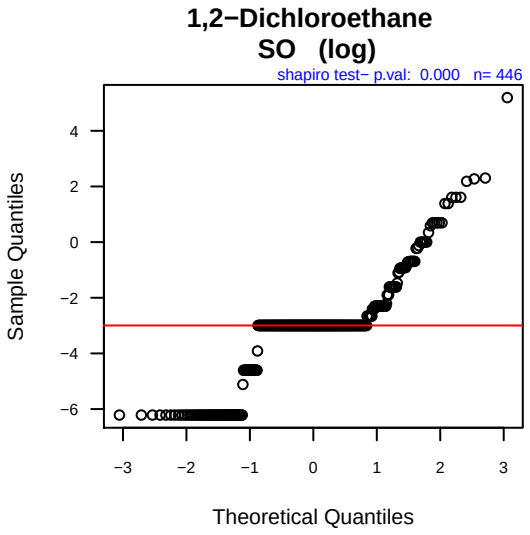

1,2−Dichlorobenzene
SO
shapiro test− p.val: 0.000 n= 449
Sample Quantiles
Theoretical Quantiles

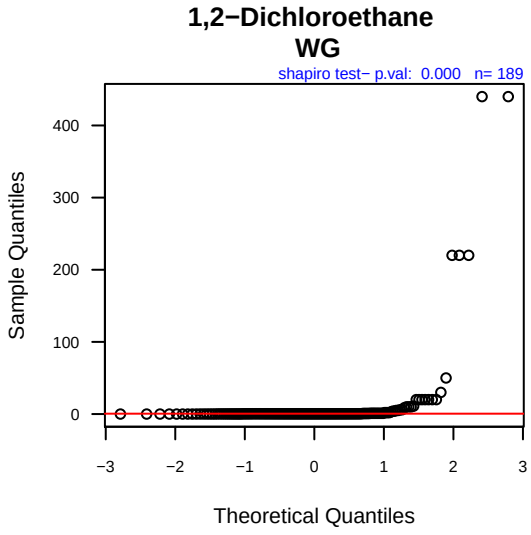

1,2−Dichlorobenzene
SO (log)
shapiro test− p.val: 0.000 n= 449
Sample Quantiles
Theoretical Quantiles

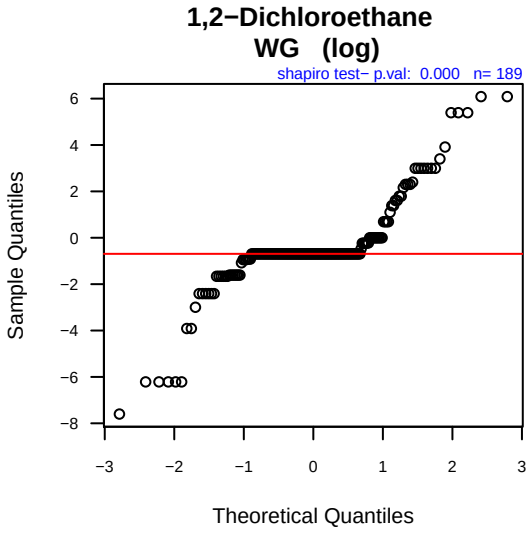

1,2−Dichlorobenzene
WG
shapiro test− p.val: 0.000 n= 194
Sample Quantiles
Theoretical Quantiles

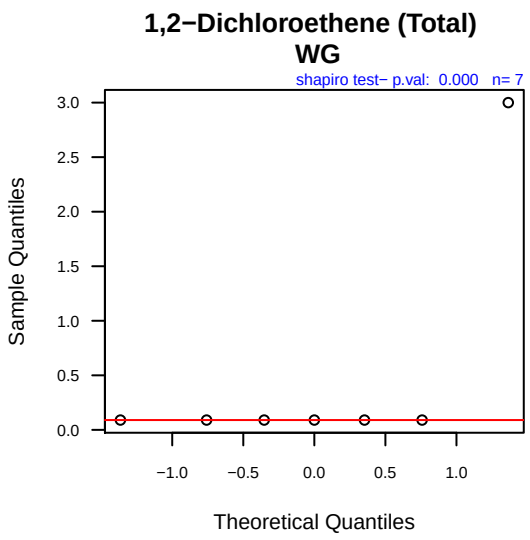

1,2−Dichlorobenzene
WG (log)
shapiro test− p.val: 0.000 n= 194
Sample Quantiles
Theoretical Quantiles

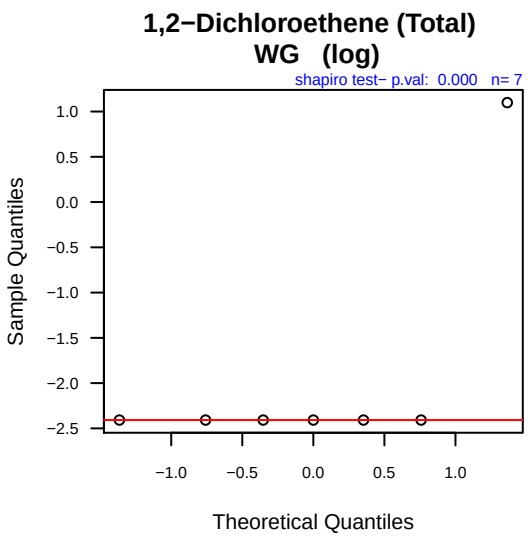

1,2−Dichloroethane
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

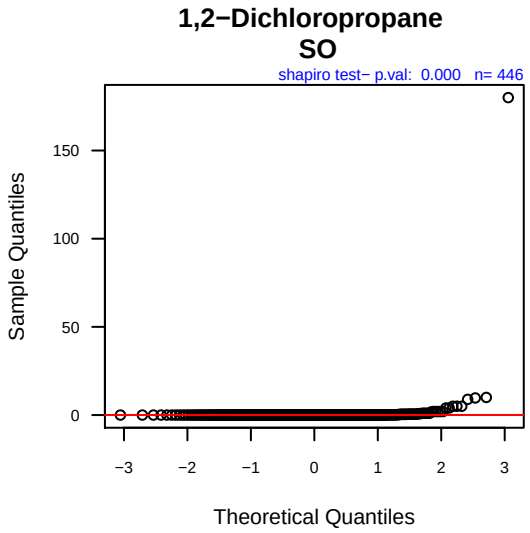

1,2−Dichloroethane
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

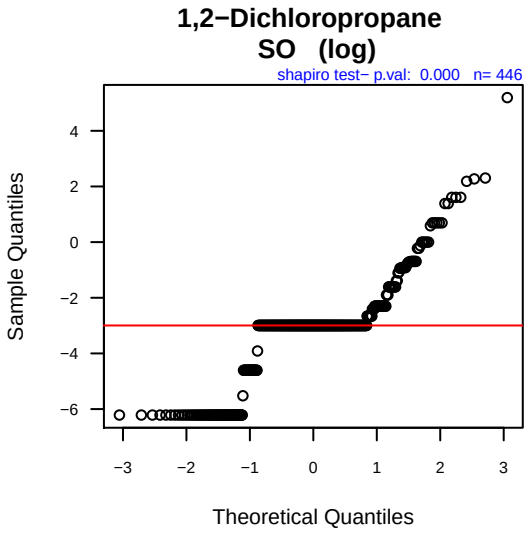

1,2−Dichloroethane
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

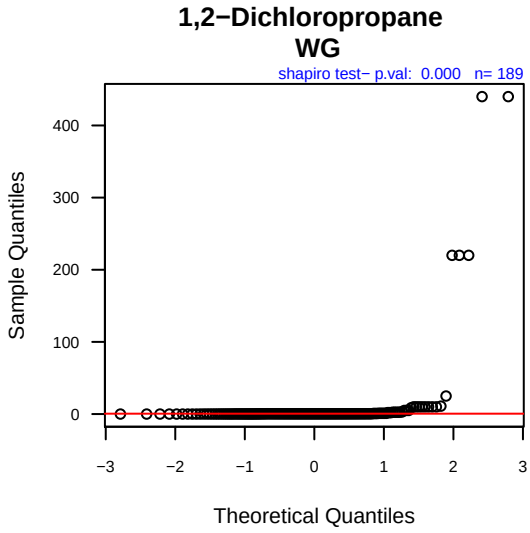

1,2−Dichloroethane
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

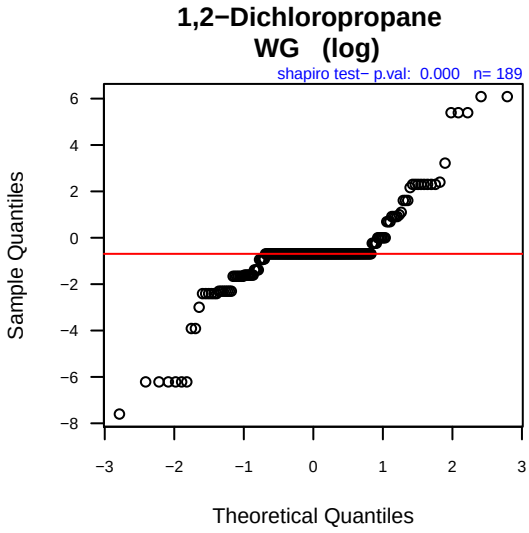

1,2−Dichloroethene (Total)
WG
shapiro test− p.val: 0.000 n= 7
Sample Quantiles
Theoretical Quantiles

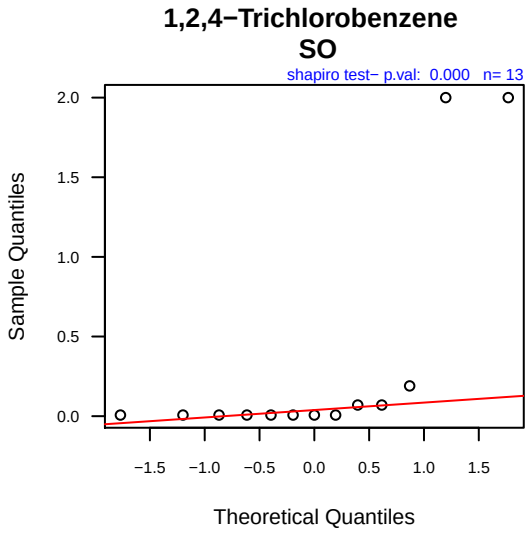

1,2−Dichloroethene (Total)
WG (log)
shapiro test− p.val: 0.000 n= 7
Sample Quantiles
Theoretical Quantiles

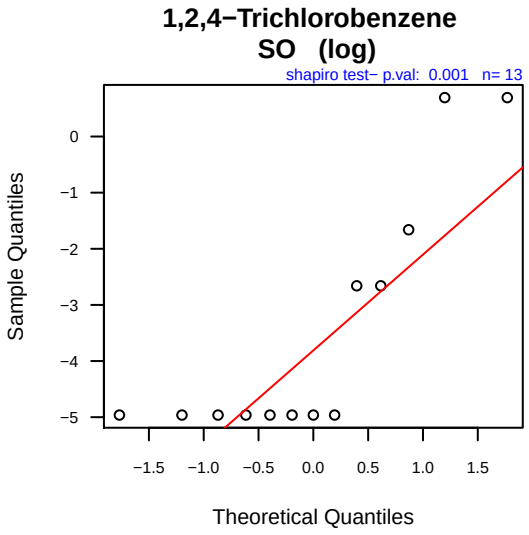

1,2−Dichloropropane
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

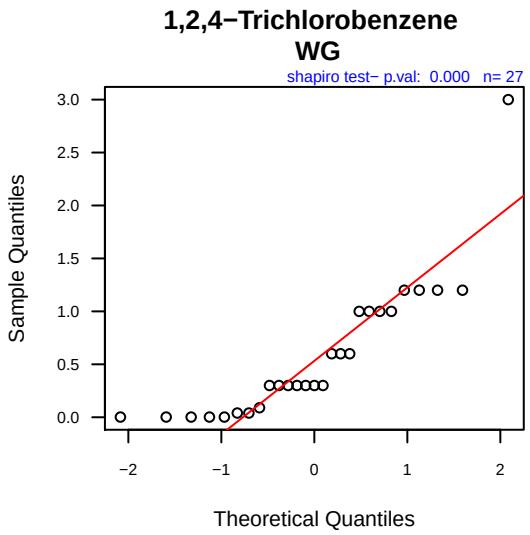

1,2−Dichloropropane
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

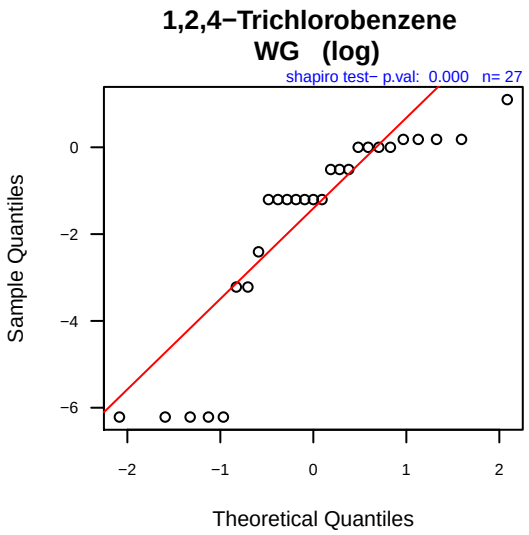

1,2−Dichloropropane
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

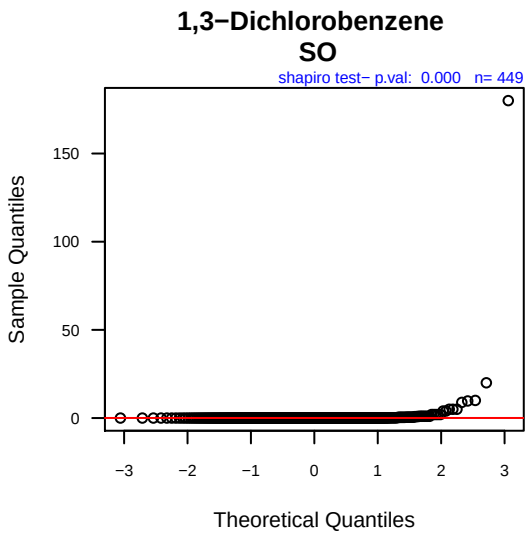

1,2−Dichloropropane
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

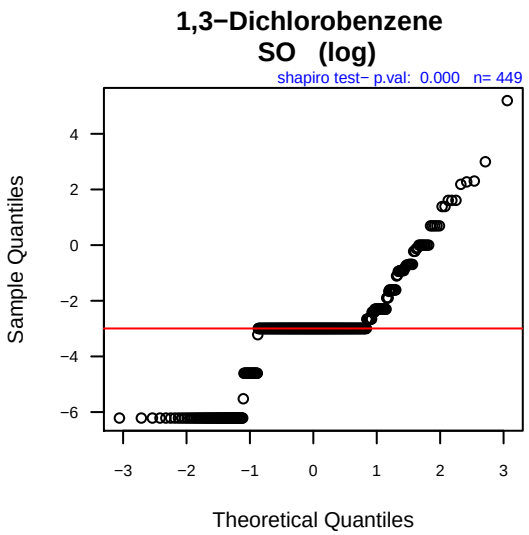

1,2,4−Trichlorobenzene
SO
shapiro test− p.val: 0.000 n= 13
Sample Quantiles
Theoretical Quantiles

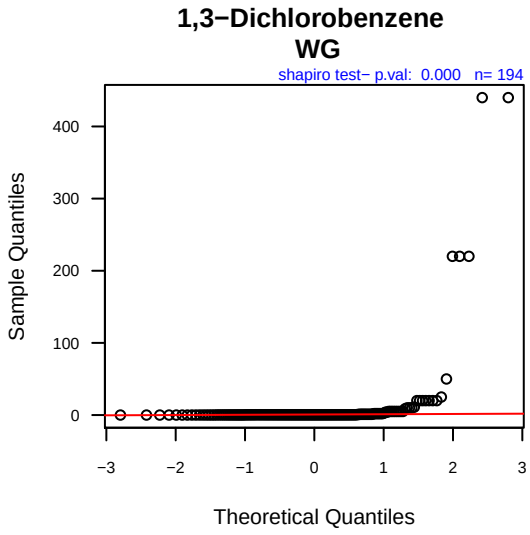

1,2,4−Trichlorobenzene
SO (log)
shapiro test− p.val: 0.001 n= 13
Sample Quantiles
Theoretical Quantiles

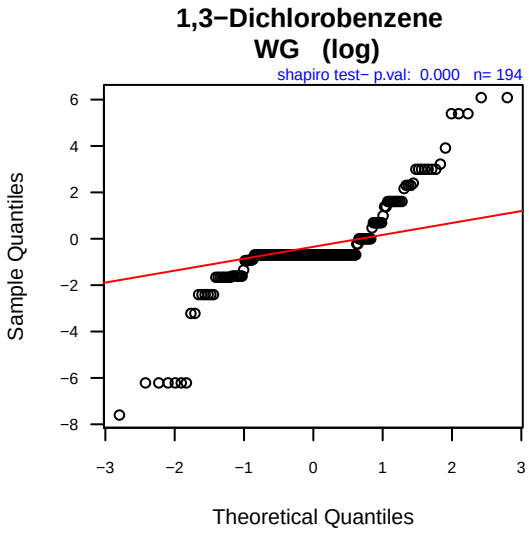

1,2,4−Trichlorobenzene
WG
shapiro test− p.val: 0.000 n= 27
Sample Quantiles
Theoretical Quantiles

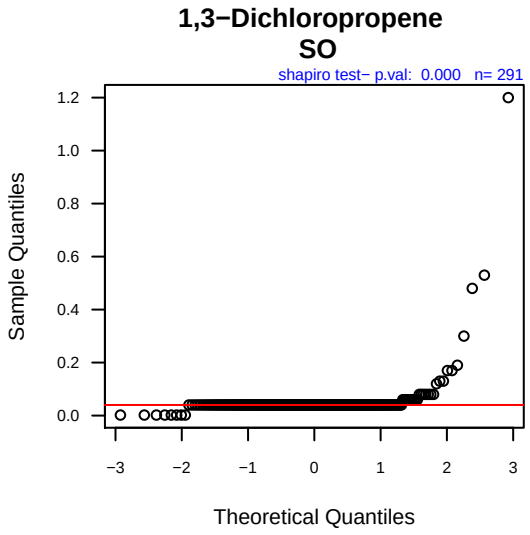

1,2,4−Trichlorobenzene
WG (log)
shapiro test− p.val: 0.000 n= 27
Sample Quantiles
Theoretical Quantiles

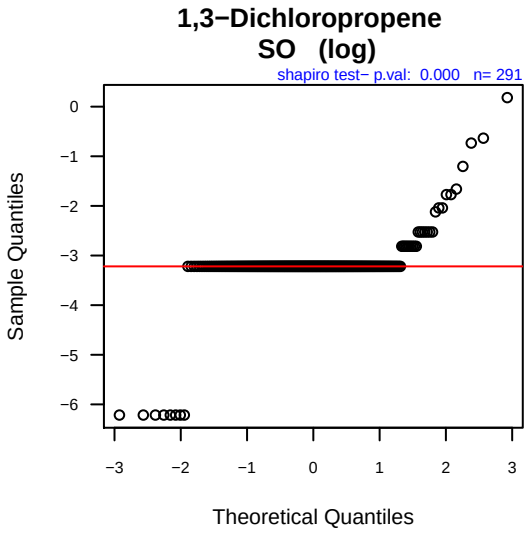

1,3−Dichlorobenzene
SO
shapiro test− p.val: 0.000 n= 449
Sample Quantiles
Theoretical Quantiles

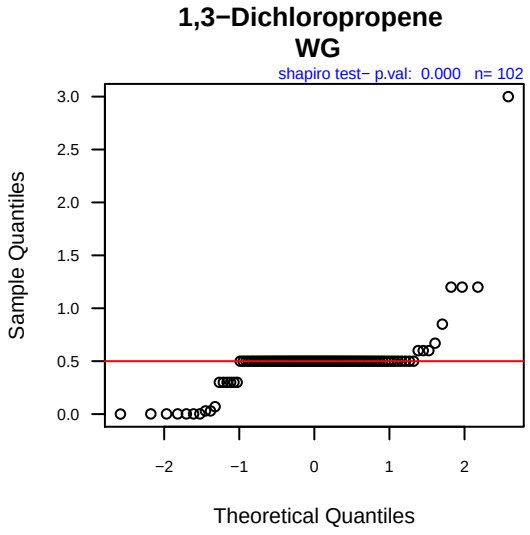

1,3−Dichlorobenzene
SO (log)
shapiro test− p.val: 0.000 n= 449
Sample Quantiles
Theoretical Quantiles

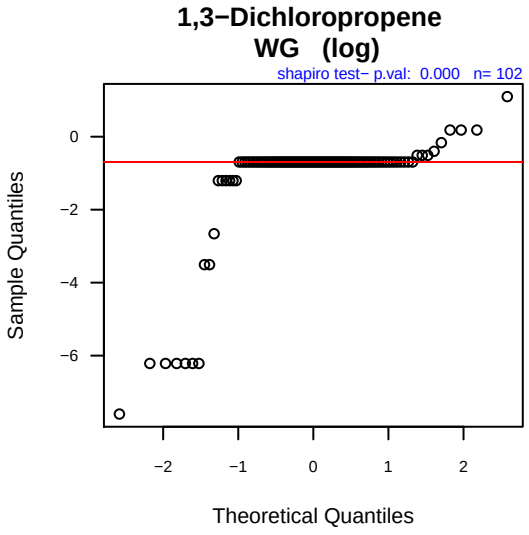

1,3−Dichlorobenzene
WG
shapiro test− p.val: 0.000 n= 194
Sample Quantiles
Theoretical Quantiles

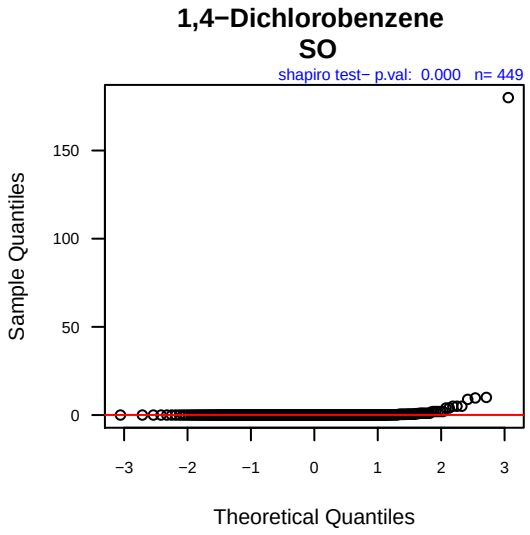

1,3−Dichlorobenzene
WG (log)
shapiro test− p.val: 0.000 n= 194
Sample Quantiles
Theoretical Quantiles

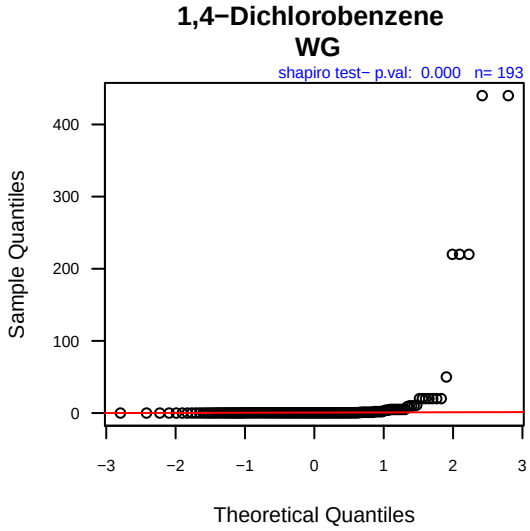

1,3−Dichloropropene
SO
shapiro test− p.val: 0.000 n= 291
Sample Quantiles
Theoretical Quantiles

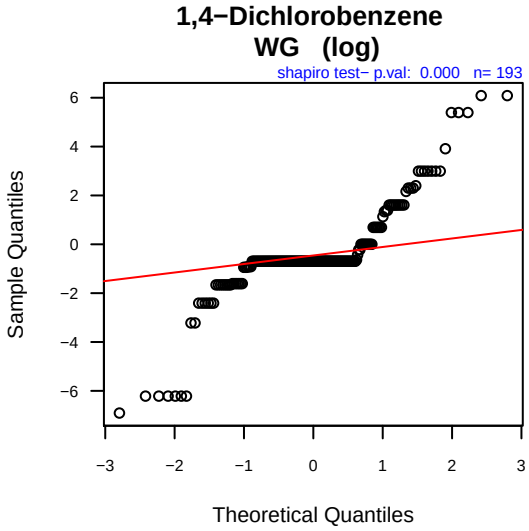

1,3−Dichloropropene
SO (log)
shapiro test− p.val: 0.000 n= 291
Sample Quantiles
Theoretical Quantiles

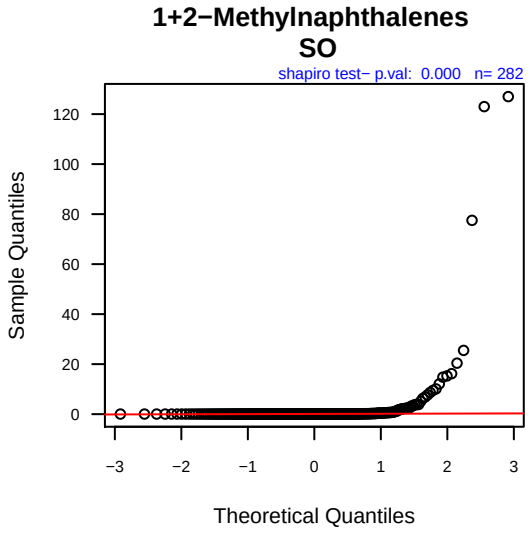

1,3−Dichloropropene
WG
shapiro test− p.val: 0.000 n= 102
Sample Quantiles
Theoretical Quantiles

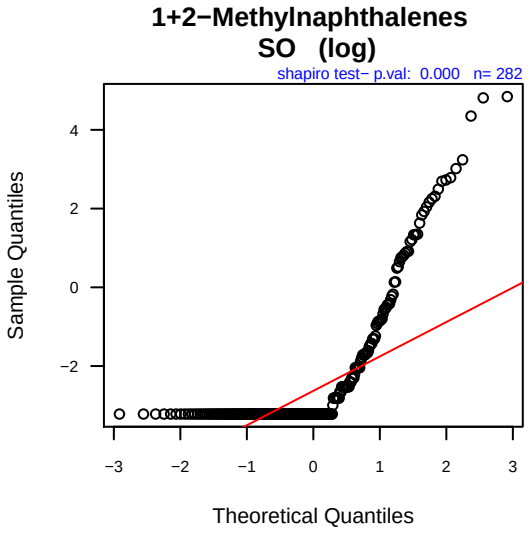

1,3−Dichloropropene
WG (log)
shapiro test− p.val: 0.000 n= 102
Sample Quantiles
Theoretical Quantiles

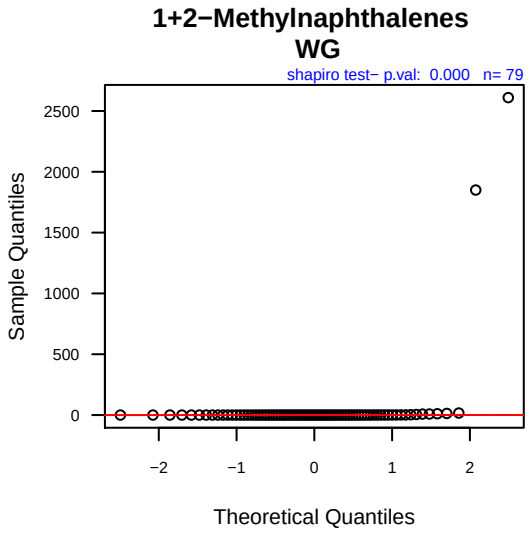

1,4−Dichlorobenzene
SO
shapiro test− p.val: 0.000 n= 449
Sample Quantiles
Theoretical Quantiles

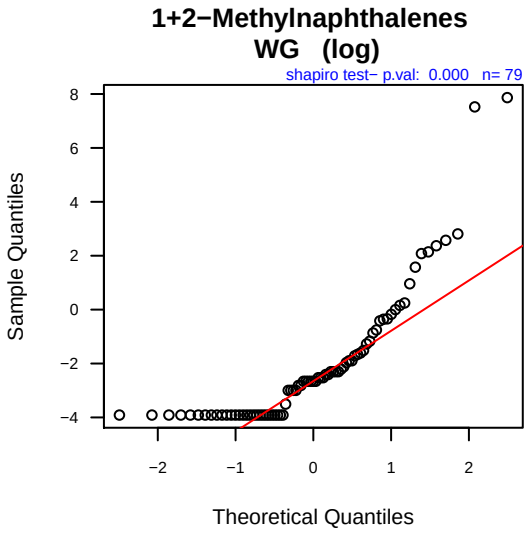

1,4−Dichlorobenzene
WG
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

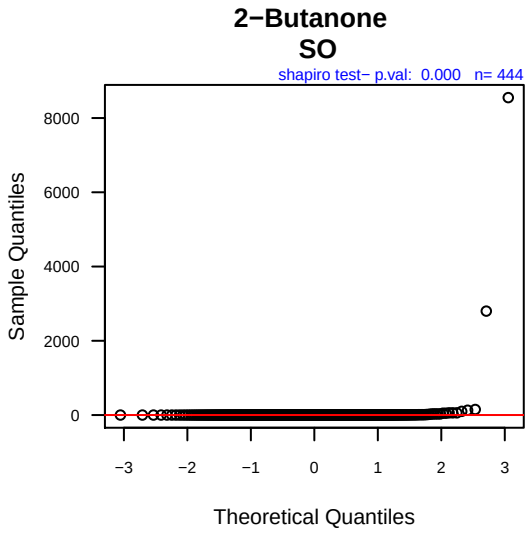

1,4−Dichlorobenzene
WG (log)
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

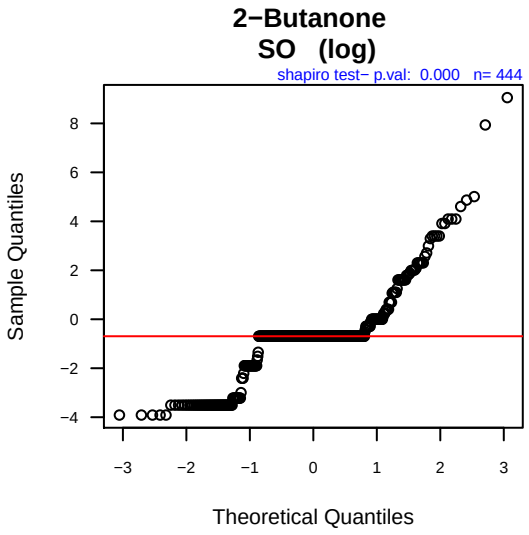

1+2−Methylnaphthalenes
SO
shapiro test− p.val: 0.000 n= 282
Sample Quantiles
Theoretical Quantiles

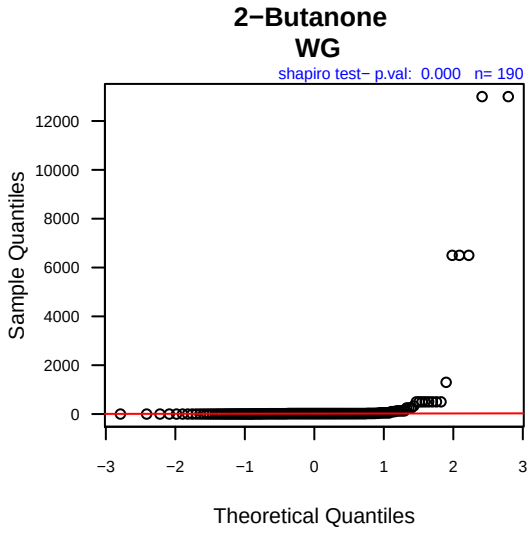

1+2−Methylnaphthalenes
SO (log)
shapiro test− p.val: 0.000 n= 282
Sample Quantiles
Theoretical Quantiles

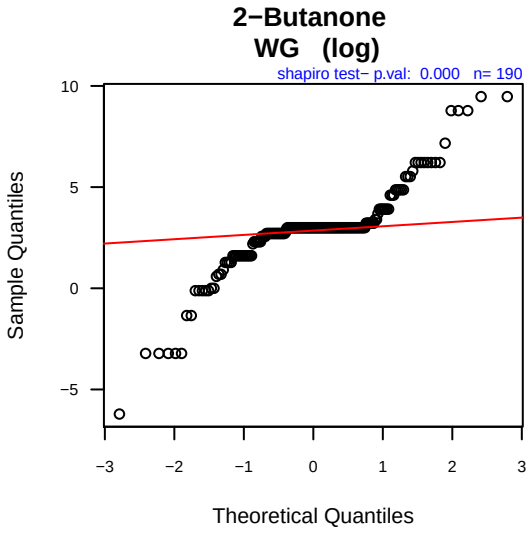

1+2−Methylnaphthalenes
WG
shapiro test− p.val: 0.000 n= 79
Sample Quantiles
Theoretical Quantiles

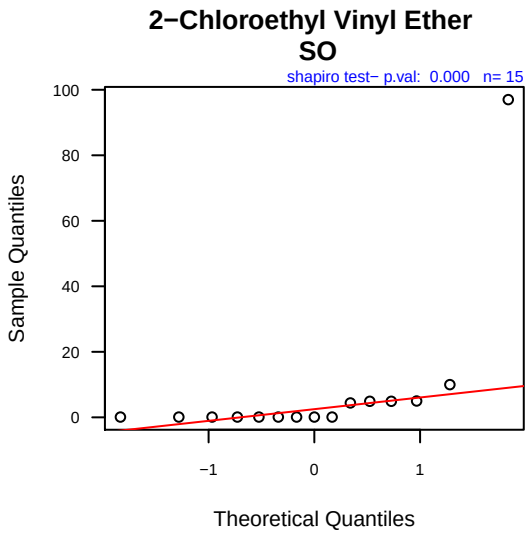

1+2−Methylnaphthalenes
WG (log)
shapiro test− p.val: 0.000 n= 79
Sample Quantiles
Theoretical Quantiles

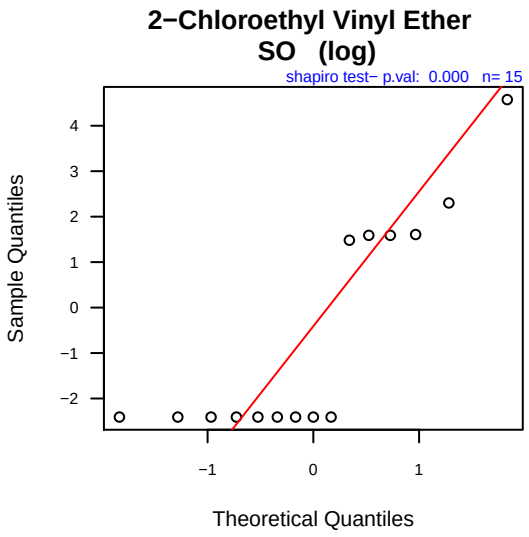

2−Butanone
SO
shapiro test− p.val: 0.000 n= 444
Sample Quantiles
Theoretical Quantiles

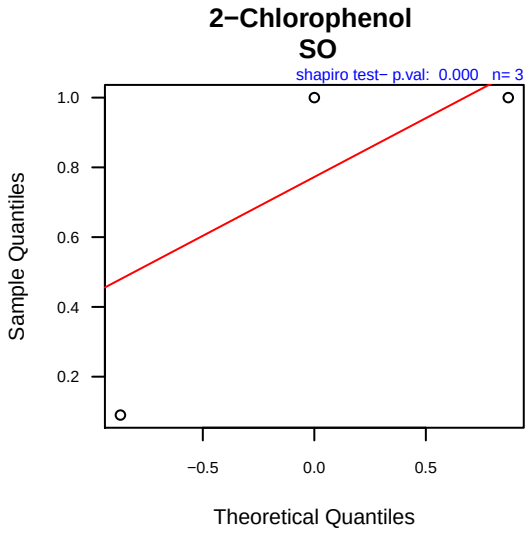

2−Butanone
SO (log)
shapiro test− p.val: 0.000 n= 444
Sample Quantiles
Theoretical Quantiles

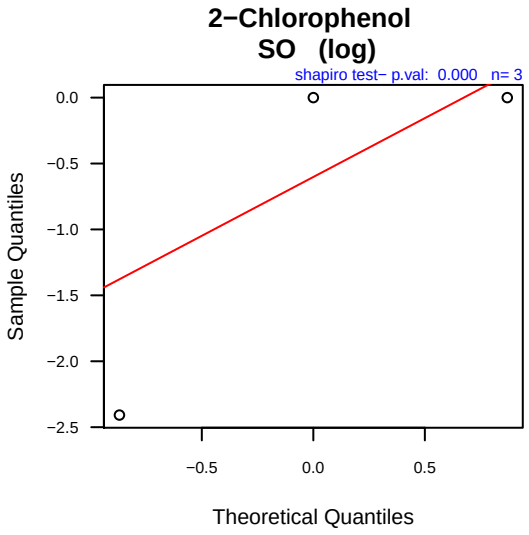

2−Butanone
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

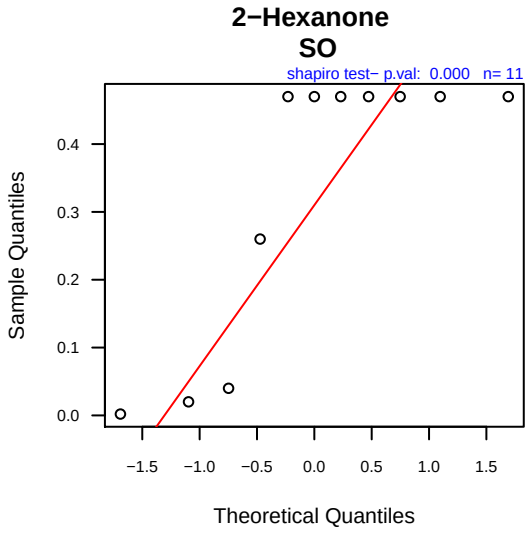

2−Butanone
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

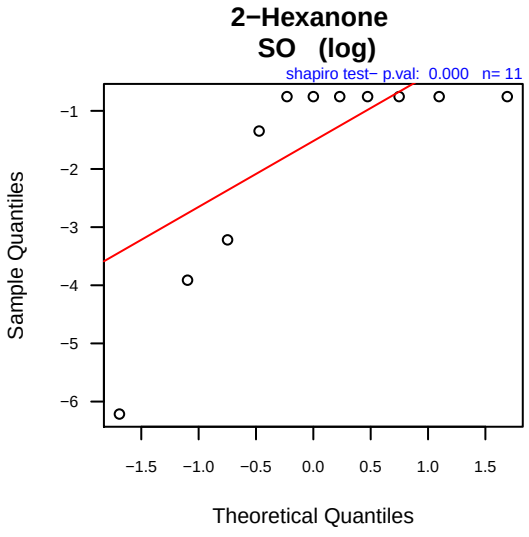

2−Chloroethyl Vinyl Ether
SO
shapiro test− p.val: 0.000 n= 15
Sample Quantiles
Theoretical Quantiles

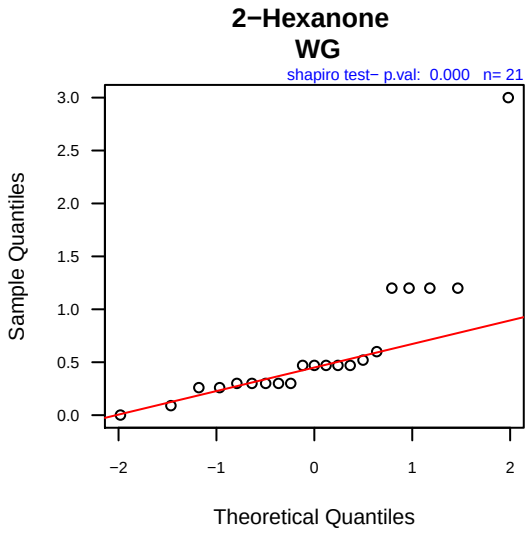

2−Chloroethyl Vinyl Ether
SO (log)
shapiro test− p.val: 0.000 n= 15
Sample Quantiles
Theoretical Quantiles

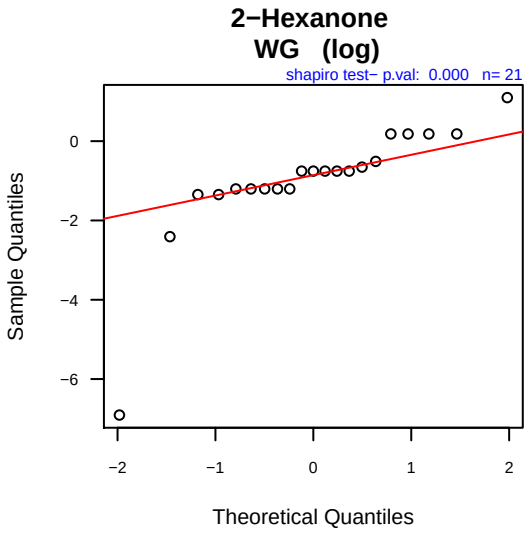

2−Chlorophenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

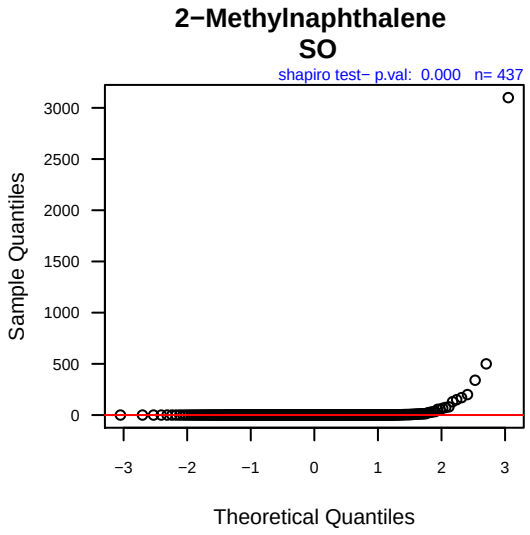

2−Chlorophenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

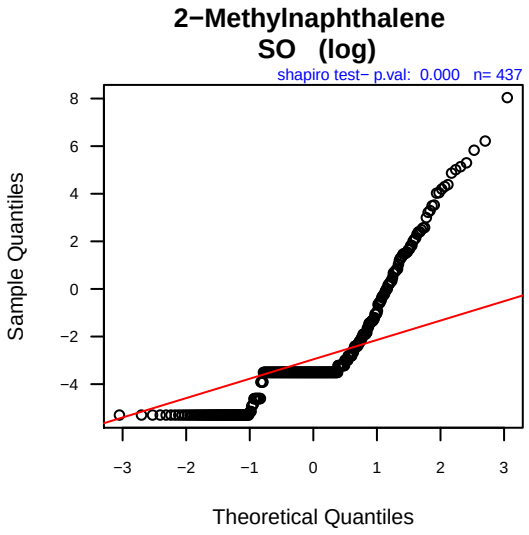

2−Hexanone
SO
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

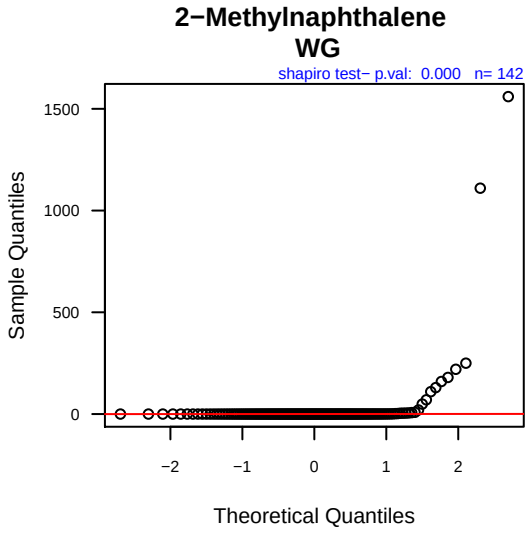

2−Hexanone
SO (log)
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

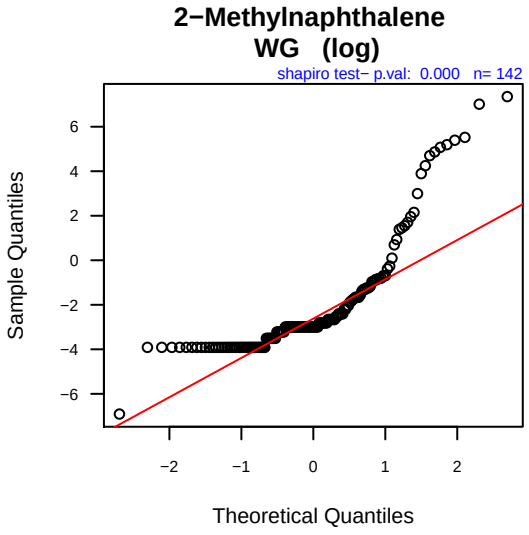

2−Hexanone
WG
shapiro test− p.val: 0.000 n= 21
Sample Quantiles
Theoretical Quantiles

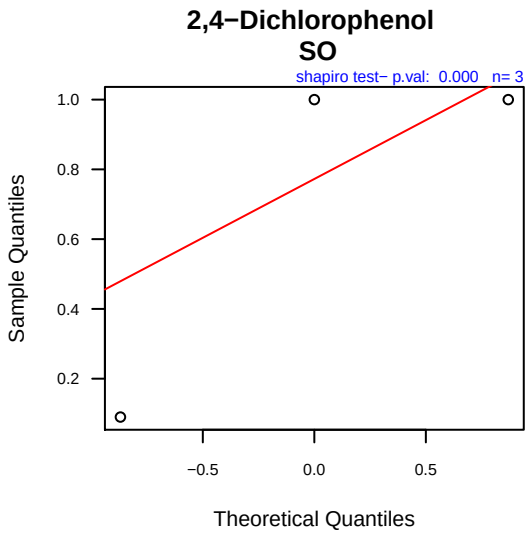

2−Hexanone
WG (log)
shapiro test− p.val: 0.000 n= 21
Sample Quantiles
Theoretical Quantiles

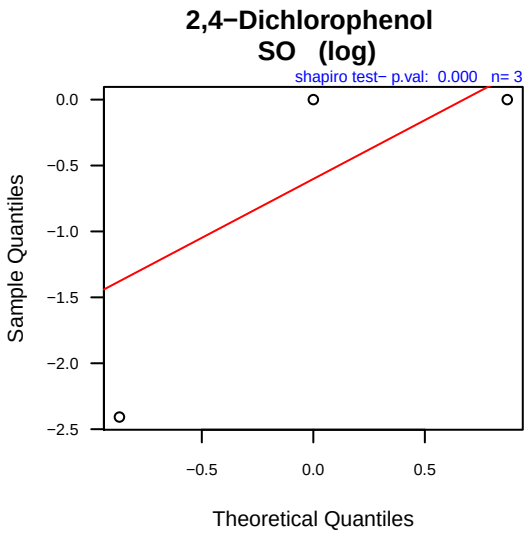

2−Methylnaphthalene
SO
shapiro test− p.val: 0.000 n= 437
Sample Quantiles
Theoretical Quantiles

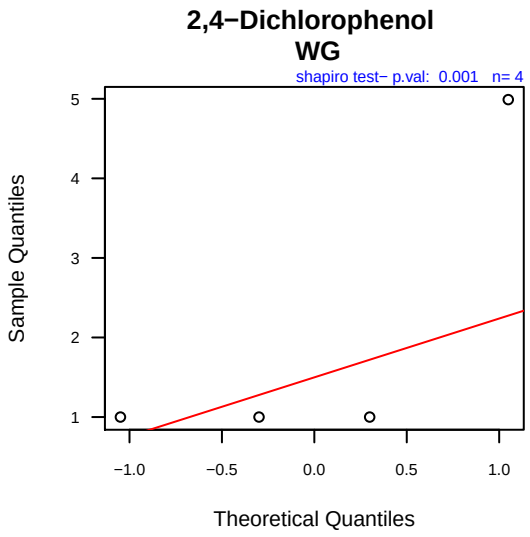

2−Methylnaphthalene
SO (log)
shapiro test− p.val: 0.000 n= 437
Sample Quantiles
Theoretical Quantiles

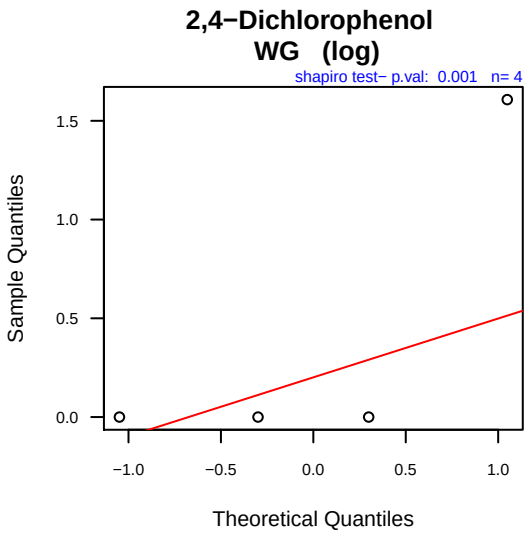

2−Methylnaphthalene
WG
shapiro test− p.val: 0.000 n= 142
Sample Quantiles
Theoretical Quantiles

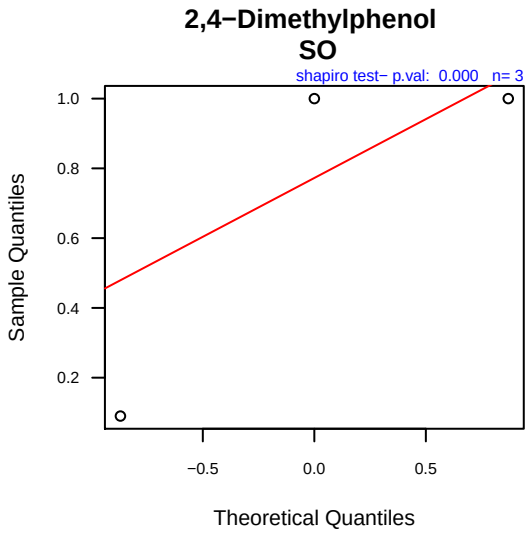

2−Methylnaphthalene
WG (log)
shapiro test− p.val: 0.000 n= 142
Sample Quantiles
Theoretical Quantiles

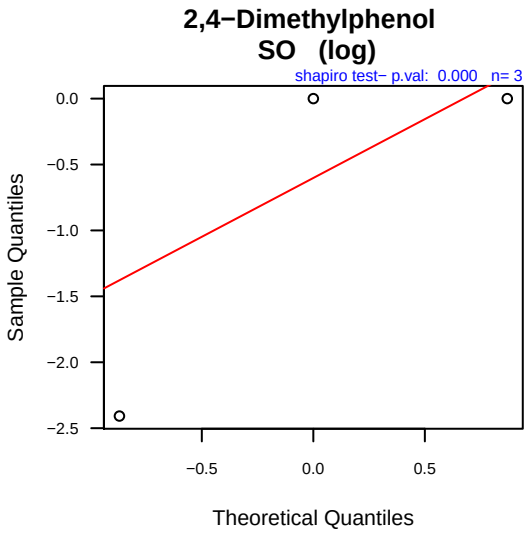

2,4−Dichlorophenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

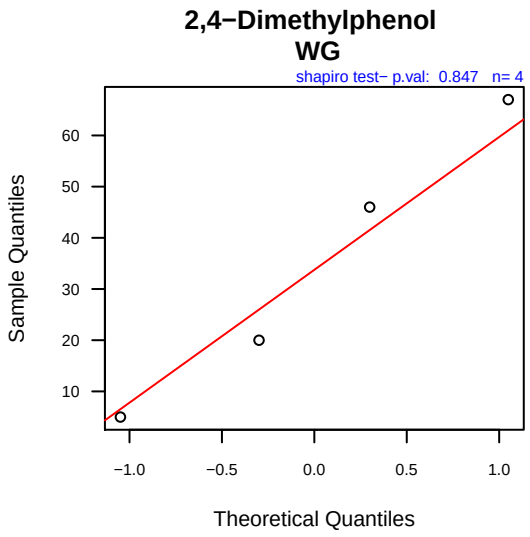

2,4−Dichlorophenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

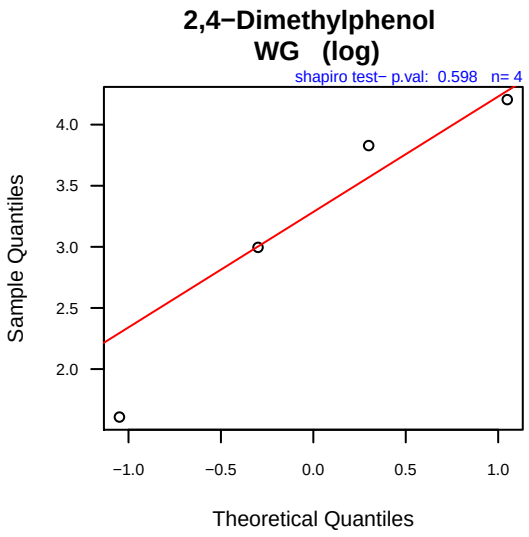

2,4−Dichlorophenol
WG
shapiro test− p.val: 0.001 n= 4
Sample Quantiles
Theoretical Quantiles

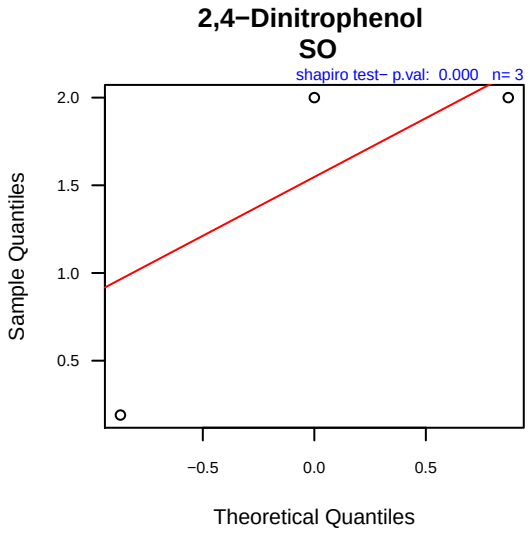

2,4−Dichlorophenol
WG (log)
shapiro test− p.val: 0.001 n= 4
Sample Quantiles
Theoretical Quantiles

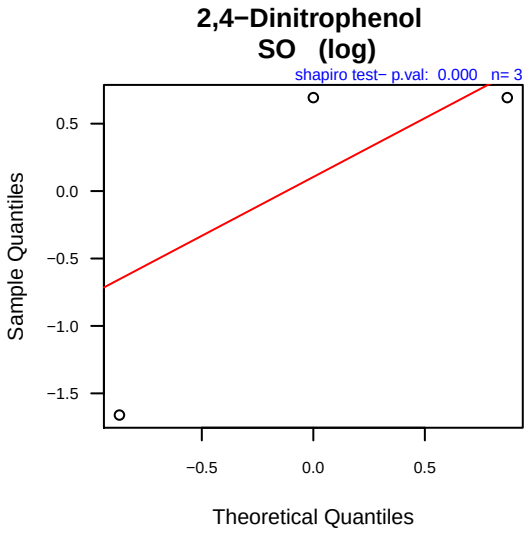

2,4−Dimethylphenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

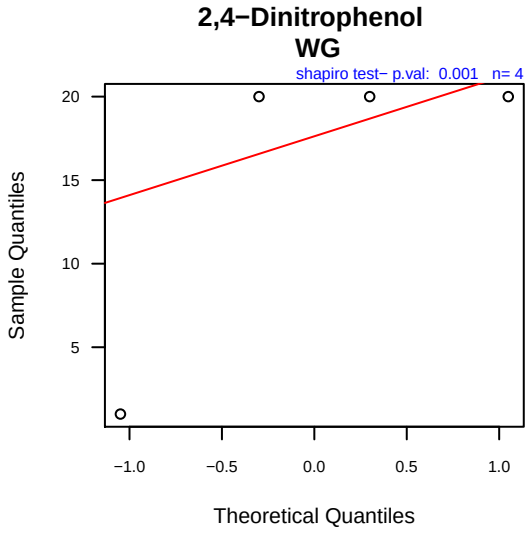

2,4−Dimethylphenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

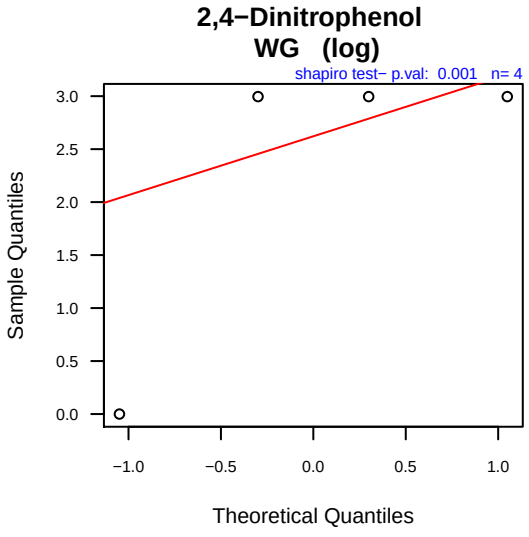

2,4−Dimethylphenol
WG
shapiro test− p.val: 0.847 n= 4
Sample Quantiles
Theoretical Quantiles

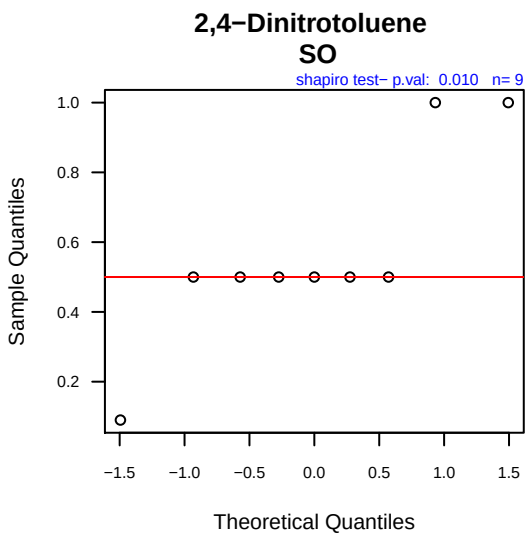

2,4−Dimethylphenol
WG (log)
shapiro test− p.val: 0.598 n= 4
Sample Quantiles
Theoretical Quantiles

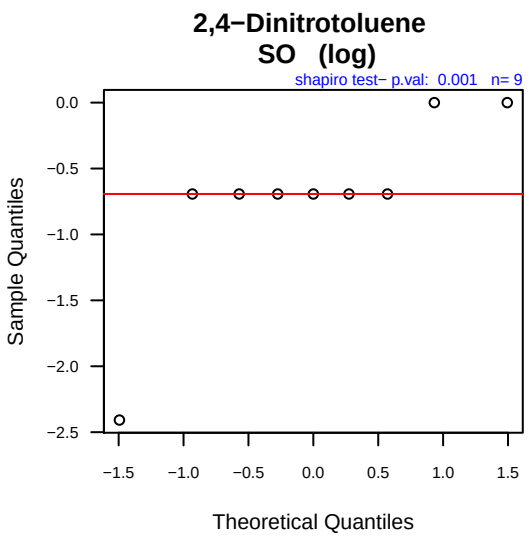

2,4−Dinitrophenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

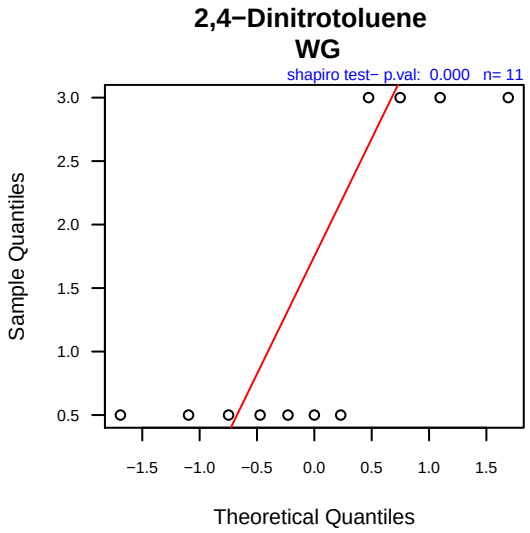

2,4−Dinitrophenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

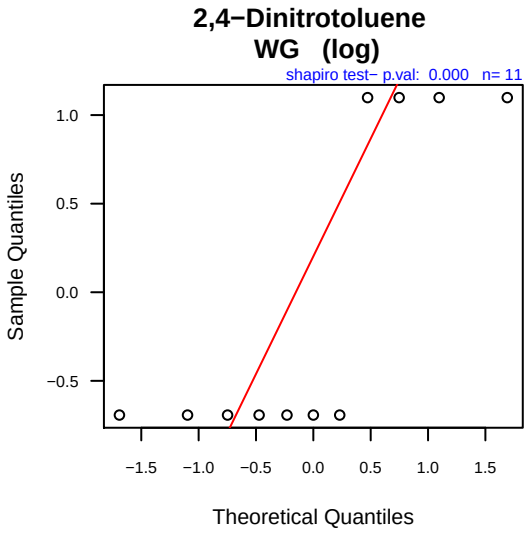

2,4−Dinitrophenol
WG
shapiro test− p.val: 0.001 n= 4
Sample Quantiles
Theoretical Quantiles

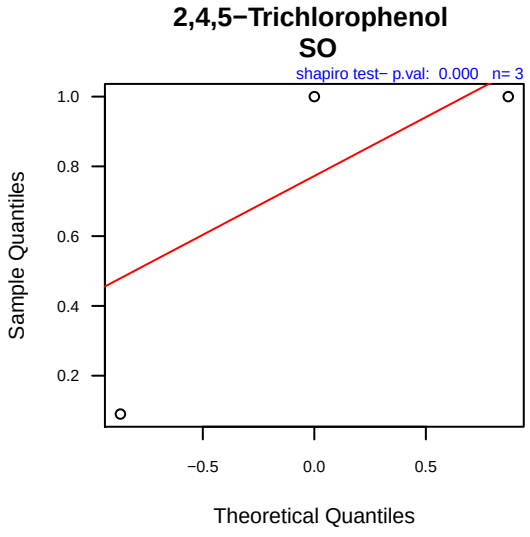

2,4−Dinitrophenol
WG (log)
shapiro test− p.val: 0.001 n= 4
Sample Quantiles
Theoretical Quantiles

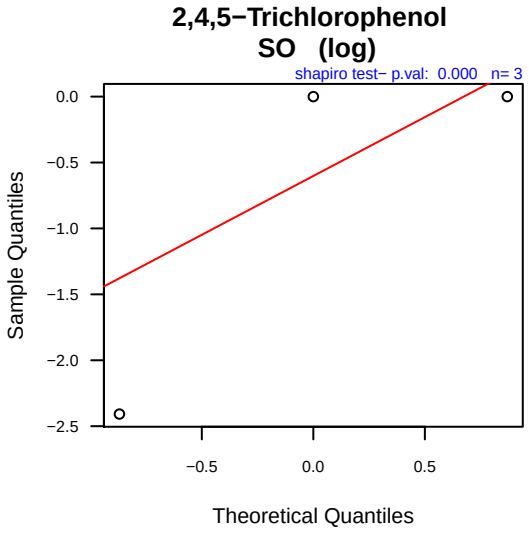

2,4−Dinitrotoluene
SO
shapiro test− p.val: 0.010 n= 9
Sample Quantiles
Theoretical Quantiles

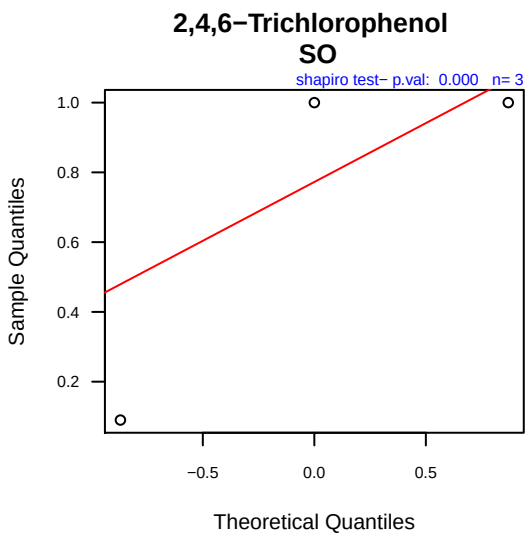

2,4−Dinitrotoluene
SO (log)
shapiro test− p.val: 0.001 n= 9
Sample Quantiles
Theoretical Quantiles

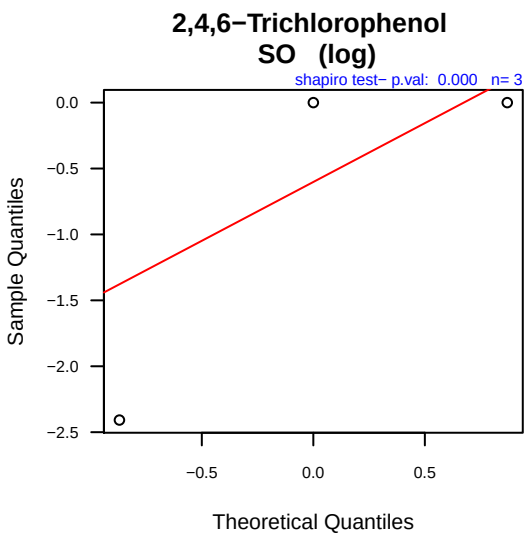

2,4−Dinitrotoluene
WG
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

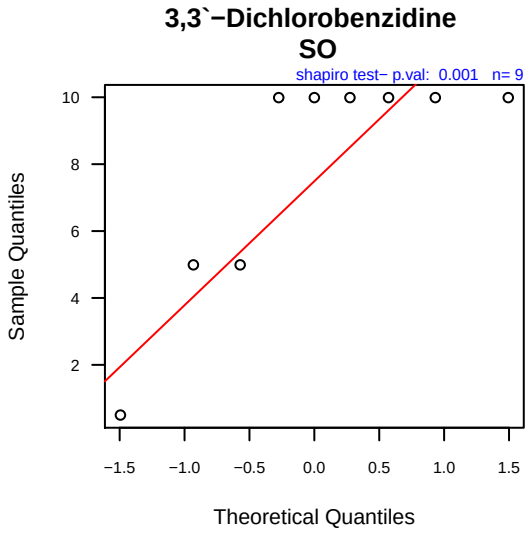

2,4−Dinitrotoluene
WG (log)
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

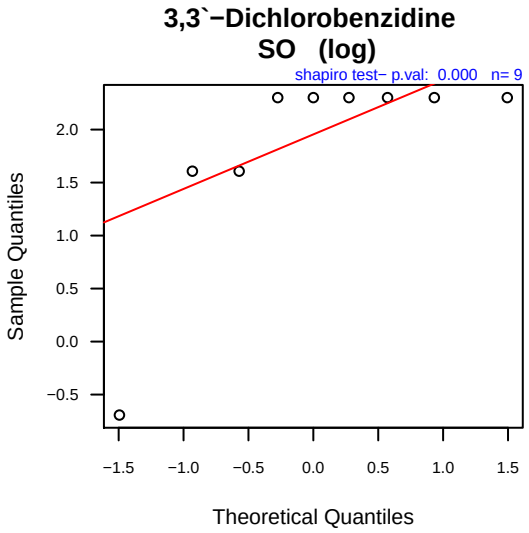

2,4,5−Trichlorophenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

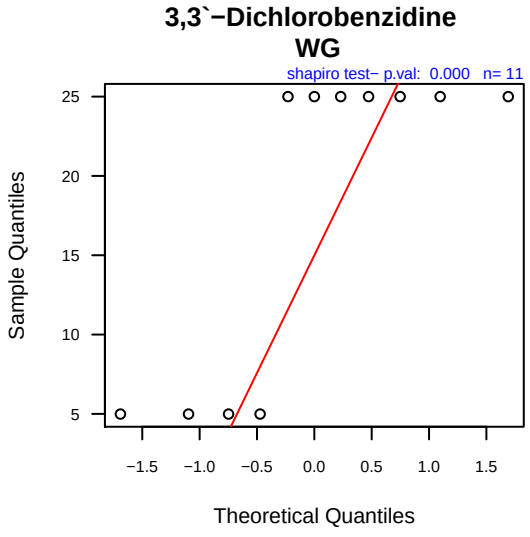

2,4,5−Trichlorophenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

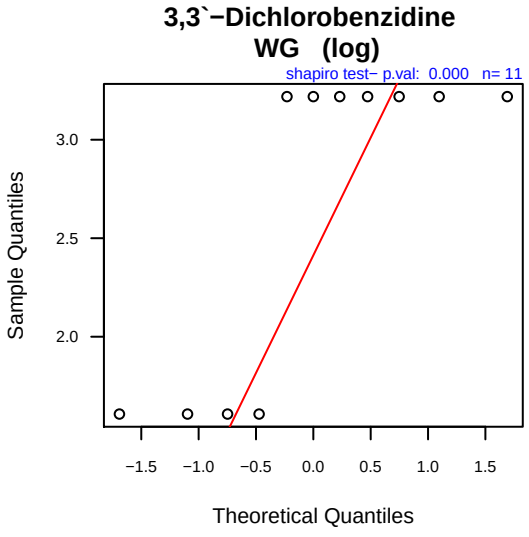

2,4,6−Trichlorophenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

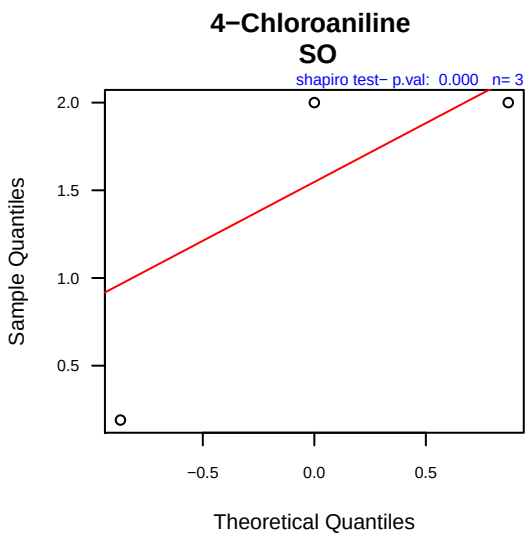

2,4,6−Trichlorophenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

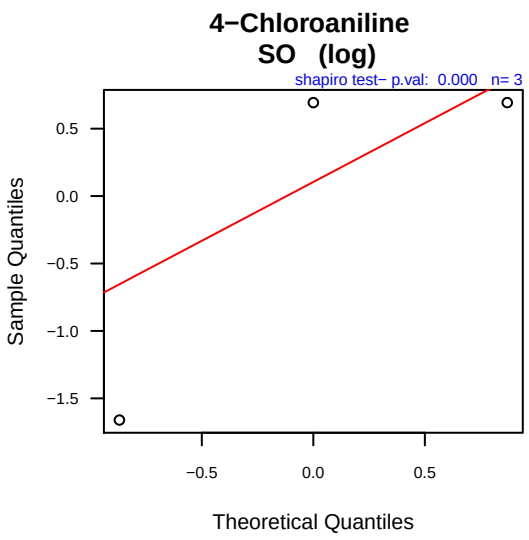

3,3`−Dichlorobenzidine
SO
shapiro test− p.val: 0.001 n= 9
Sample Quantiles
Theoretical Quantiles

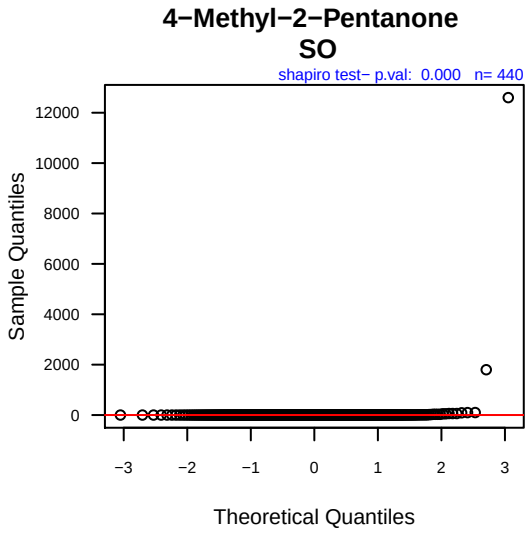

3,3`−Dichlorobenzidine
SO (log)
shapiro test− p.val: 0.000 n= 9
Sample Quantiles
Theoretical Quantiles

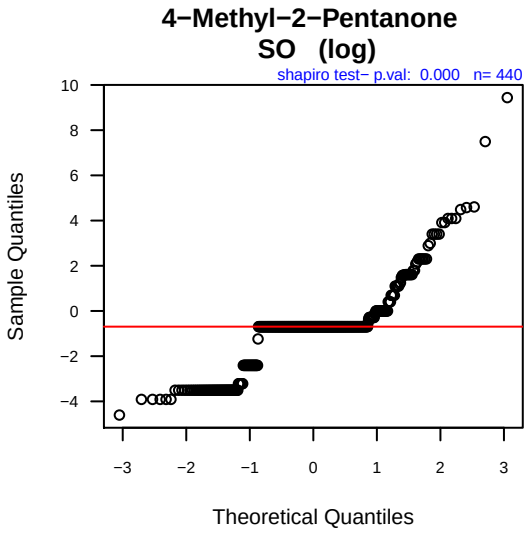

3,3`−Dichlorobenzidine
WG
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

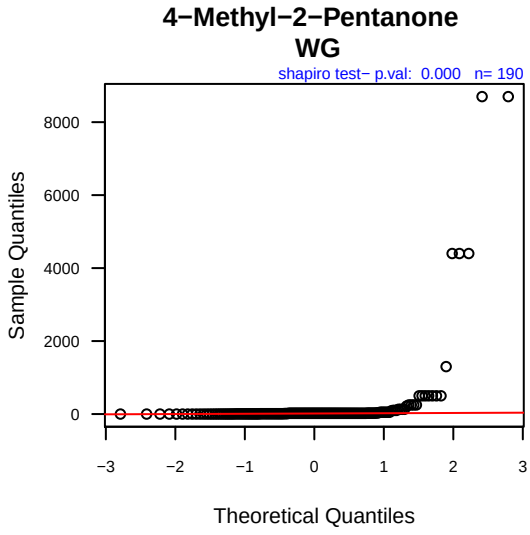

3,3`−Dichlorobenzidine
WG (log)
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

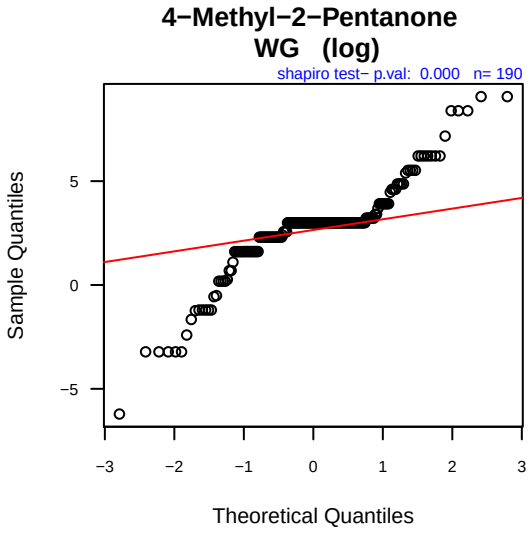

4−Chloroaniline
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

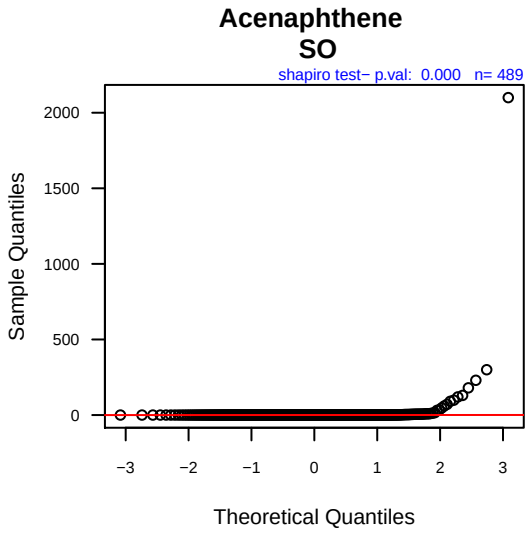

4−Chloroaniline
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

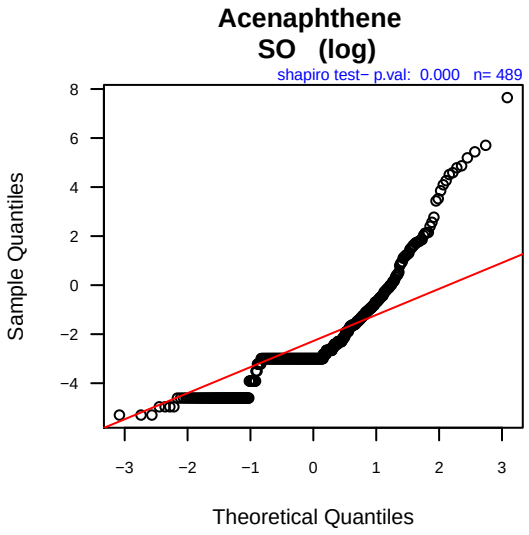

4−Methyl−2−Pentanone
SO
shapiro test− p.val: 0.000 n= 440
Sample Quantiles
Theoretical Quantiles

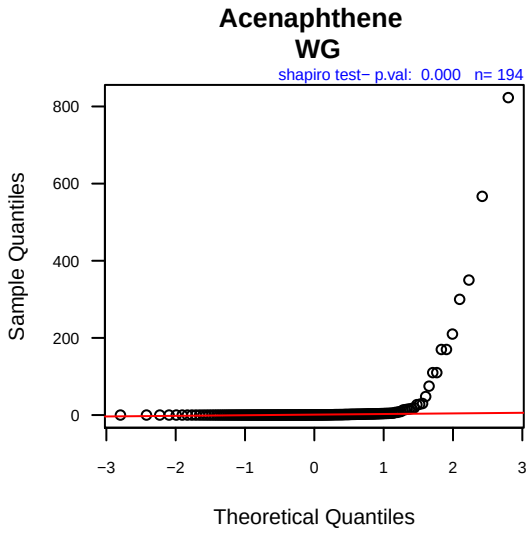

4−Methyl−2−Pentanone
SO (log)
shapiro test− p.val: 0.000 n= 440
Sample Quantiles
Theoretical Quantiles

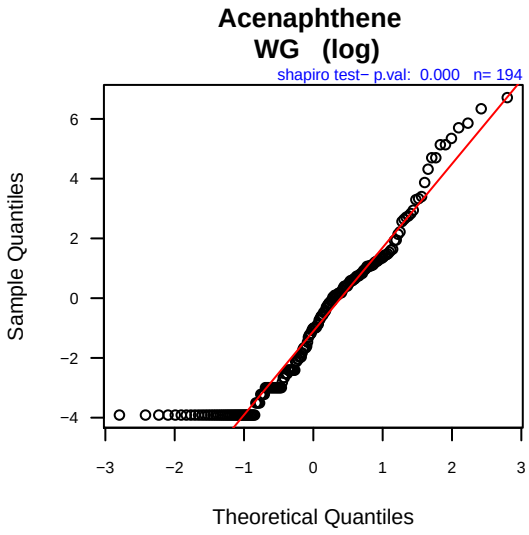

4−Methyl−2−Pentanone
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

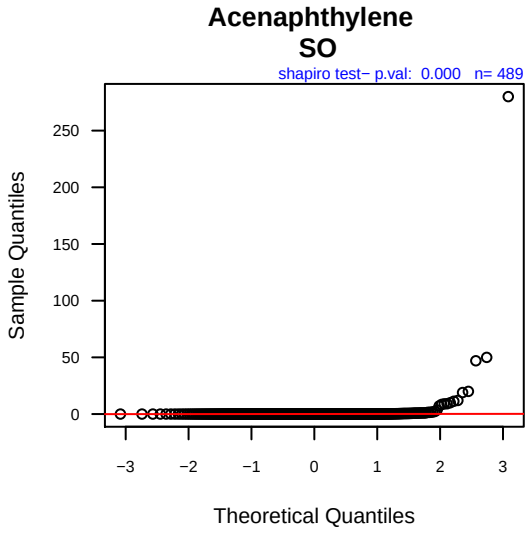

4−Methyl−2−Pentanone
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

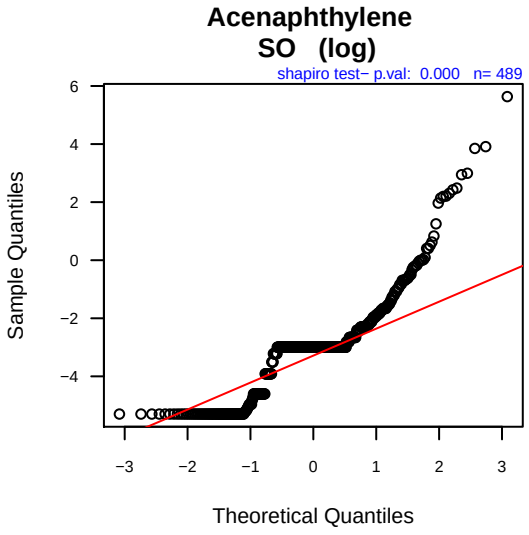

Acenaphthene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

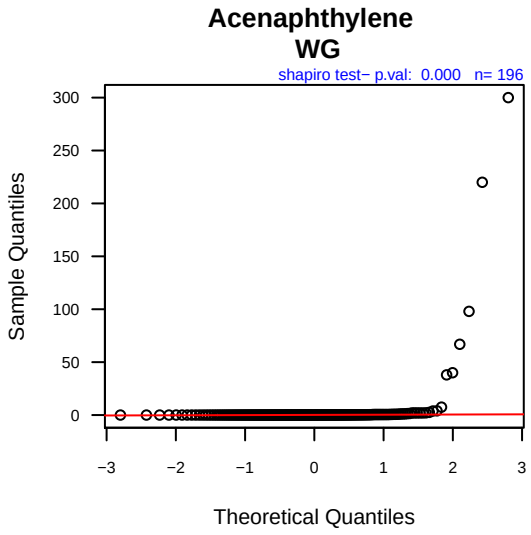

Acenaphthene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

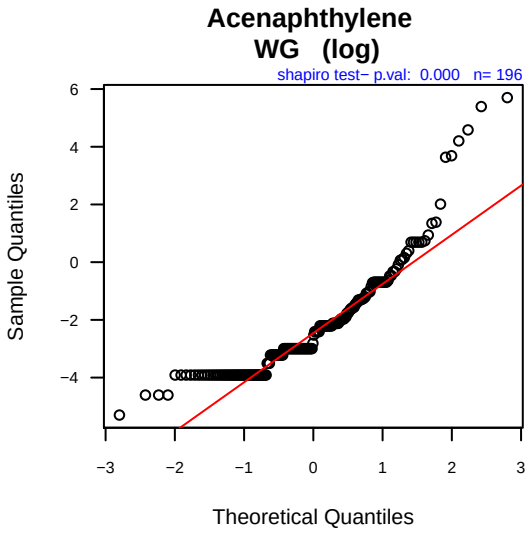

Acenaphthene
WG
shapiro test− p.val: 0.000 n= 194
Sample Quantiles
Theoretical Quantiles

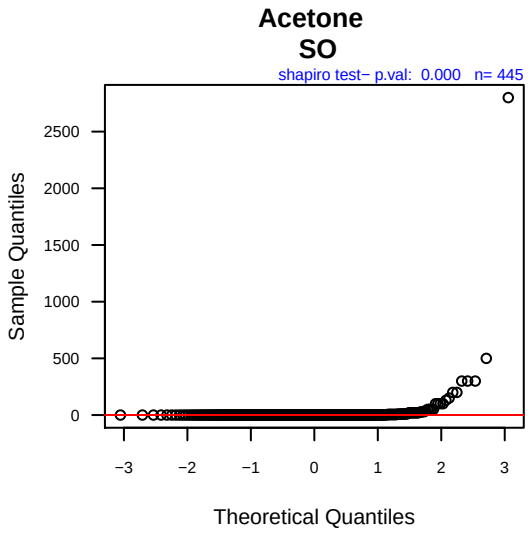

Acenaphthene
WG (log)
shapiro test− p.val: 0.000 n= 194
Sample Quantiles
Theoretical Quantiles

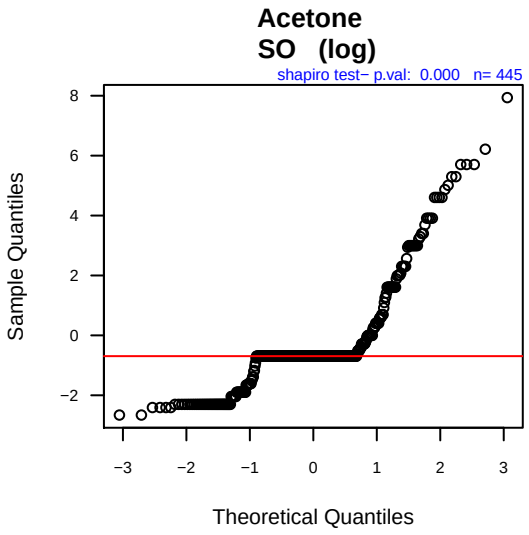

Acenaphthylene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

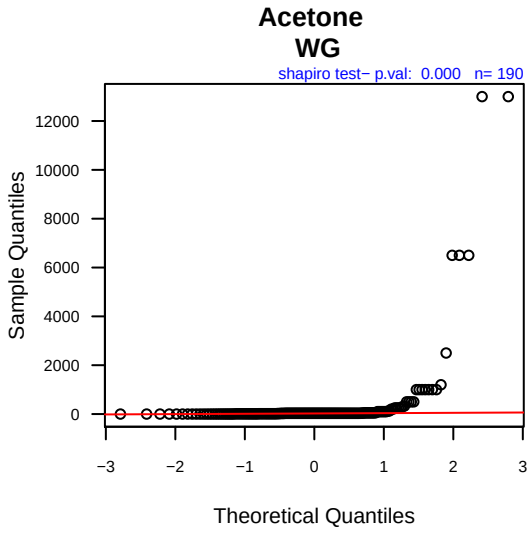

Acenaphthylene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

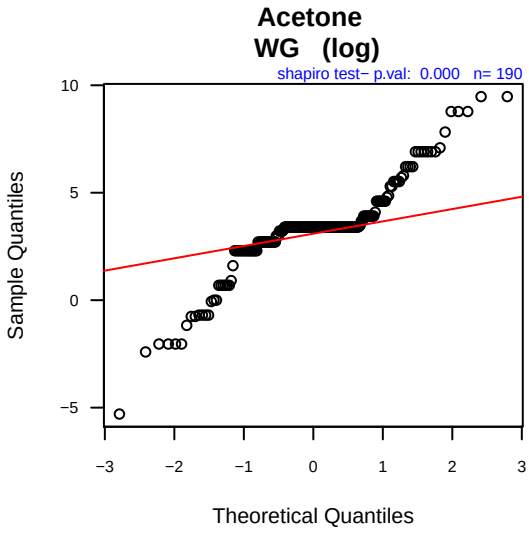

Acenaphthylene
WG
shapiro test– p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

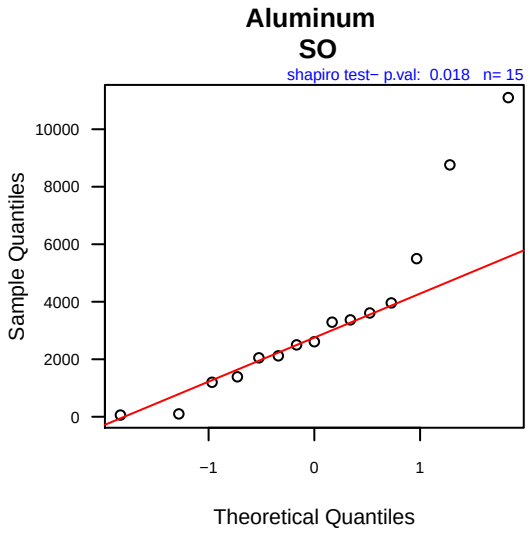

Acenaphthylene
WG (log)
shapiro test– p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

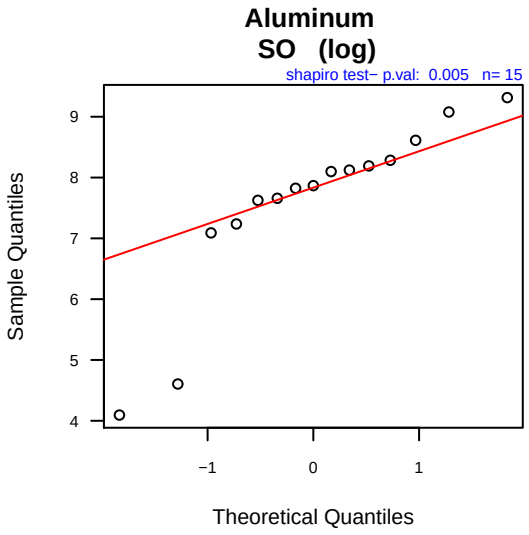

Acetone
SO
shapiro test– p.val: 0.000 n= 445
Sample Quantiles
Theoretical Quantiles

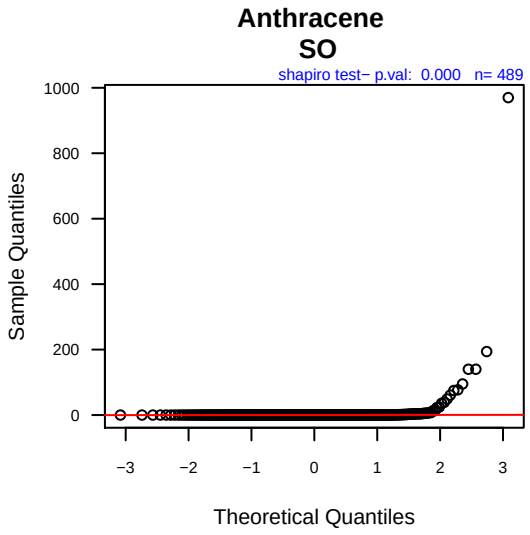

Acetone
SO (log)
shapiro test– p.val: 0.000 n= 445
Sample Quantiles
Theoretical Quantiles

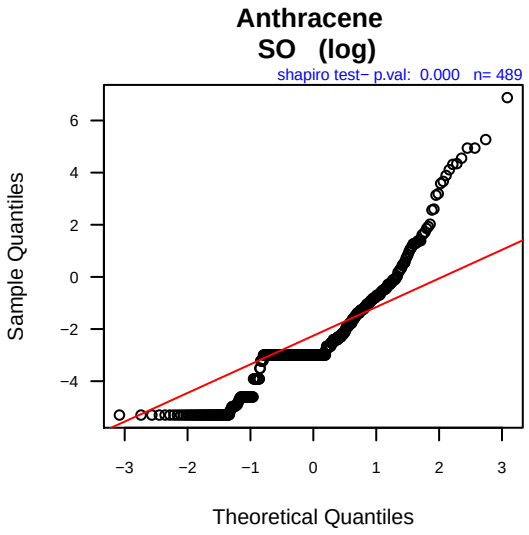

Acetone
WG
shapiro test– p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

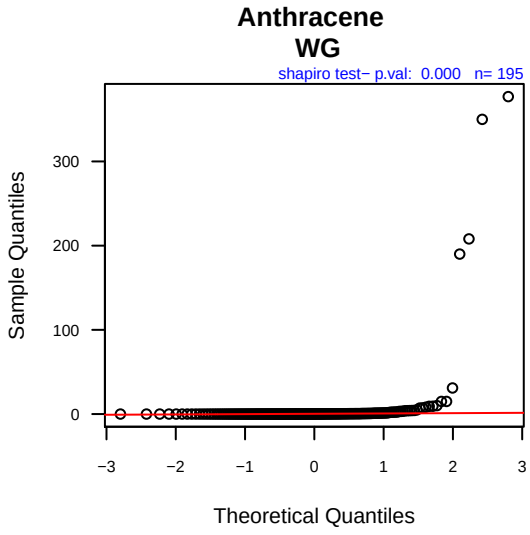

Acetone
WG (log)
shapiro test– p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

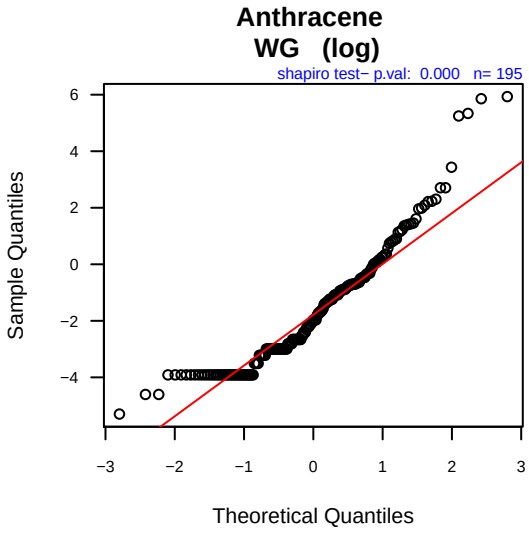

Aluminum
SO
shapiro test− p.val: 0.018 n= 15
Sample Quantiles
Theoretical Quantiles

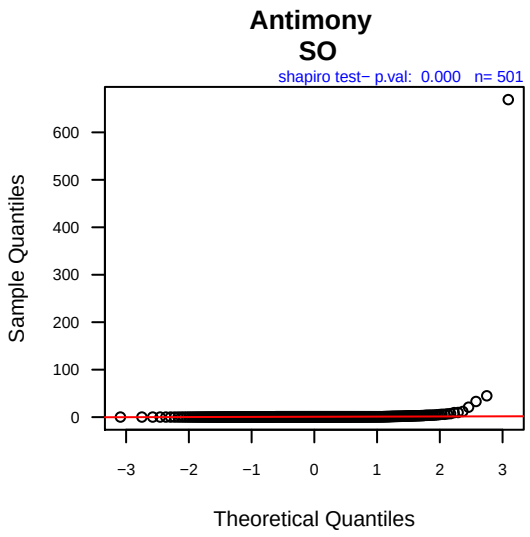

Aluminum
SO (log)
shapiro test− p.val: 0.005 n= 15
Sample Quantiles
Theoretical Quantiles

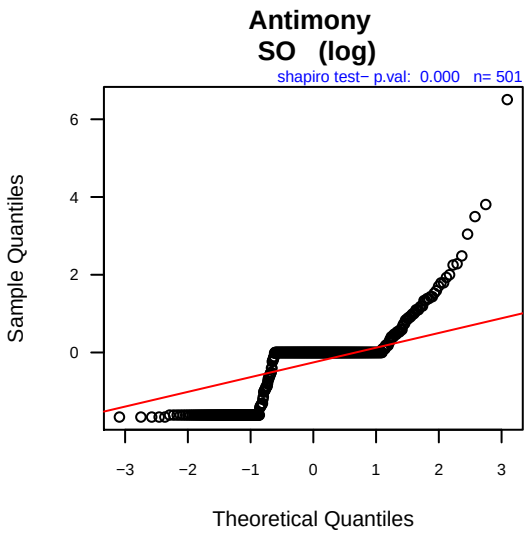

Anthracene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

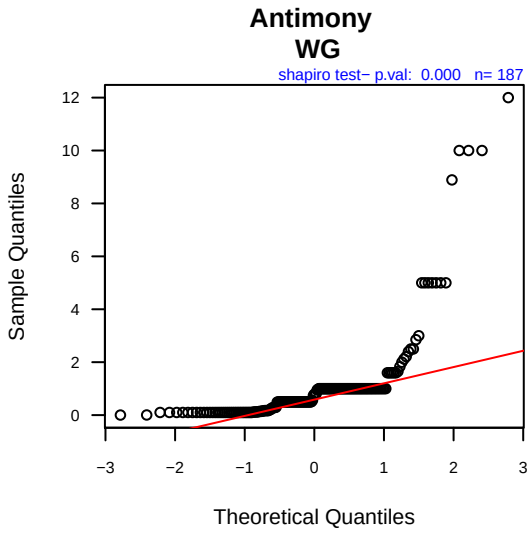

Anthracene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

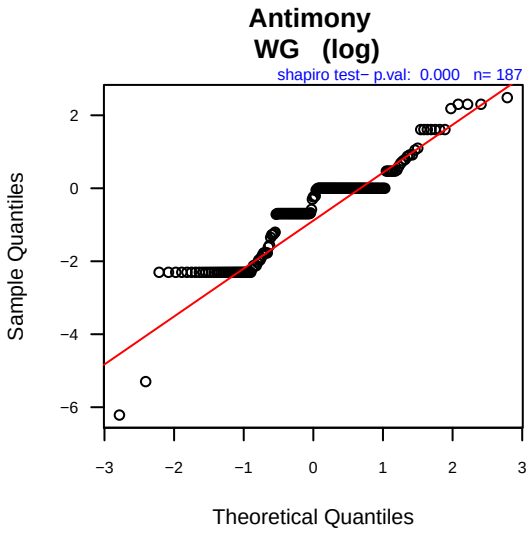

Anthracene
WG
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

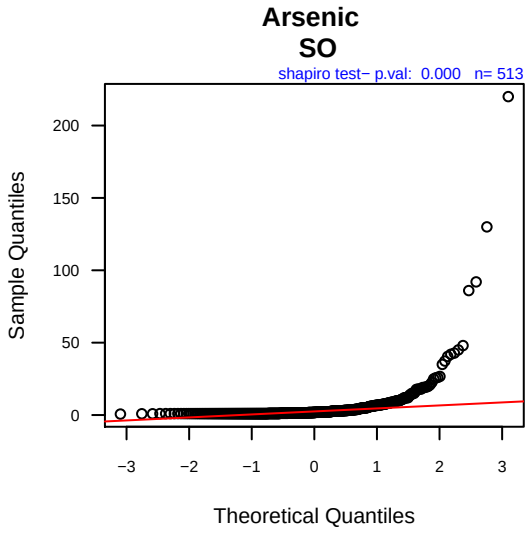

Anthracene
WG (log)
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

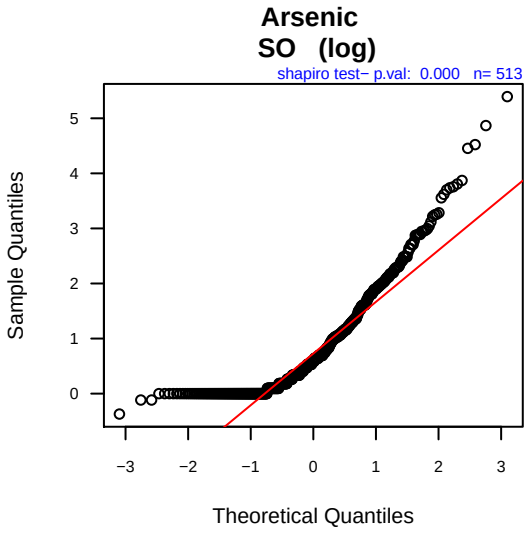

Antimony
SO
shapiro test− p.val: 0.000 n= 501
Sample Quantiles
Theoretical Quantiles

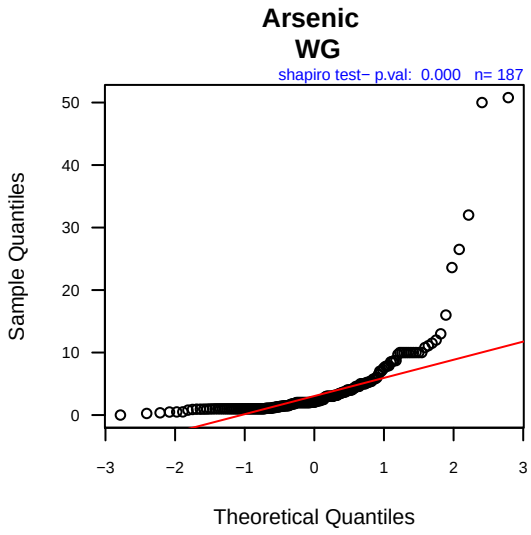

Antimony
SO (log)
shapiro test− p.val: 0.000 n= 501
Sample Quantiles
Theoretical Quantiles

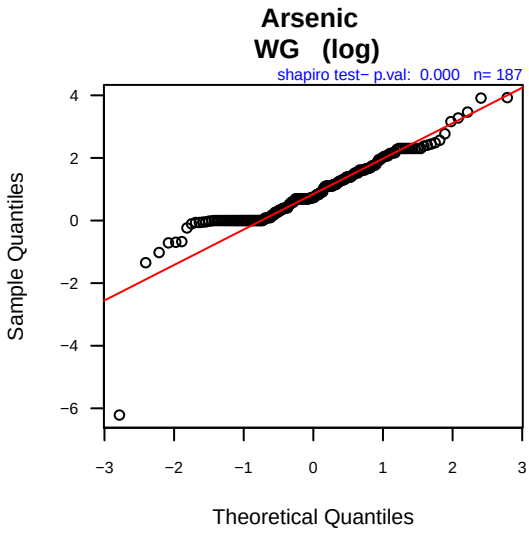

Antimony
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

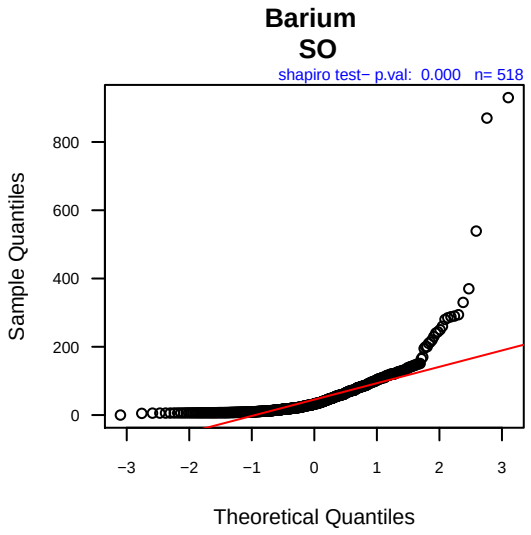

Antimony
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

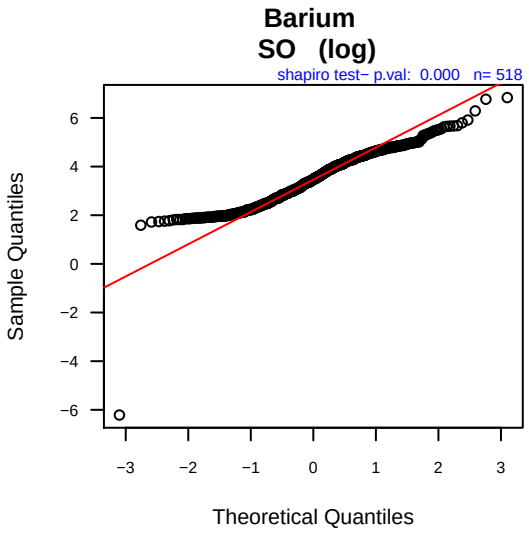

Arsenic
SO
shapiro test− p.val: 0.000 n= 513
Sample Quantiles
Theoretical Quantiles

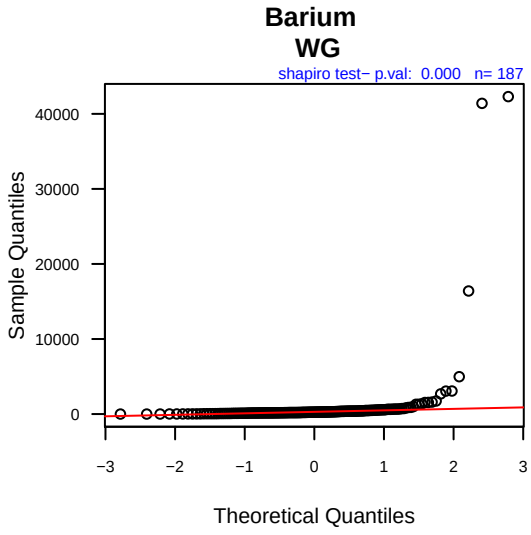

Arsenic
SO (log)
shapiro test− p.val: 0.000 n= 513
Sample Quantiles
Theoretical Quantiles

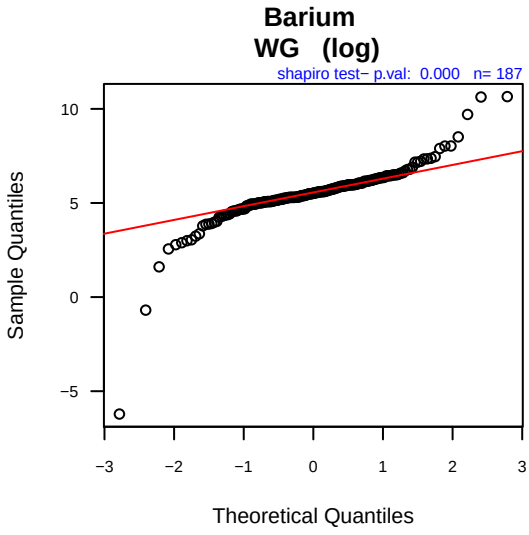

Arsenic
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

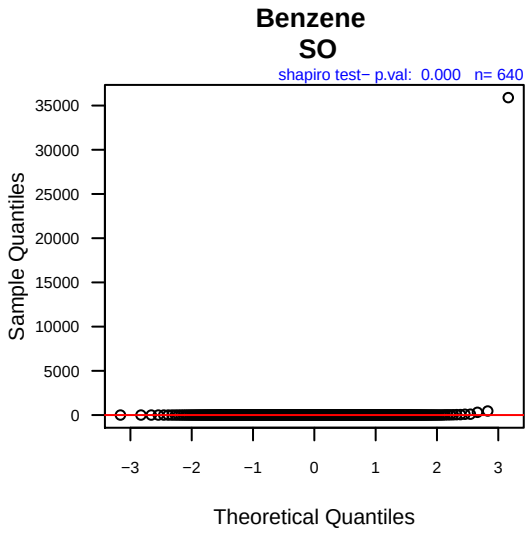

Arsenic
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

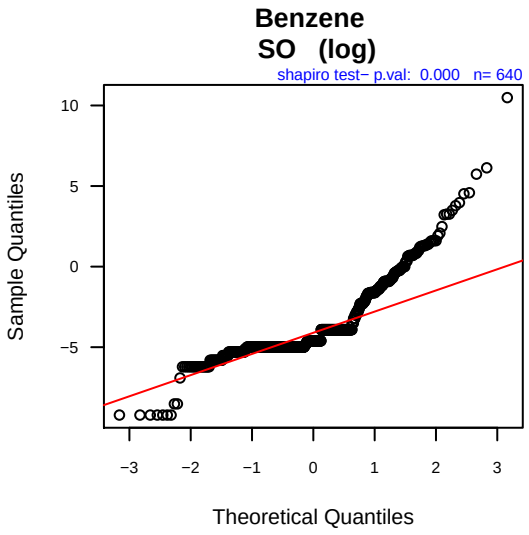

Barium
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

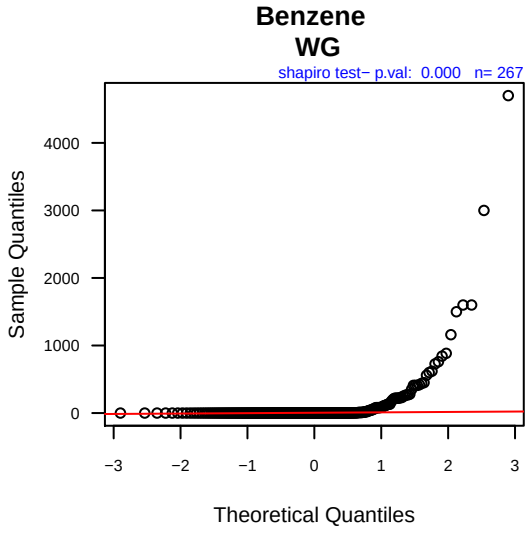

Barium
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

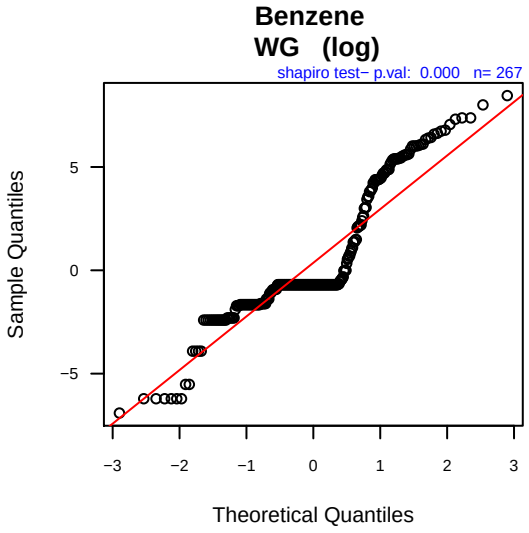

Barium
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

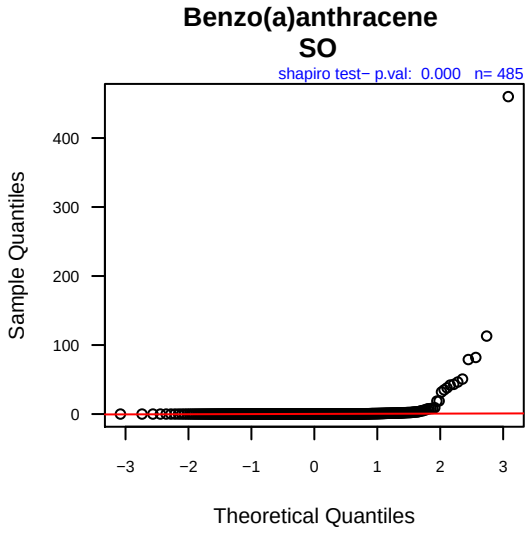

Barium
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

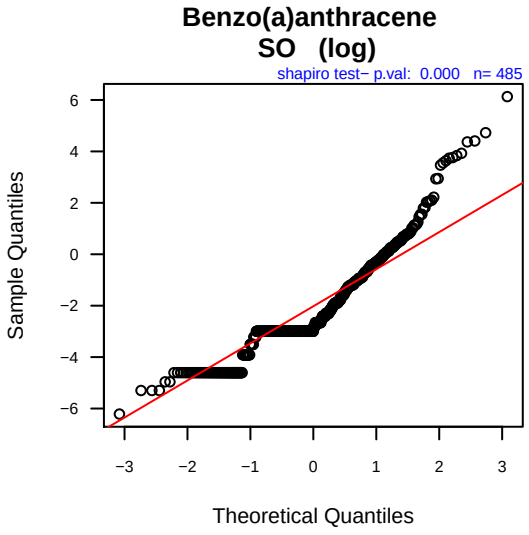

Benzene
SO
shapiro test− p.val: 0.000 n= 640
Sample Quantiles
Theoretical Quantiles

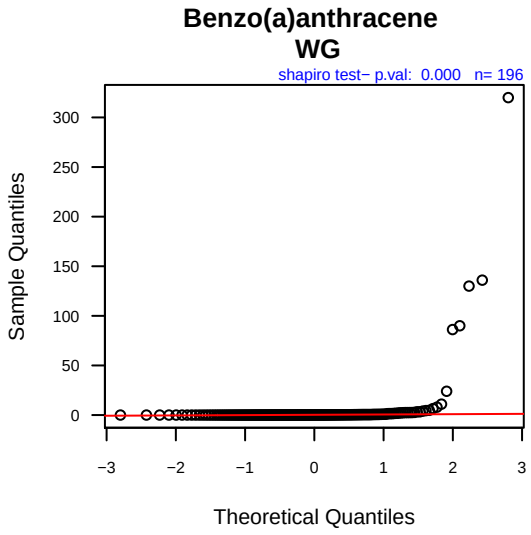

Benzene
SO (log)
shapiro test− p.val: 0.000 n= 640
Sample Quantiles
Theoretical Quantiles

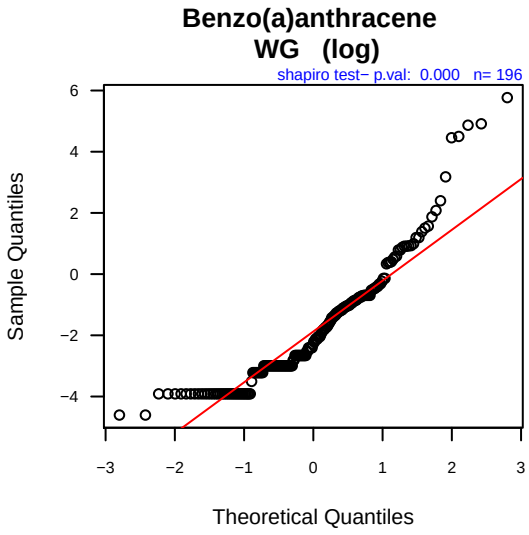

Benzene
WG
shapiro test− p.val: 0.000 n= 267
Sample Quantiles
Theoretical Quantiles

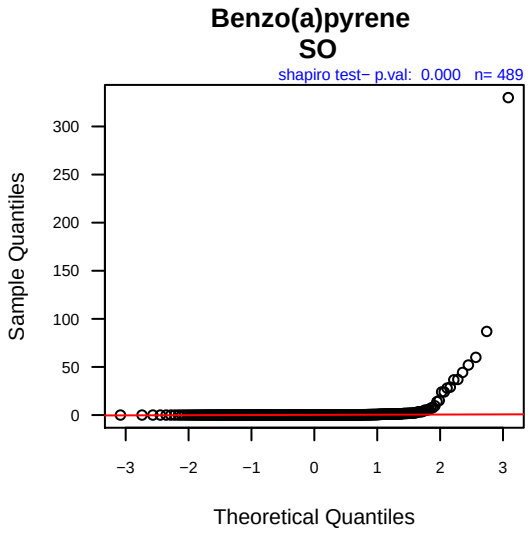

Benzene
WG (log)
shapiro test− p.val: 0.000 n= 267
Sample Quantiles
Theoretical Quantiles

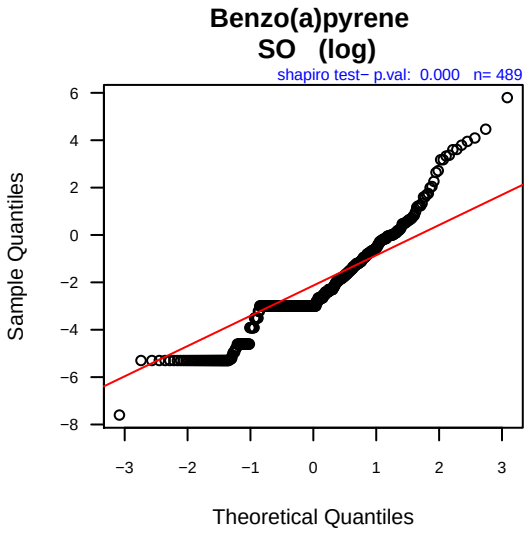

Benzo(a)anthracene
SO
shapiro test− p.val: 0.000 n= 485
Sample Quantiles
Theoretical Quantiles

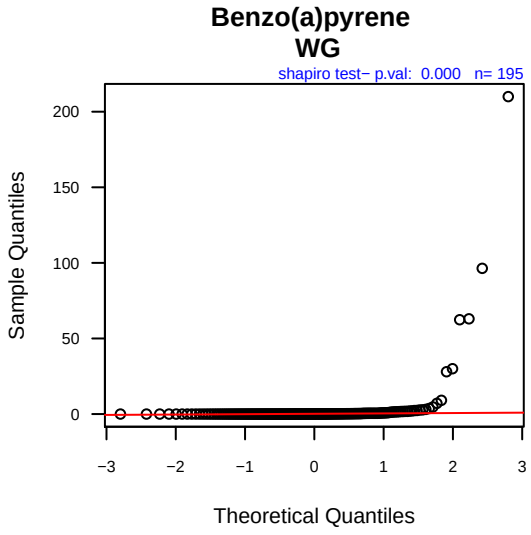

Benzo(a)anthracene
SO (log)
shapiro test− p.val: 0.000 n= 485
Sample Quantiles
Theoretical Quantiles

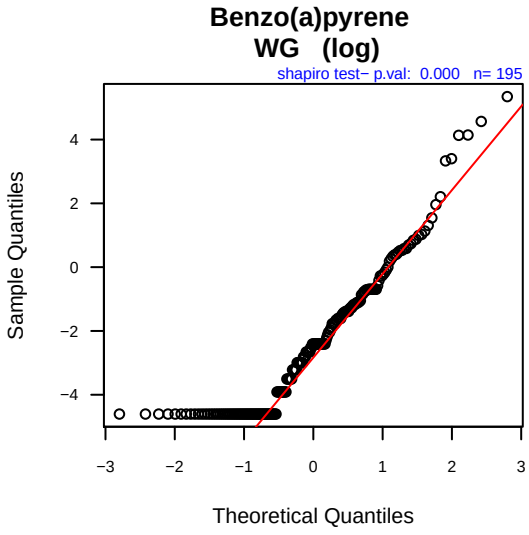

Benzo(a)anthracene
WG
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

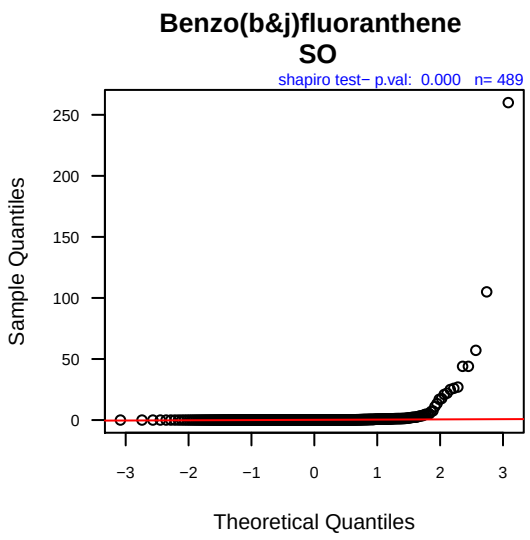

Benzo(a)anthracene
WG (log)
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

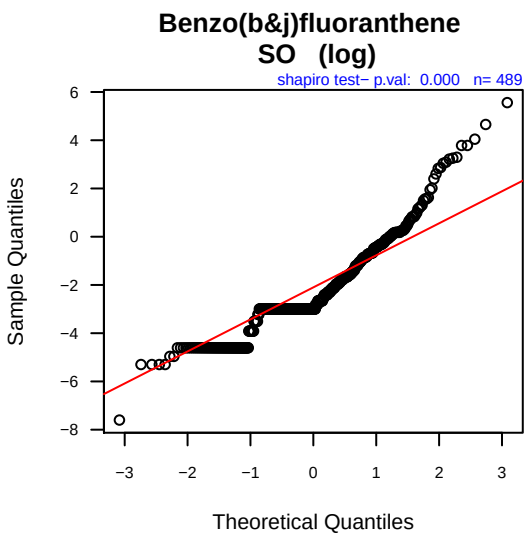

Benzo(a)pyrene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

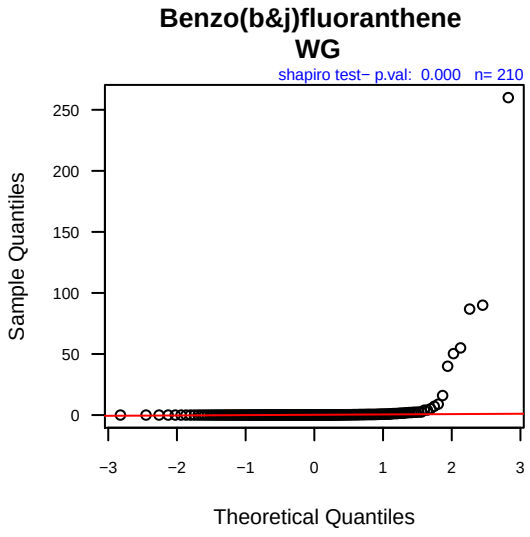

Benzo(a)pyrene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

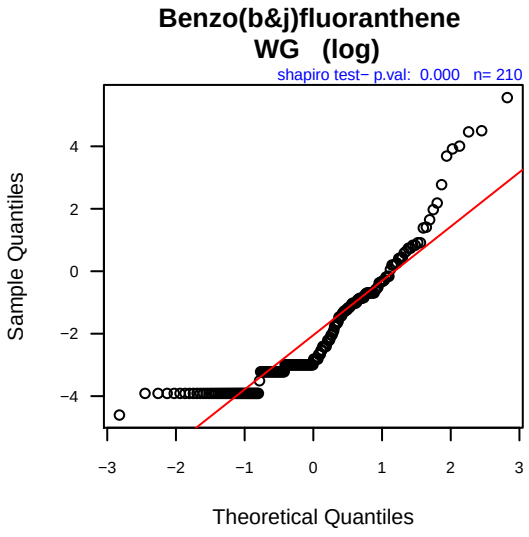

Benzo(a)pyrene
WG
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

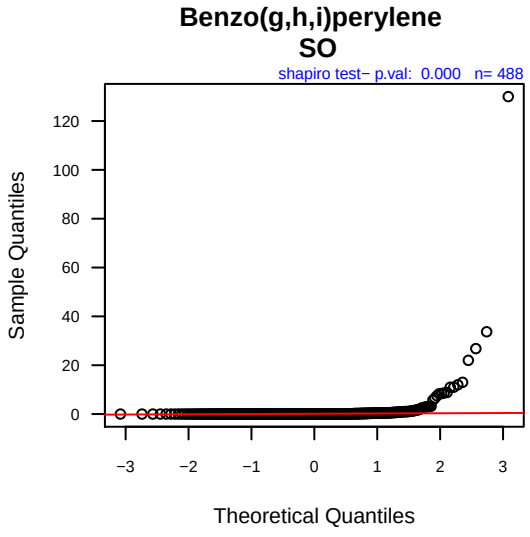

Benzo(a)pyrene
WG (log)
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

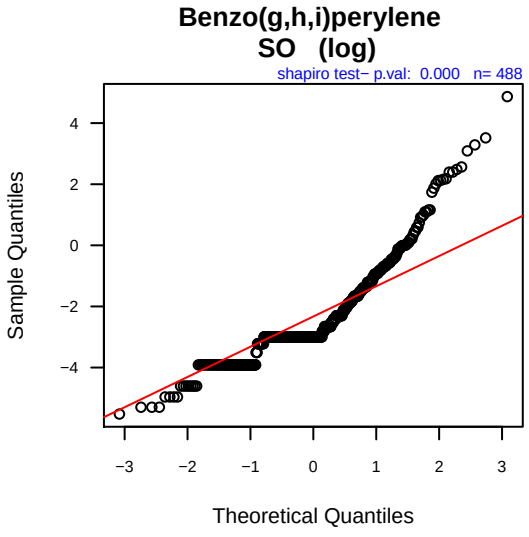

Benzo(b&j)fluoranthene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

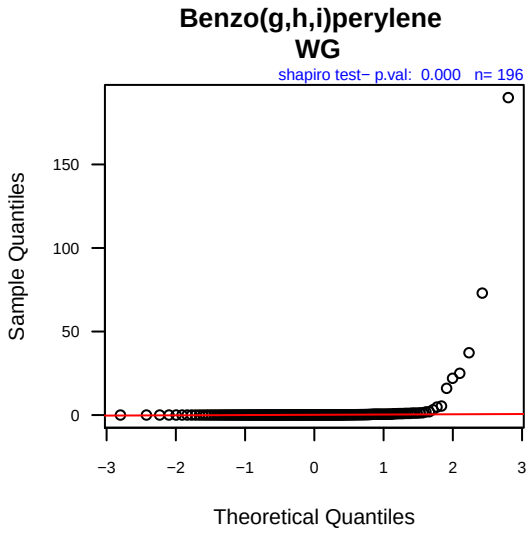

Benzo(b&j)fluoranthene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

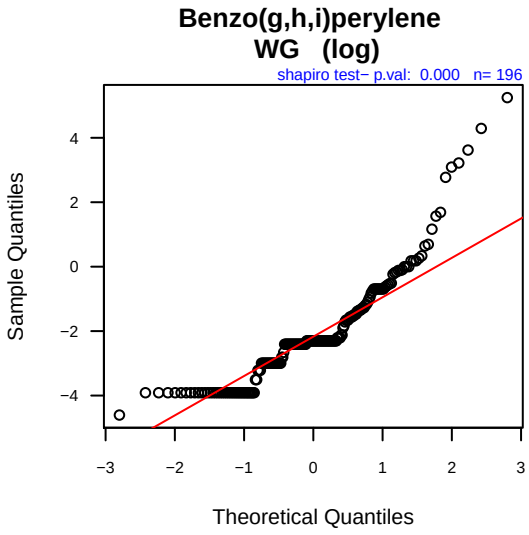

Benzo(b&j)fluoranthene
WG
shapiro test− p.val: 0.000 n= 210
Sample Quantiles
Theoretical Quantiles

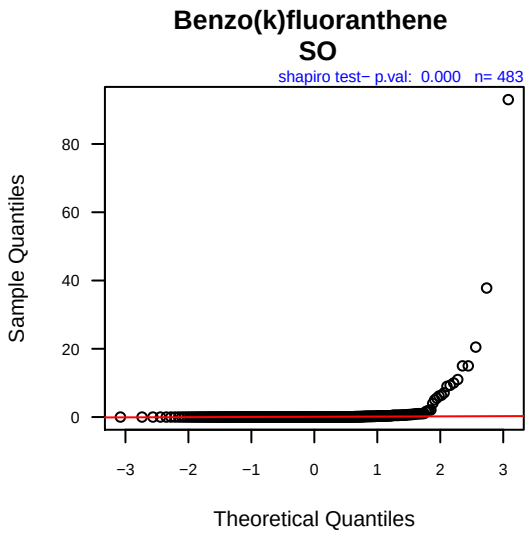

Benzo(b&j)fluoranthene
WG (log)
shapiro test− p.val: 0.000 n= 210
Sample Quantiles
Theoretical Quantiles

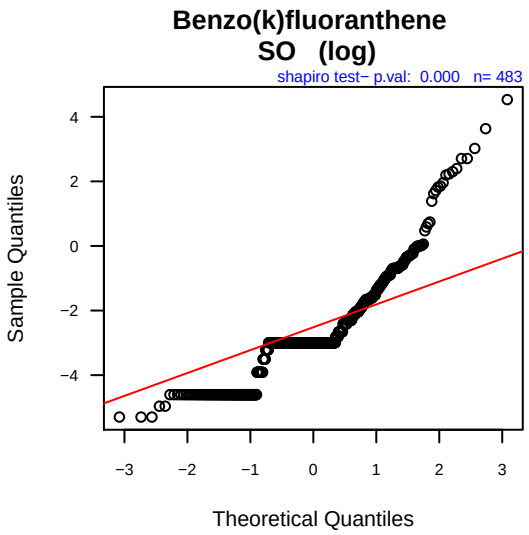

Benzo(g,h,i)perylene
SO
shapiro test− p.val: 0.000 n= 488
Sample Quantiles
Theoretical Quantiles

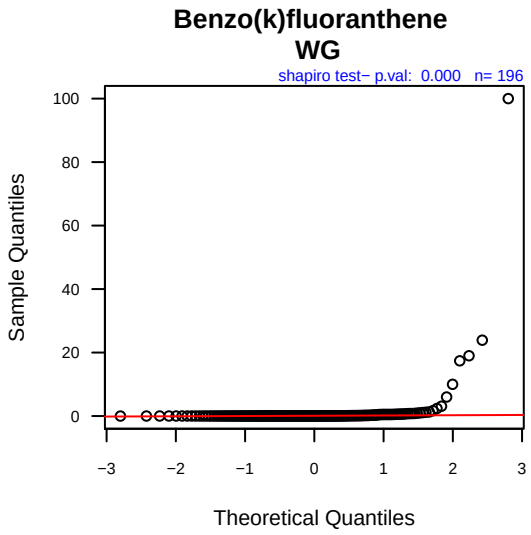

Benzo(g,h,i)perylene
SO (log)
shapiro test− p.val: 0.000 n= 488
Sample Quantiles
Theoretical Quantiles

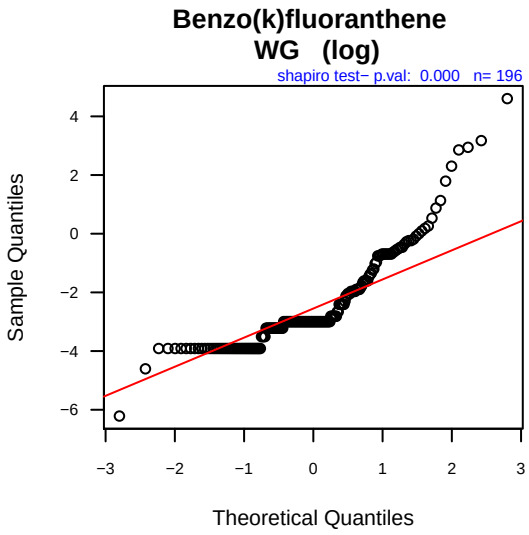

Benzo(g,h,i)perylene
WG
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

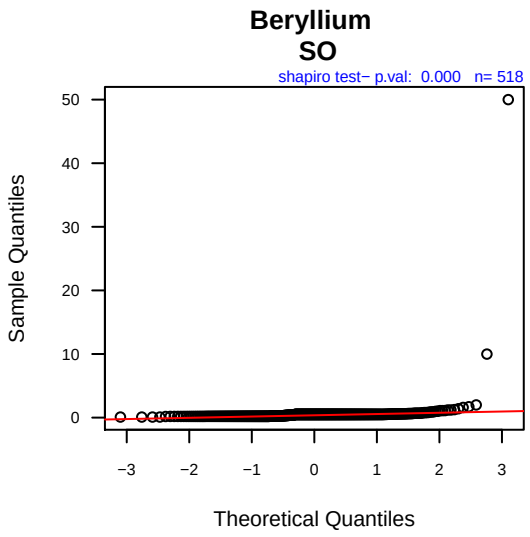

Benzo(g,h,i)perylene
WG (log)
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

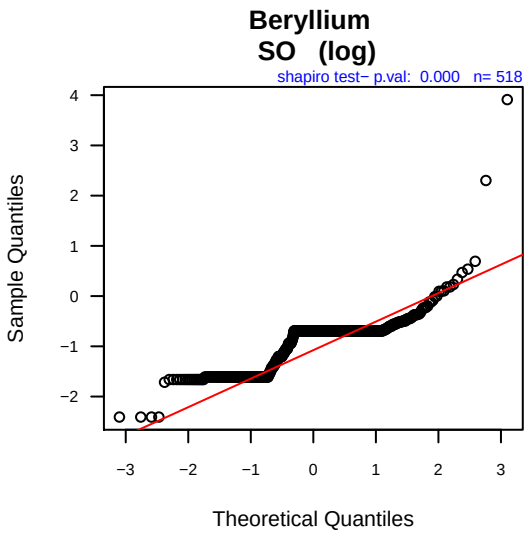

Benzo(k)fluoranthene
SO
shapiro test− p.val: 0.000 n= 483
Sample Quantiles
Theoretical Quantiles

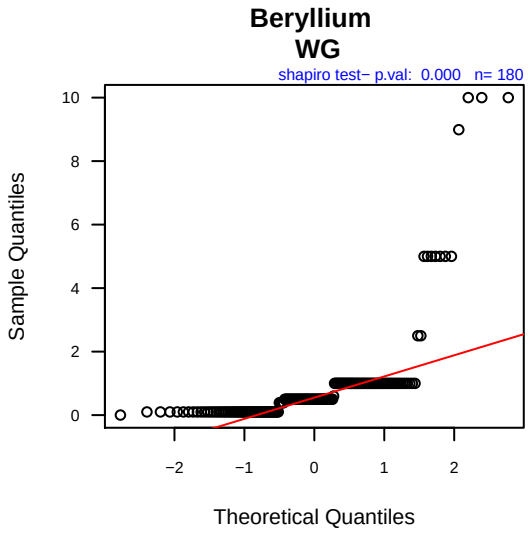

Benzo(k)fluoranthene
SO (log)
shapiro test− p.val: 0.000 n= 483
Sample Quantiles
Theoretical Quantiles

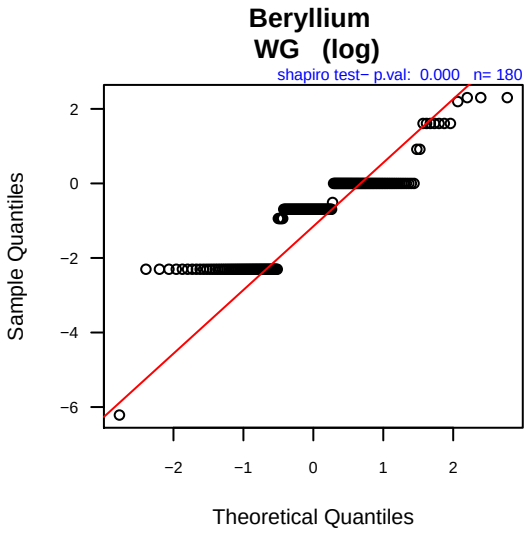

Benzo(k)fluoranthene
WG
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

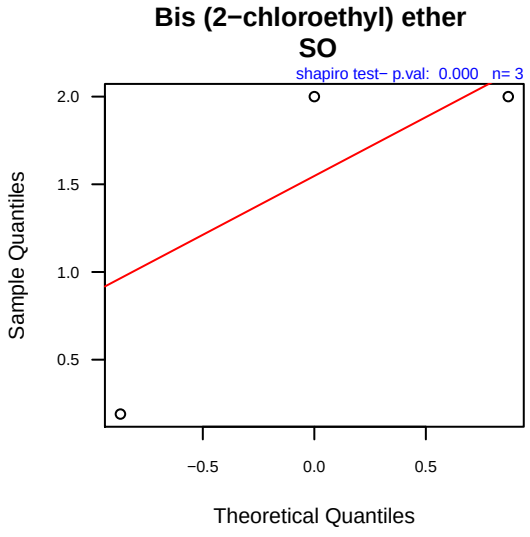

Benzo(k)fluoranthene
WG (log)
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

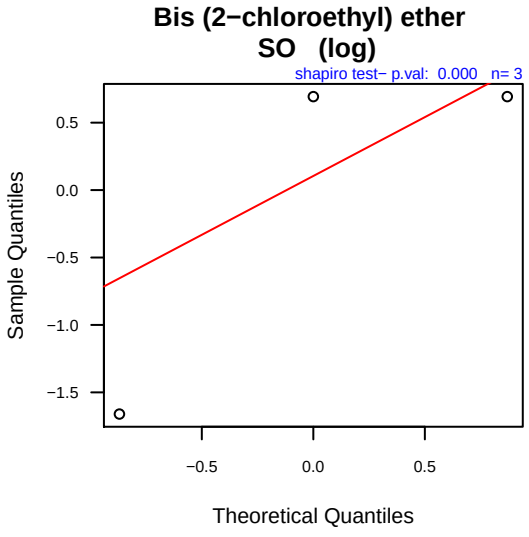

Beryllium
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

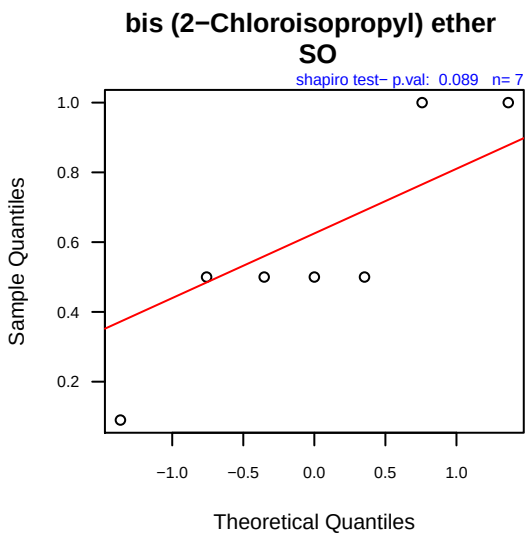

Beryllium
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

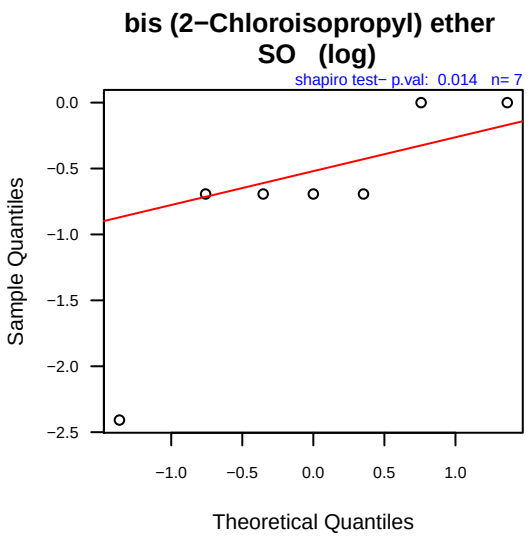

Beryllium
WG
shapiro test− p.val: 0.000 n= 180
Sample Quantiles
Theoretical Quantiles

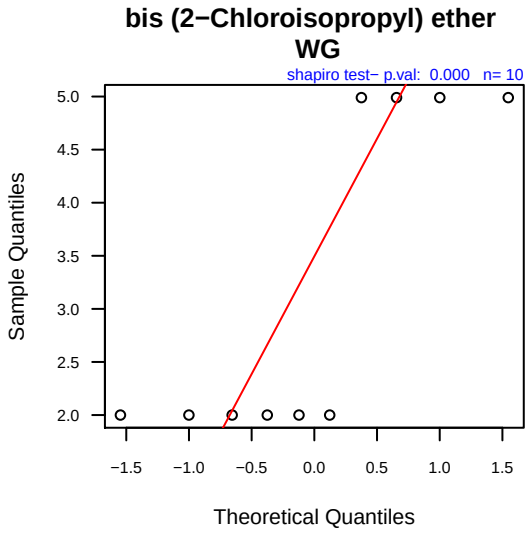

Beryllium
WG (log)
shapiro test− p.val: 0.000 n= 180
Sample Quantiles
Theoretical Quantiles

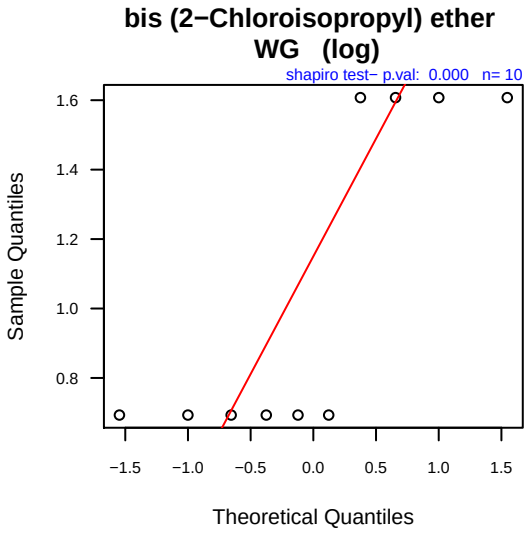

Bis (2−chloroethyl) ether
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

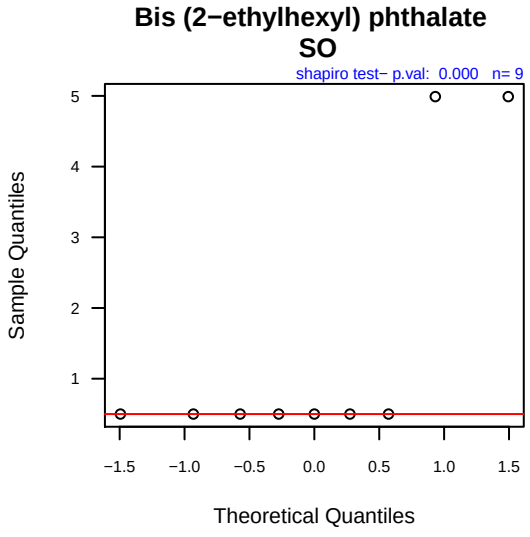

Bis (2−chloroethyl) ether
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

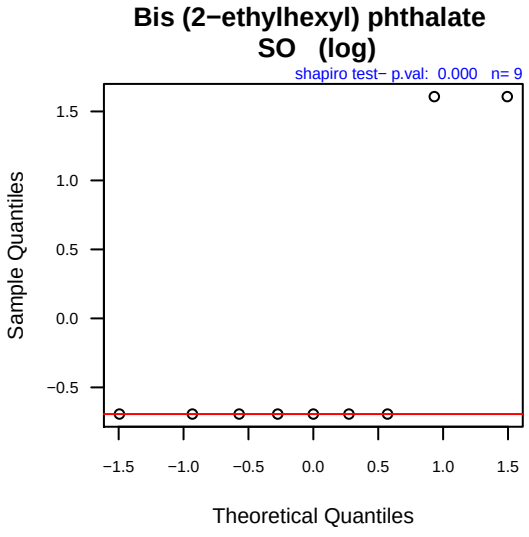

bis (2−Chloroisopropyl) ether
SO
shapiro test− p.val: 0.089 n= 7
Sample Quantiles
Theoretical Quantiles

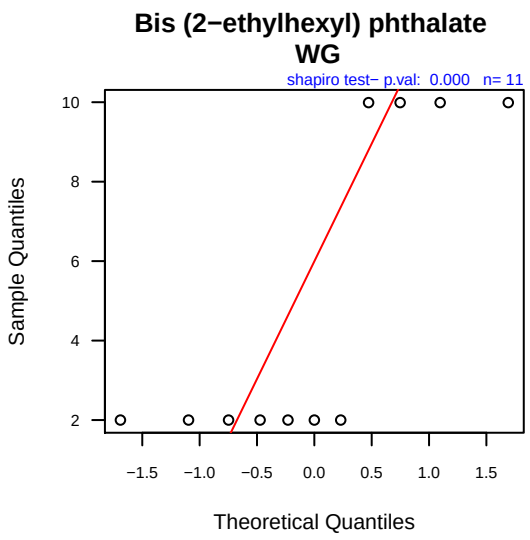

bis (2−Chloroisopropyl) ether
SO (log)
shapiro test− p.val: 0.014 n= 7
Sample Quantiles
Theoretical Quantiles

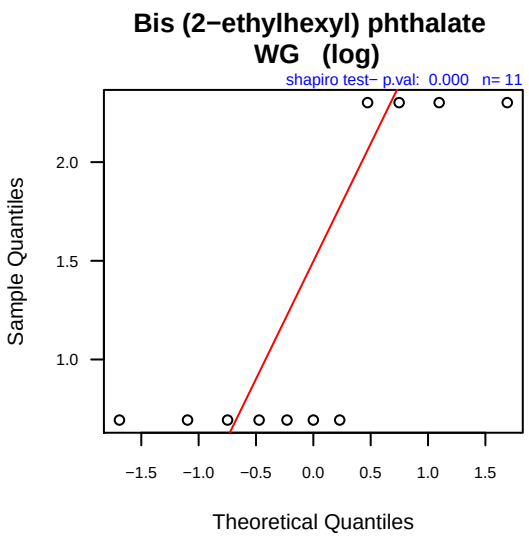

bis (2−Chloroisopropyl) ether
WG
shapiro test− p.val: 0.000 n= 10
Sample Quantiles
Theoretical Quantiles

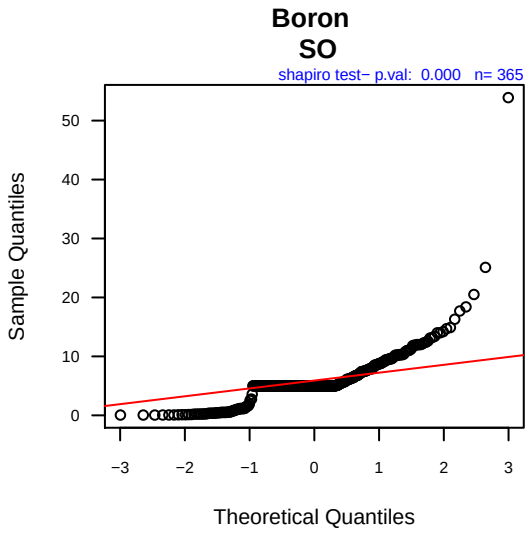

bis (2−Chloroisopropyl) ether
WG (log)
shapiro test− p.val: 0.000 n= 10
Sample Quantiles
Theoretical Quantiles

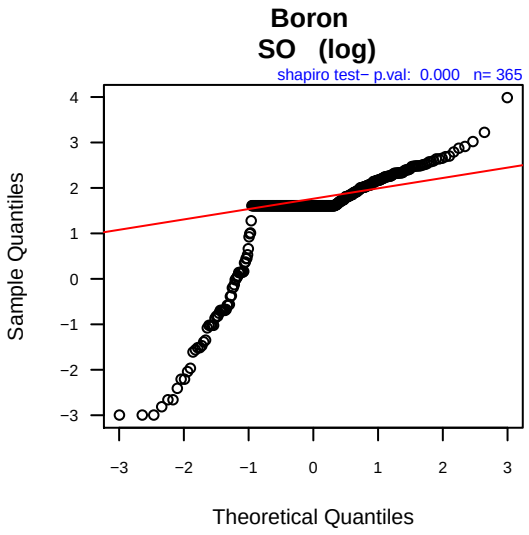

Bis (2−ethylhexyl) phthalate
SO
shapiro test− p.val: 0.000 n= 9
Sample Quantiles
Theoretical Quantiles

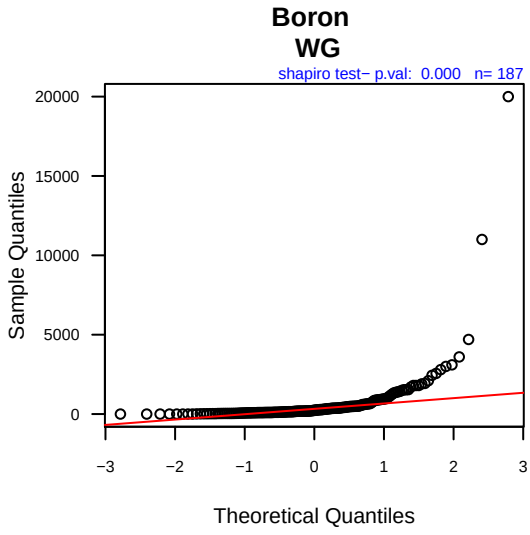

Bis (2−ethylhexyl) phthalate
SO (log)
shapiro test− p.val: 0.000 n= 9
Sample Quantiles
Theoretical Quantiles

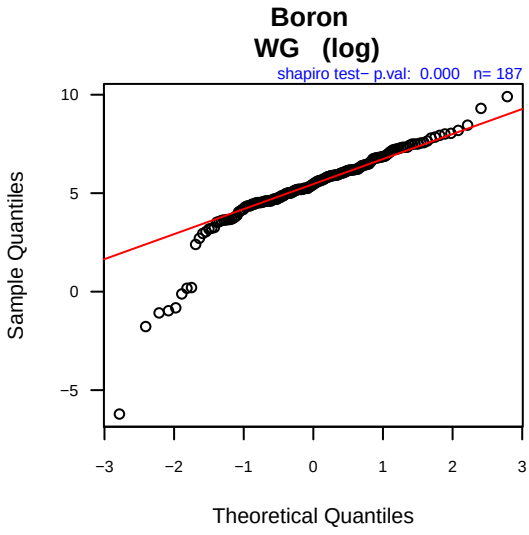

Bis (2−ethylhexyl) phthalate
WG
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

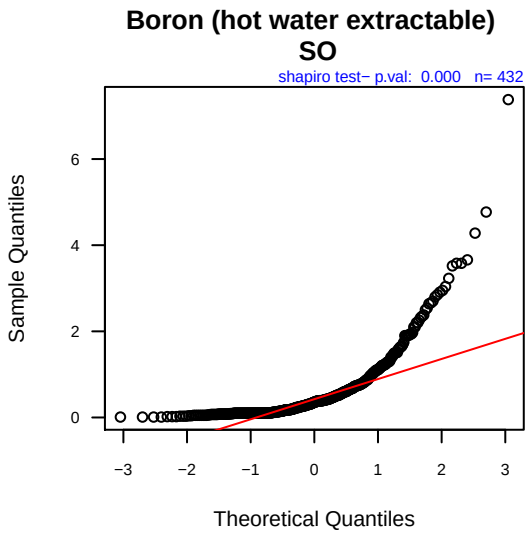

Bis (2−ethylhexyl) phthalate
WG (log)
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

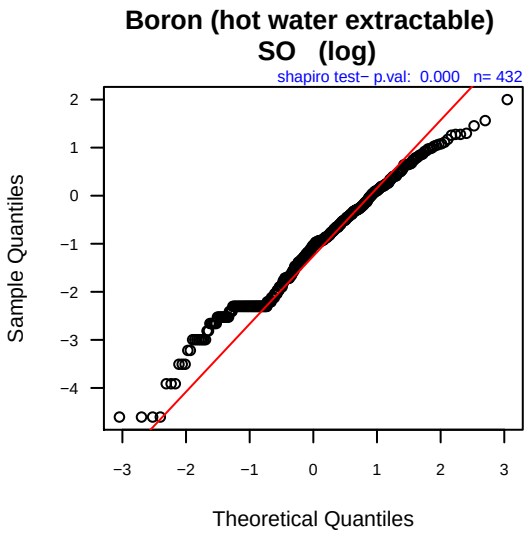

Boron
SO
shapiro test− p.val: 0.000 n= 365
Sample Quantiles
Theoretical Quantiles

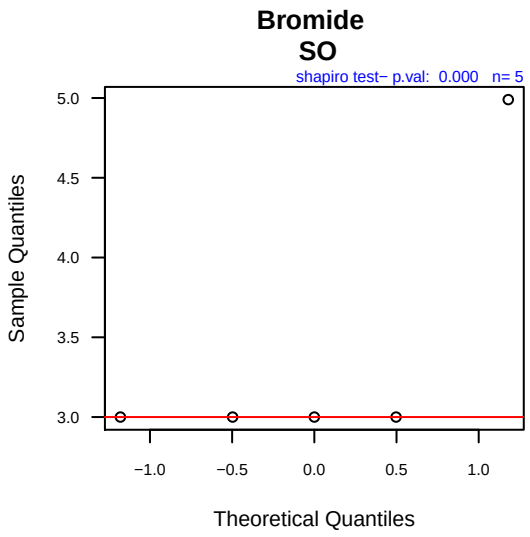

Boron
SO (log)
shapiro test− p.val: 0.000 n= 365
Sample Quantiles
Theoretical Quantiles

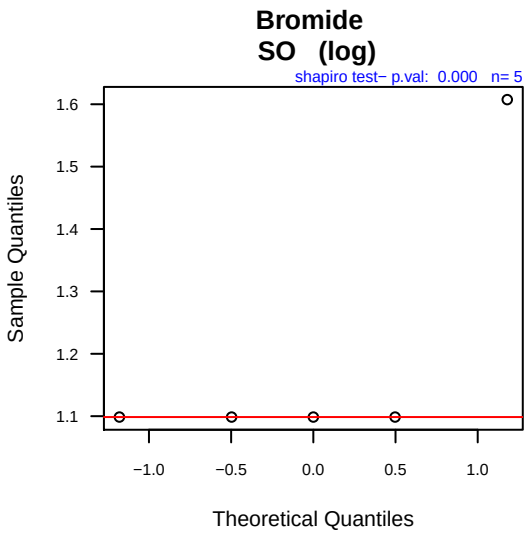

Boron
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

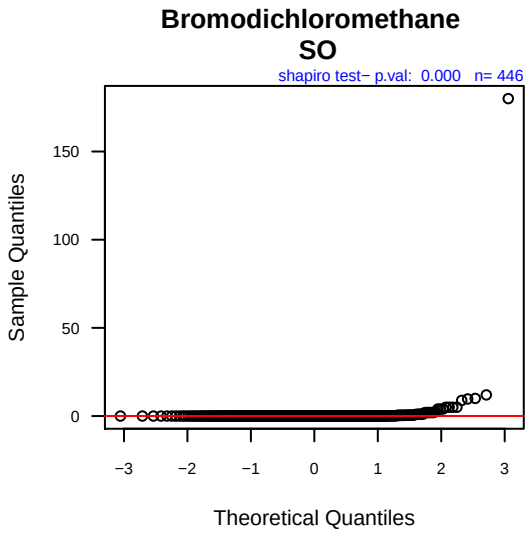

Boron
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

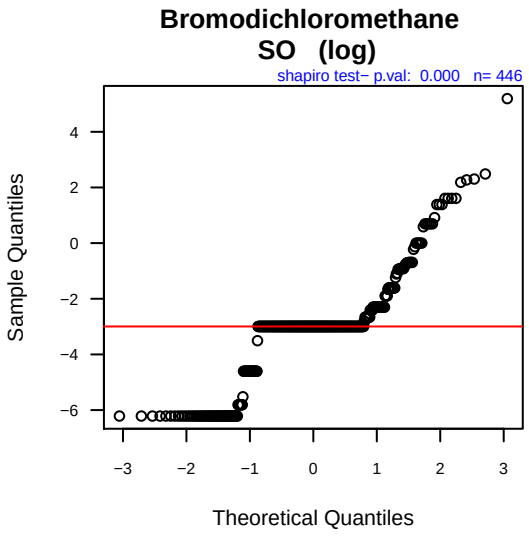

Boron (hot water extractable)
SO
shapiro test− p.val: 0.000 n= 432
Sample Quantiles
Theoretical Quantiles

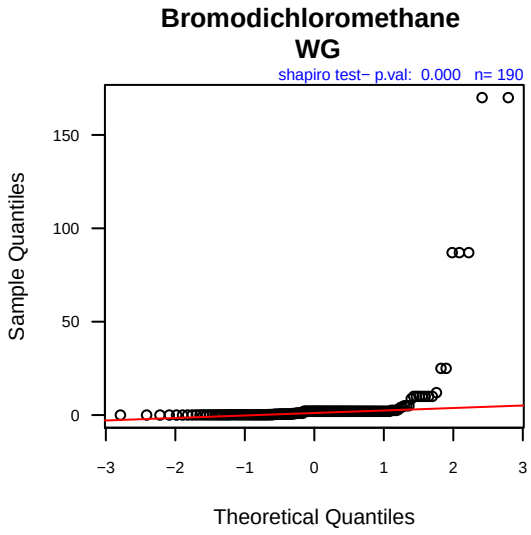

Boron (hot water extractable)
SO (log)
shapiro test− p.val: 0.000 n= 432
Sample Quantiles
Theoretical Quantiles

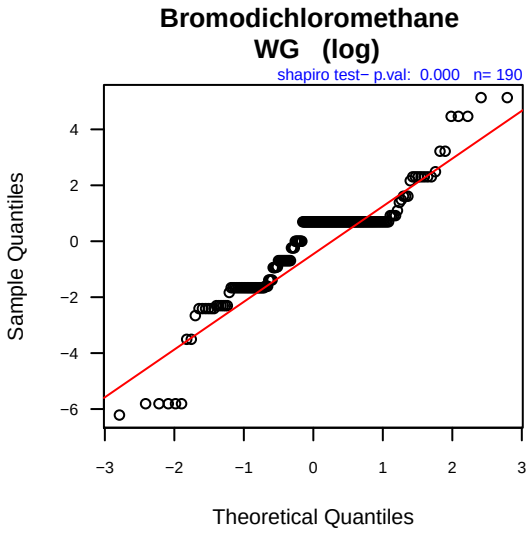

Bromide
SO
shapiro test− p.val: 0.000 n= 5
Sample Quantiles
Theoretical Quantiles

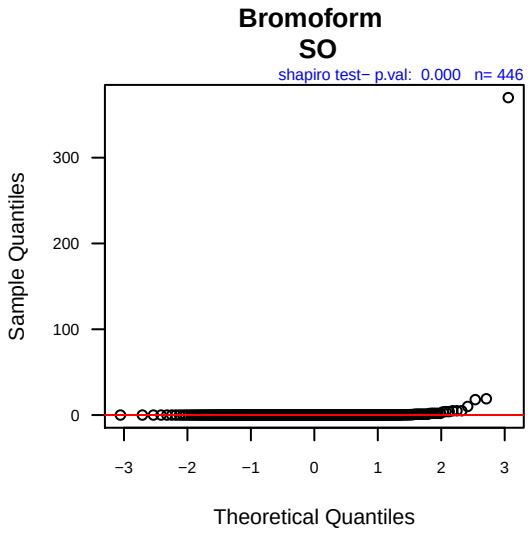

Bromide
SO (log)
shapiro test− p.val: 0.000 n= 5
Sample Quantiles
Theoretical Quantiles

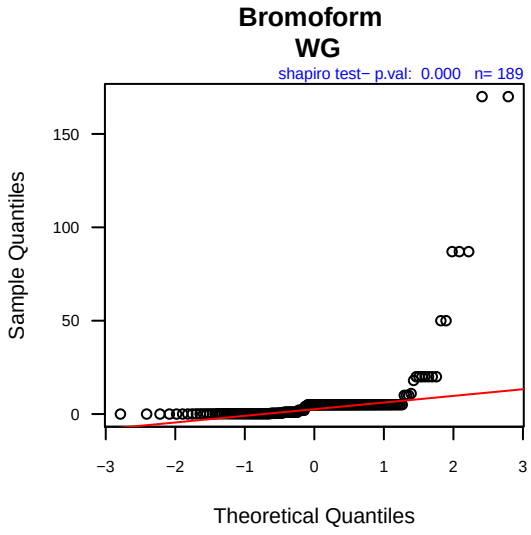

Bromodichloromethane
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

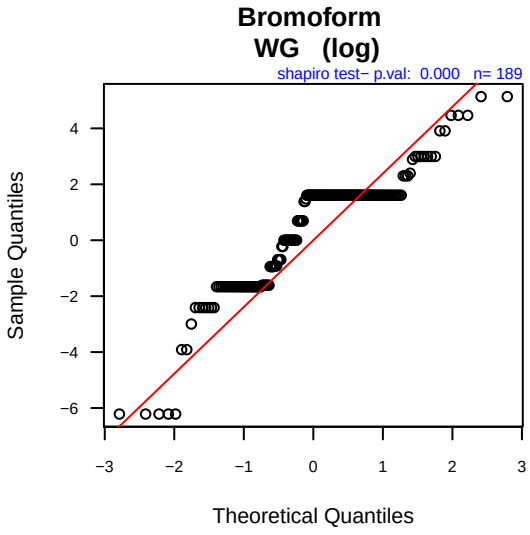

Bromodichloromethane
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

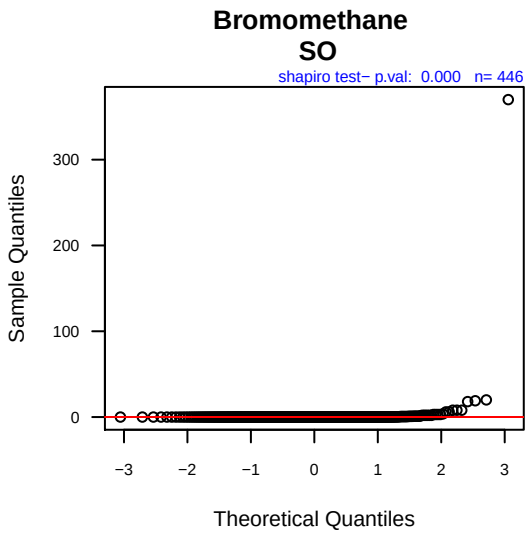

Bromodichloromethane
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

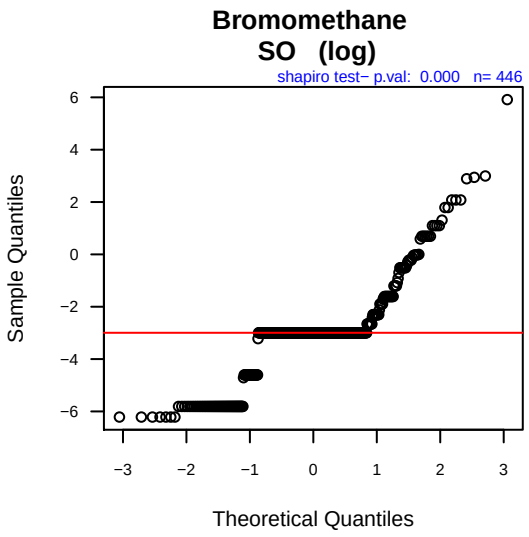

Bromodichloromethane
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

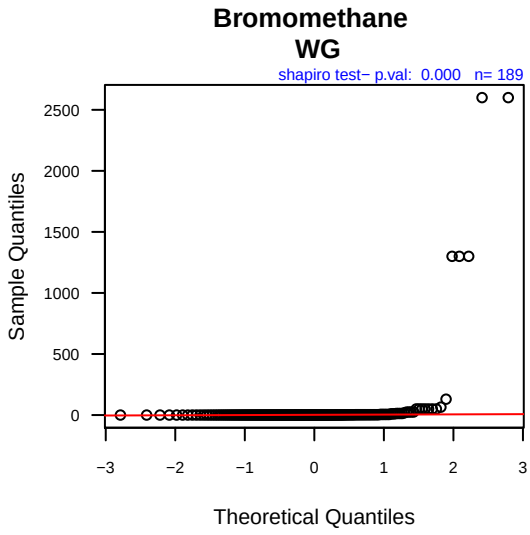

Bromoform
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

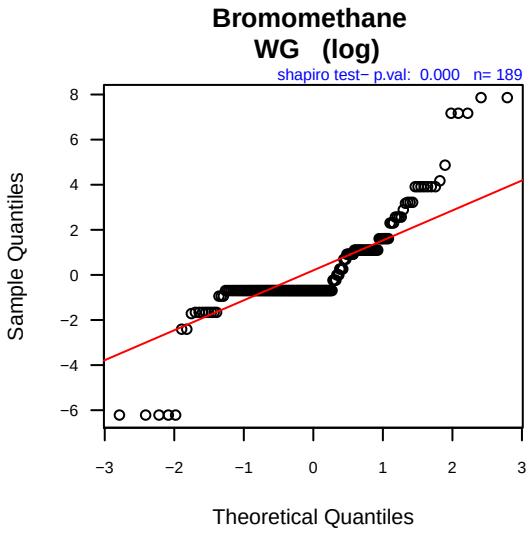

Bromoform
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

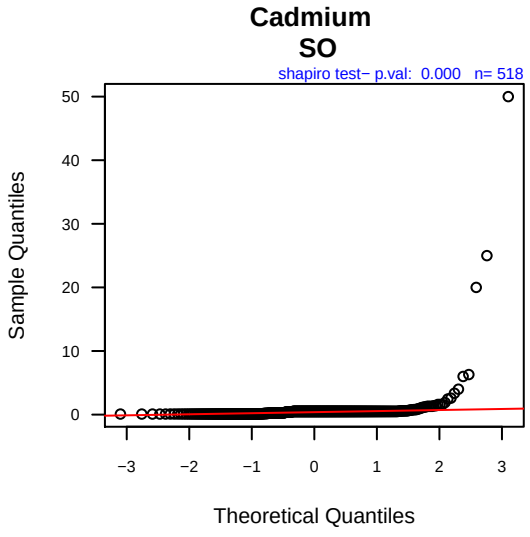

Bromoform
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

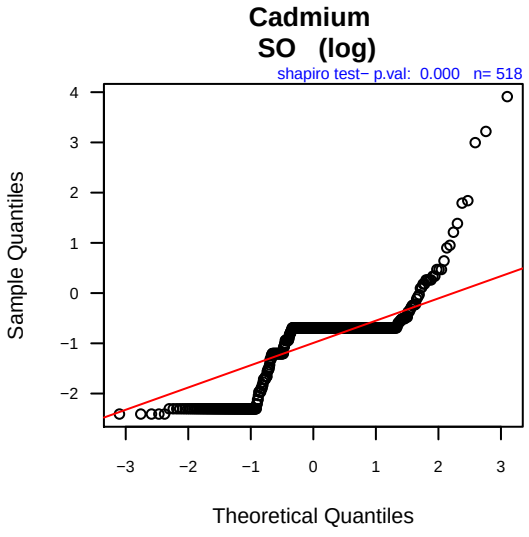

Bromomethane
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

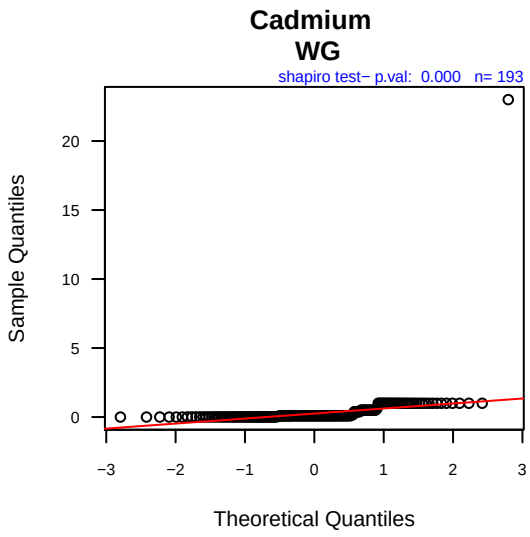

Bromomethane
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

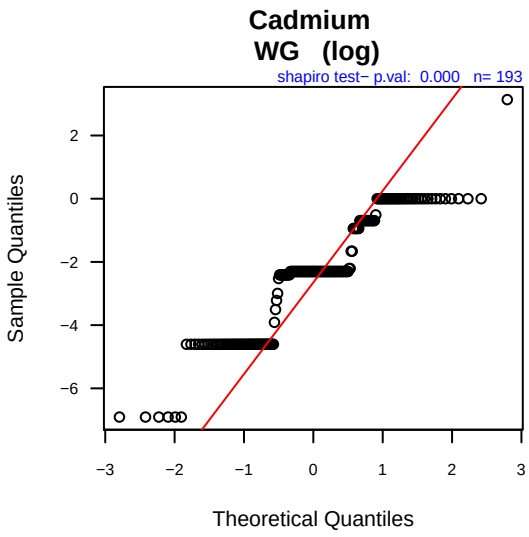

Bromomethane
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

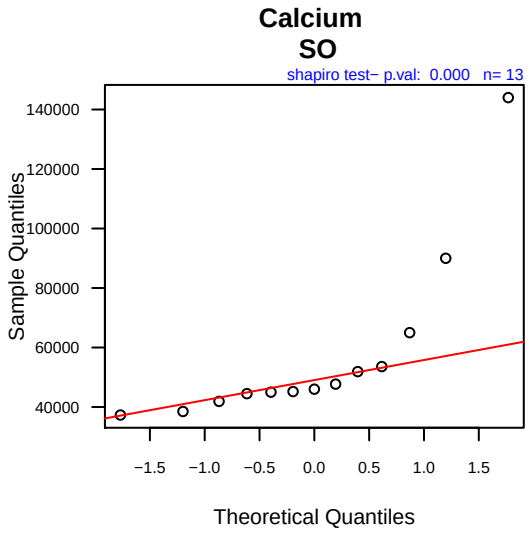

Bromomethane
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

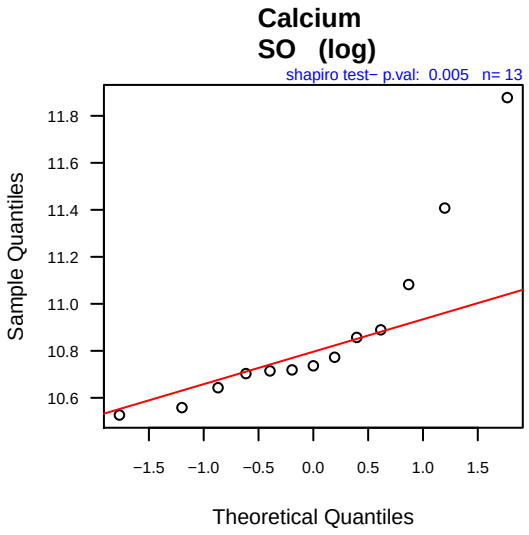

Cadmium
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

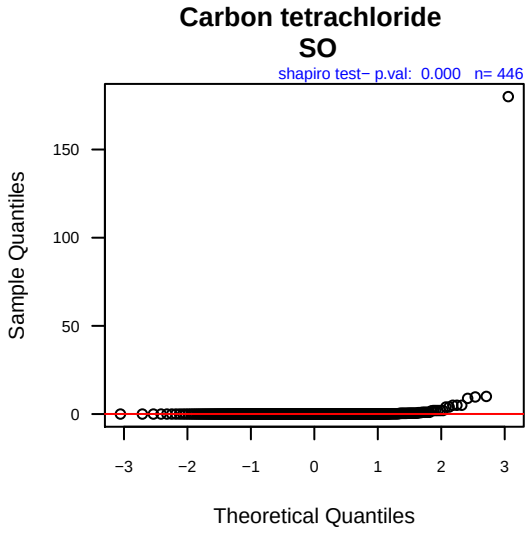

Cadmium
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

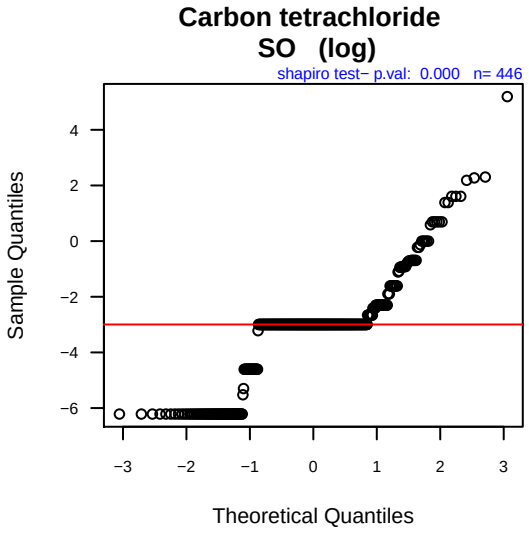

Cadmium
WG
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

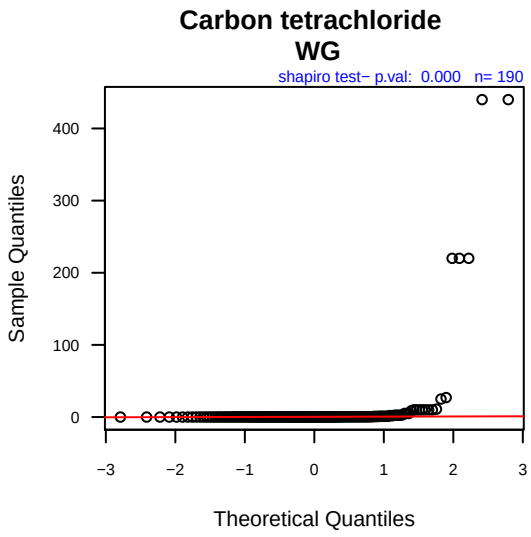

Cadmium
WG (log)
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

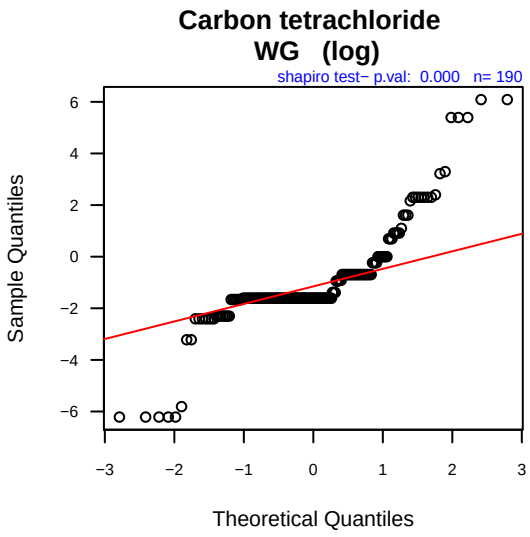

Calcium
SO
shapiro test− p.val: 0.000 n= 13
Sample Quantiles
Theoretical Quantiles

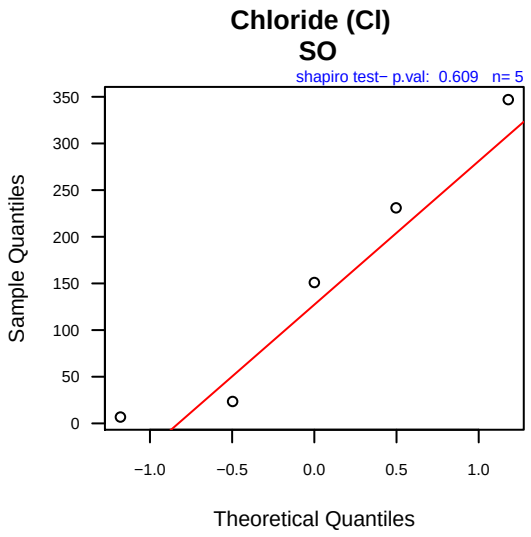

Calcium
SO (log)
shapiro test− p.val: 0.005 n= 13
Sample Quantiles
Theoretical Quantiles

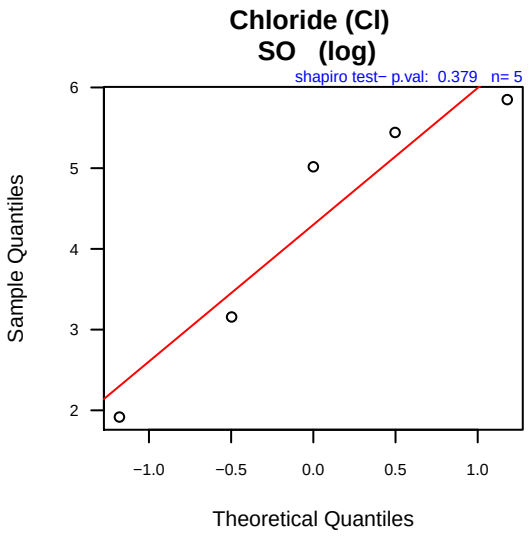

Carbon tetrachloride
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

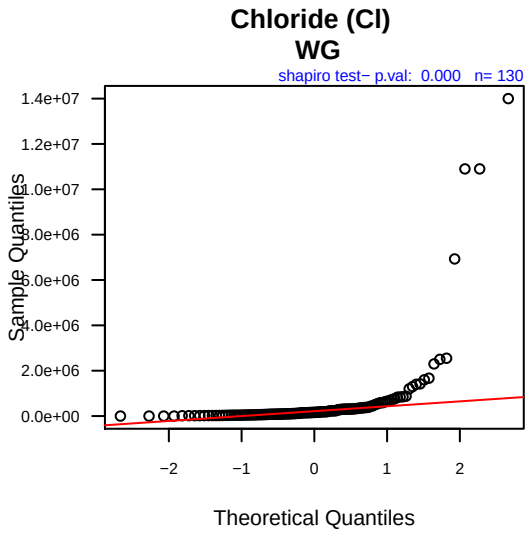

Carbon tetrachloride
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

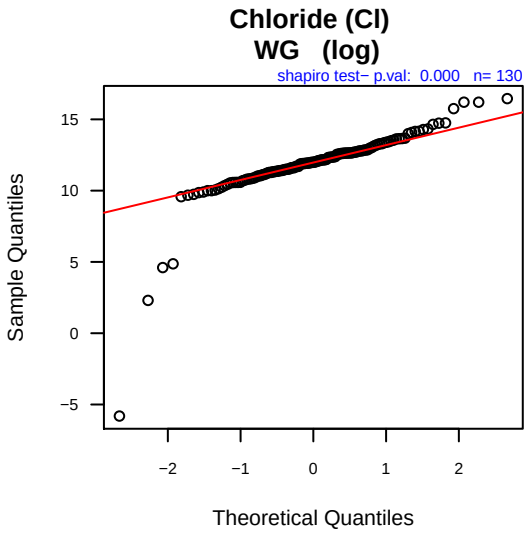

Carbon tetrachloride
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

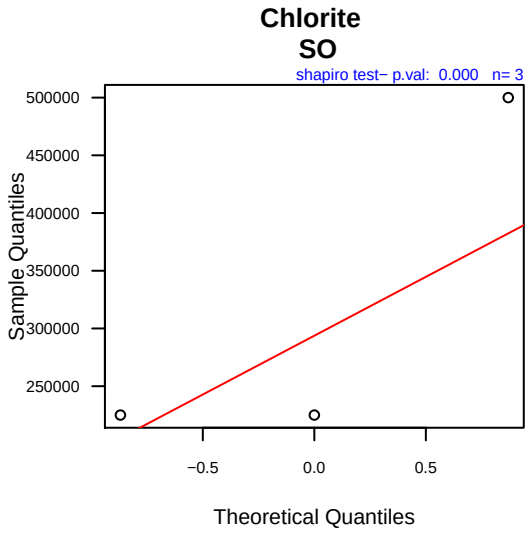

Carbon tetrachloride
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

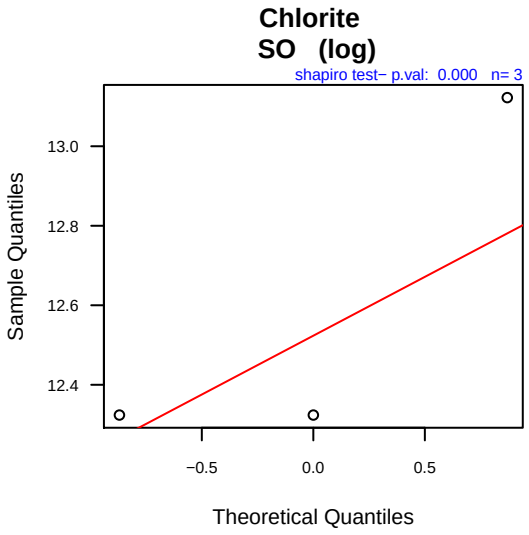

Chloride (Cl)
SO
shapiro test− p.val: 0.609 n= 5
Sample Quantiles
Theoretical Quantiles

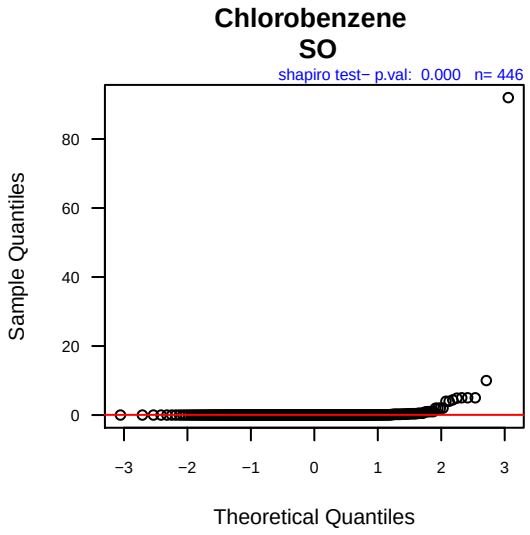

Chloride (Cl)
SO (log)
shapiro test− p.val: 0.379 n= 5
Sample Quantiles
Theoretical Quantiles

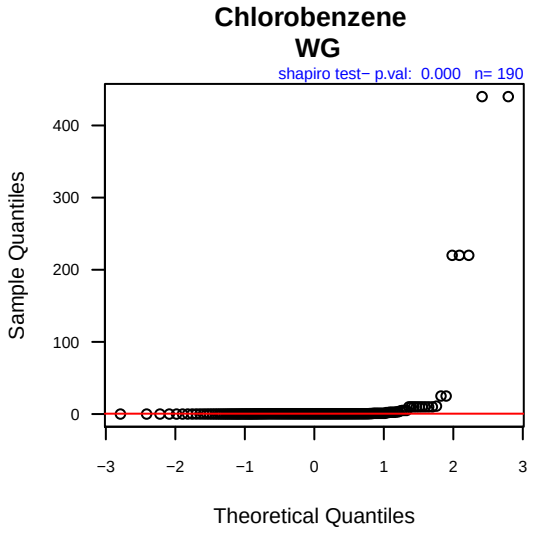

Chloride (Cl)
WG
shapiro test− p.val: 0.000 n= 130
Sample Quantiles
Theoretical Quantiles

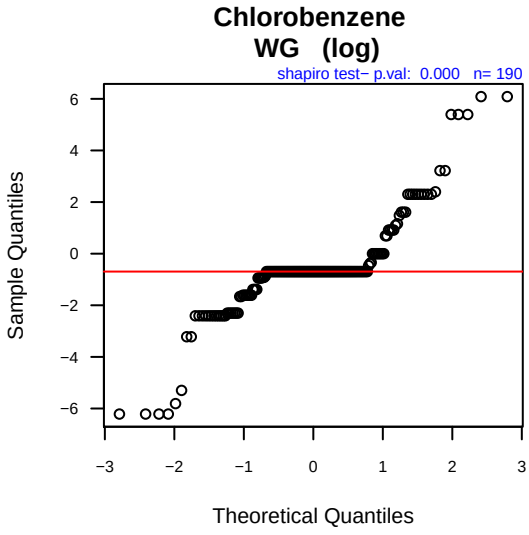

Chloride (Cl)
WG (log)
shapiro test− p.val: 0.000 n= 130
Sample Quantiles
Theoretical Quantiles

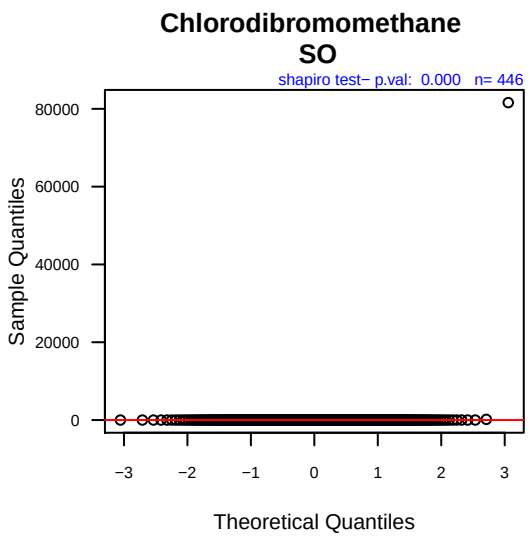

Chlorite
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

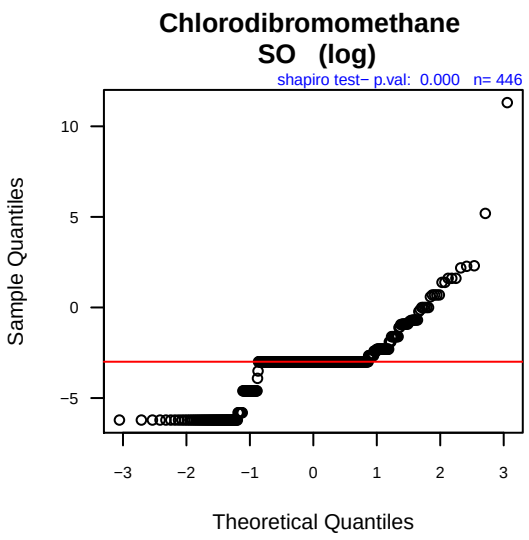

Chlorite
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

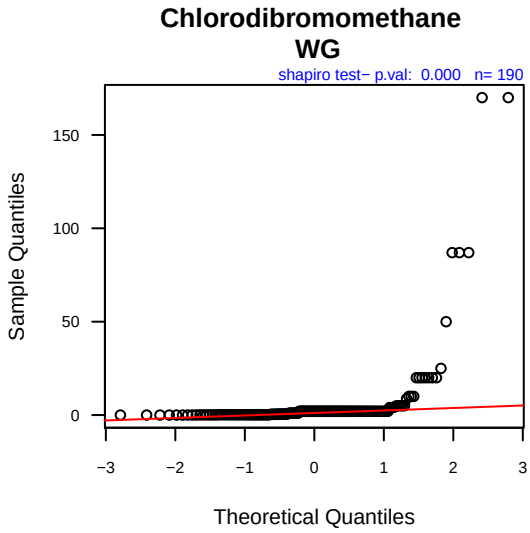

Chlorobenzene
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

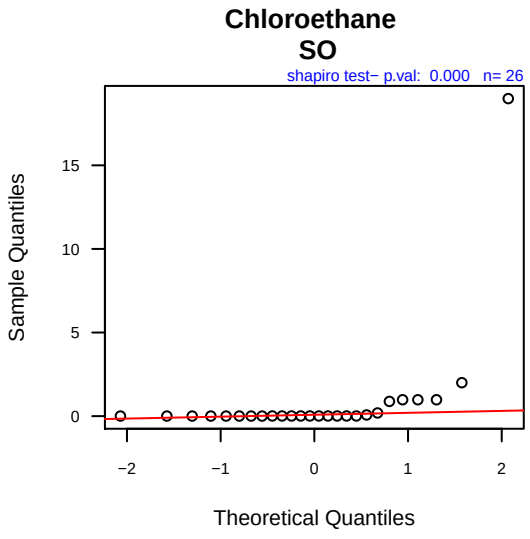

Chlorobenzene
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

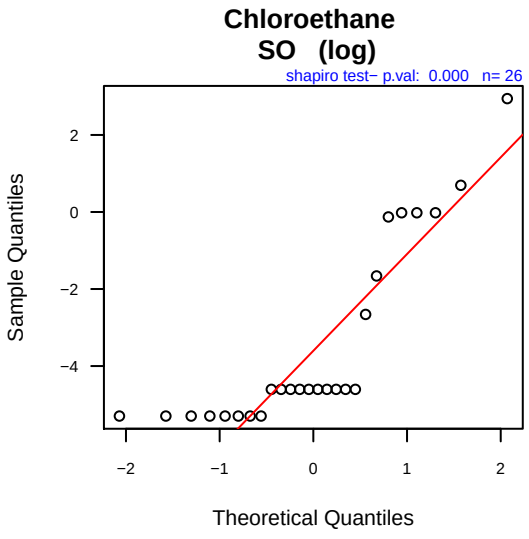

Chlorobenzene
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

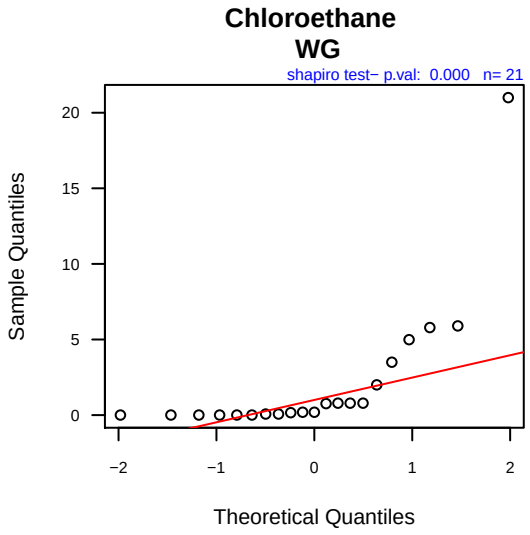

Chlorodibromomethane
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

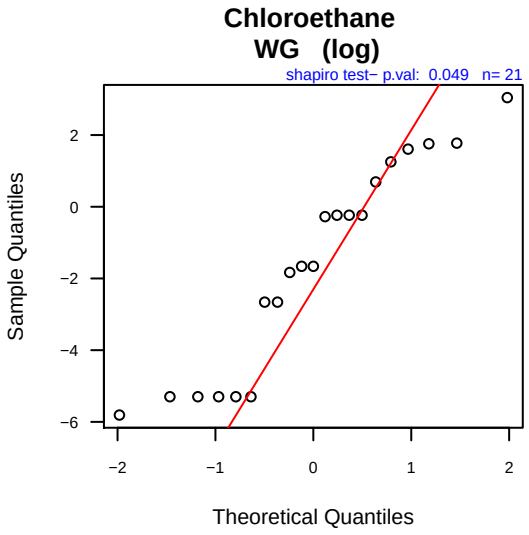

Chlorodibromomethane
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

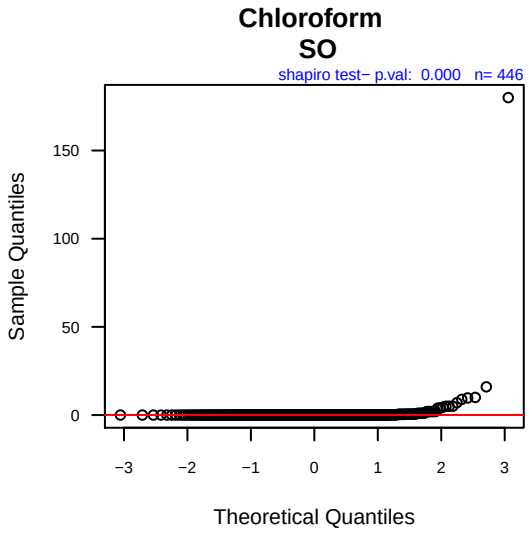

Chlorodibromomethane
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

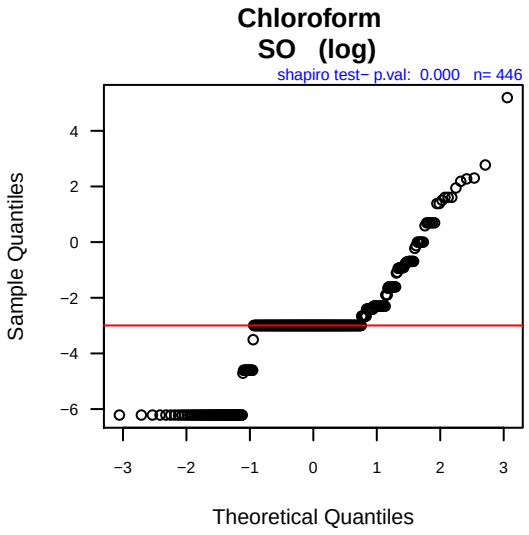

Chloroethane
SO
shapiro test− p.val: 0.000 n= 26
Sample Quantiles
Theoretical Quantiles

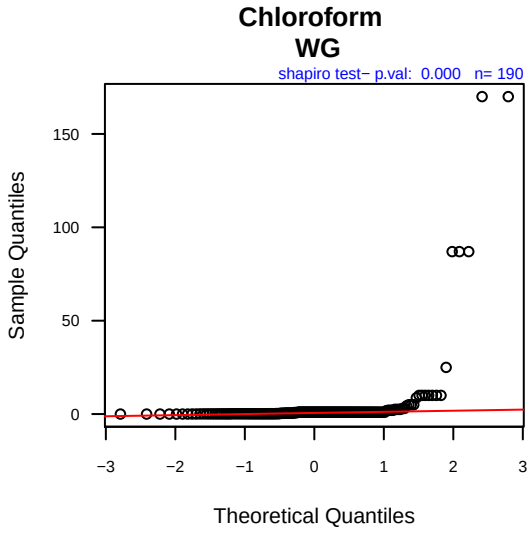

Chloroethane
SO (log)
shapiro test− p.val: 0.000 n= 26
Sample Quantiles
Theoretical Quantiles

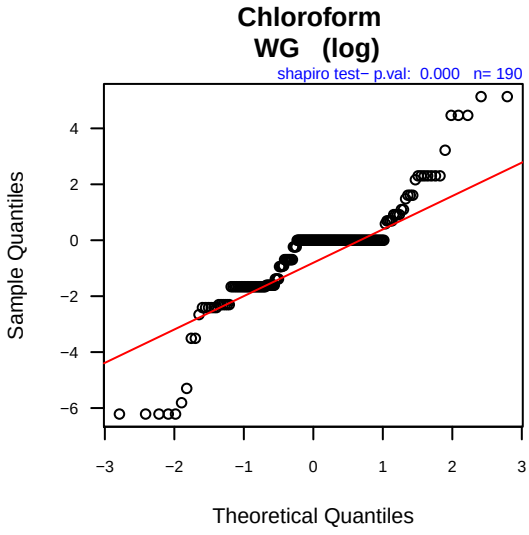

Chloroethane
WG
shapiro test− p.val: 0.000 n= 21
Sample Quantiles
Theoretical Quantiles

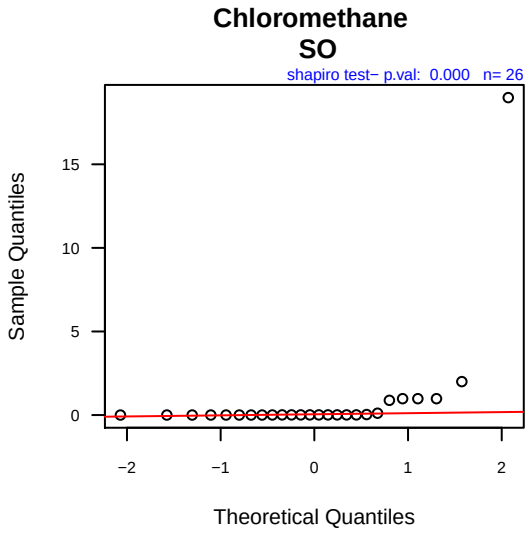

Chloroethane
WG (log)
shapiro test− p.val: 0.049 n= 21
Sample Quantiles
Theoretical Quantiles

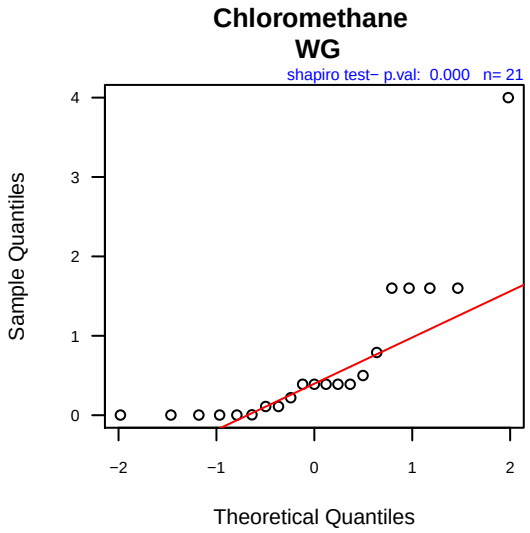

Chloroform
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

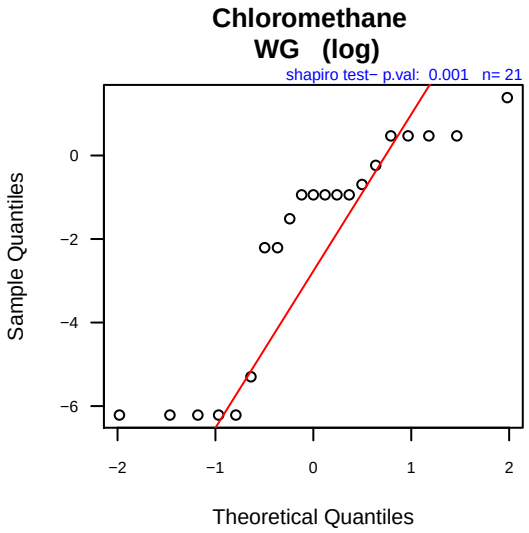

Chloroform
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

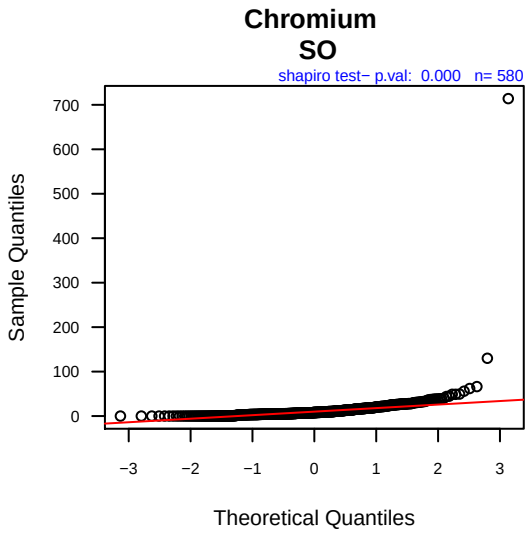

Chloroform
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

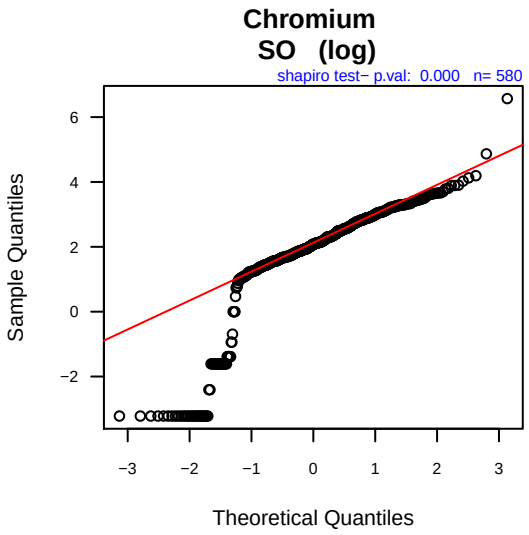

Chloroform
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

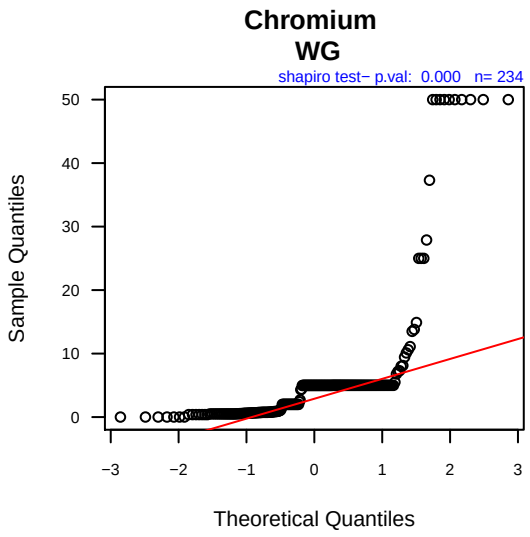

Chloromethane
SO
shapiro test− p.val: 0.000 n= 26
Sample Quantiles
Theoretical Quantiles

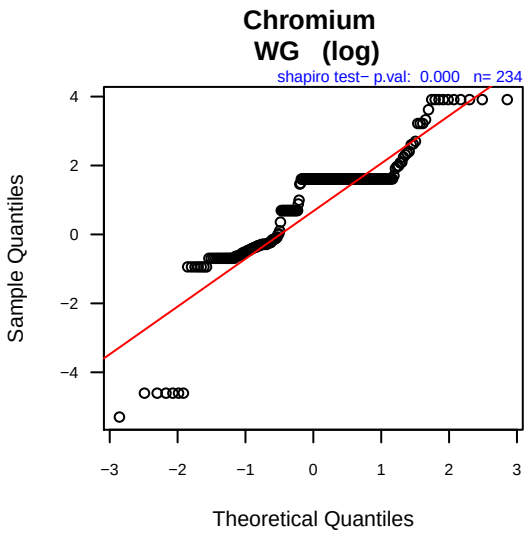

Chloromethane
WG
shapiro test− p.val: 0.000 n= 21
Sample Quantiles
Theoretical Quantiles

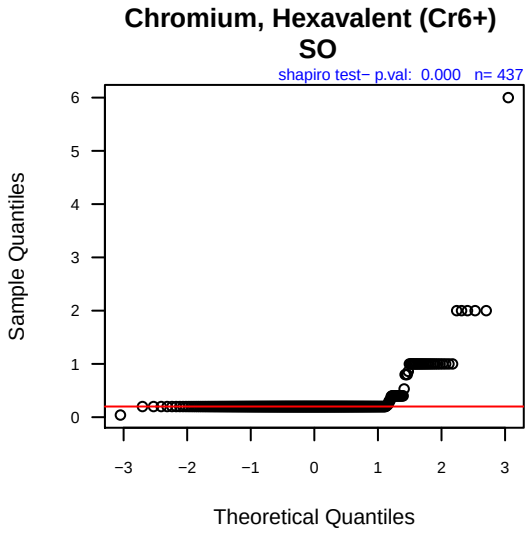

Chloromethane
WG (log)
shapiro test− p.val: 0.001 n= 21
Sample Quantiles
Theoretical Quantiles

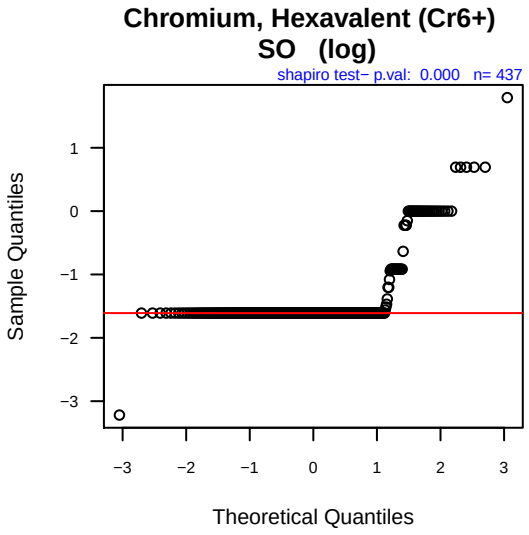

Chromium
SO
shapiro test− p.val: 0.000 n= 580
Sample Quantiles
Theoretical Quantiles

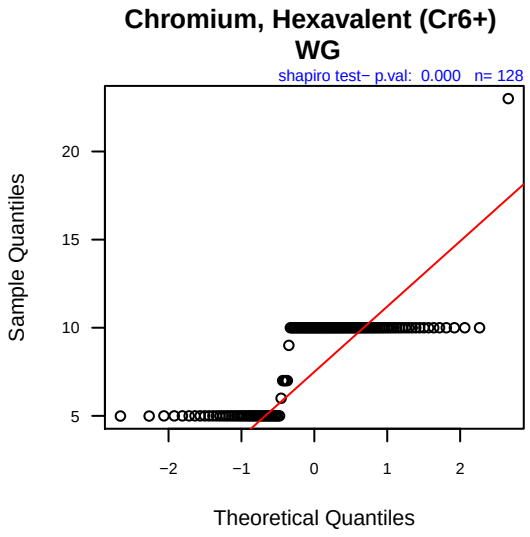

Chromium
SO (log)
shapiro test− p.val: 0.000 n= 580
Sample Quantiles
Theoretical Quantiles

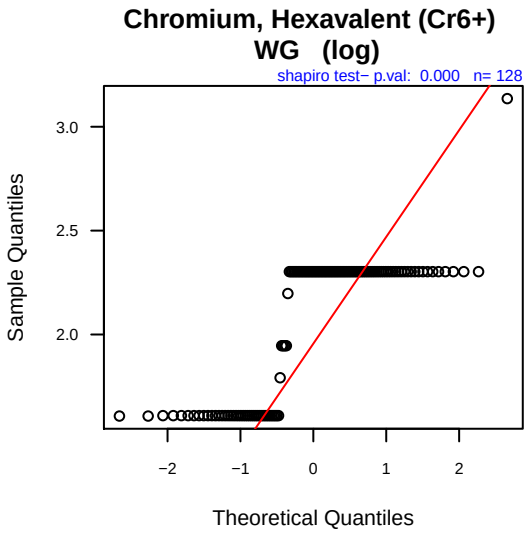

Chromium
WG
shapiro test− p.val: 0.000 n= 234
Sample Quantiles
Theoretical Quantiles

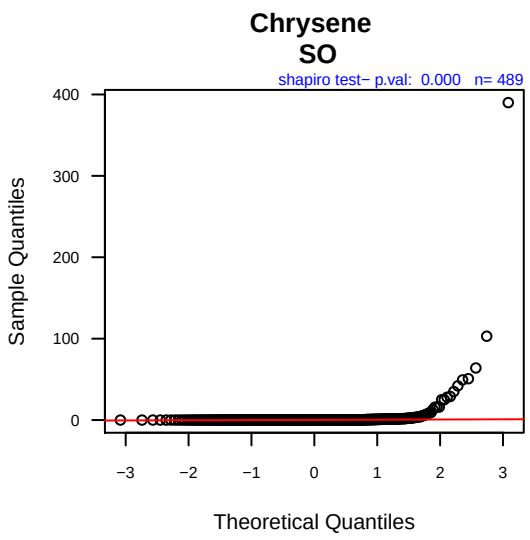

Chromium
WG (log)
shapiro test− p.val: 0.000 n= 234
Sample Quantiles
Theoretical Quantiles

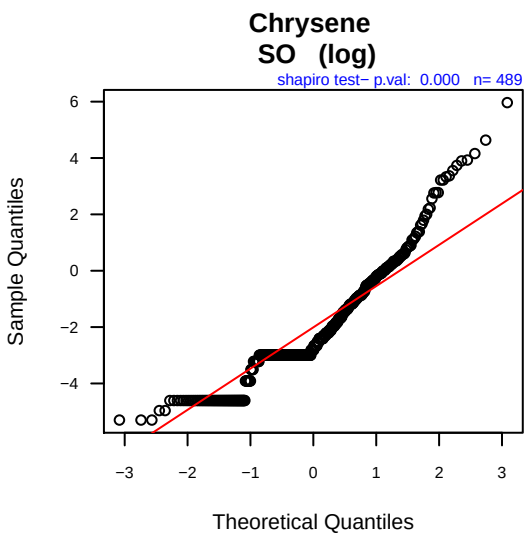

Chromium, Hexavalent (Cr6+)
SO
shapiro test− p.val: 0.000 n= 437
Sample Quantiles
Theoretical Quantiles

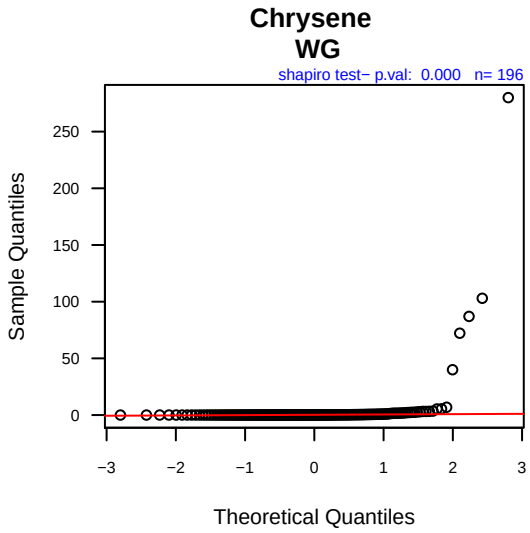

Chromium, Hexavalent (Cr6+)
SO (log)
shapiro test− p.val: 0.000 n= 437
Sample Quantiles
Theoretical Quantiles

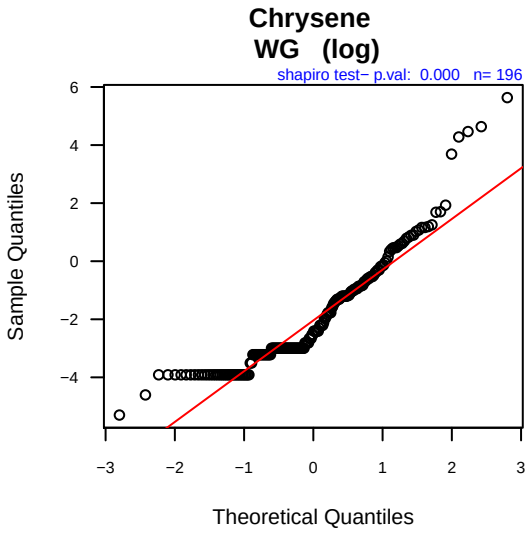

Chromium, Hexavalent (Cr6+)
WG
shapiro test− p.val: 0.000 n= 128
Sample Quantiles
Theoretical Quantiles

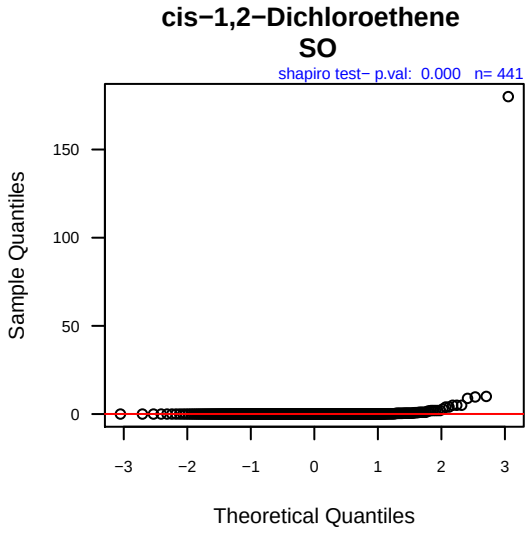

Chromium, Hexavalent (Cr6+)
WG (log)
shapiro test− p.val: 0.000 n= 128
Sample Quantiles
Theoretical Quantiles

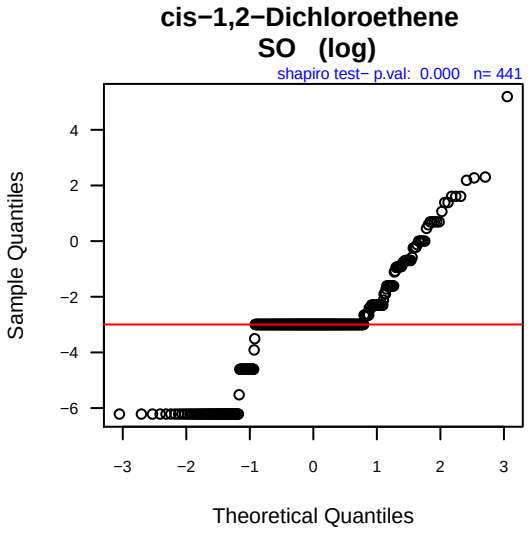

Chrysene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

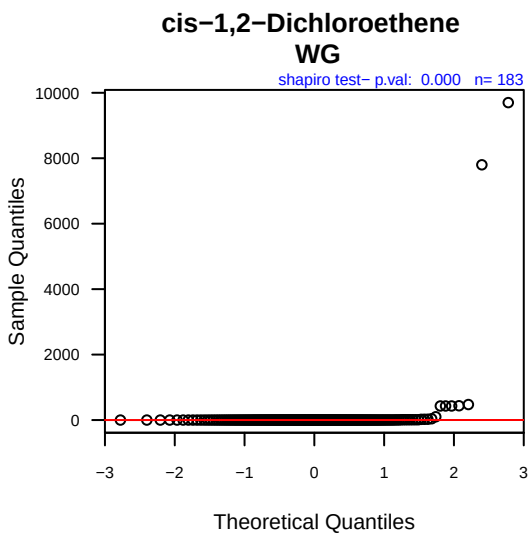

Chrysene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

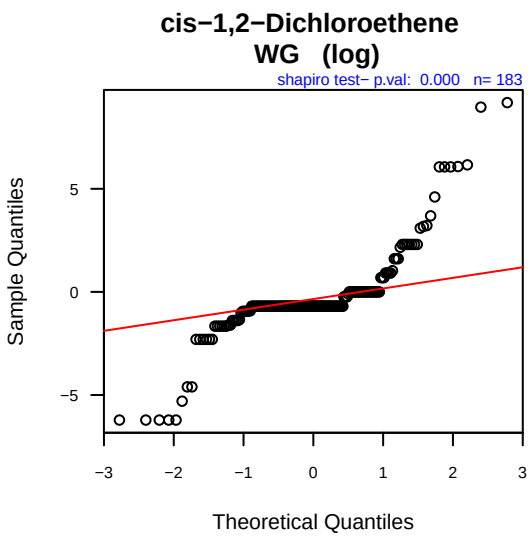

Chrysene
WG
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

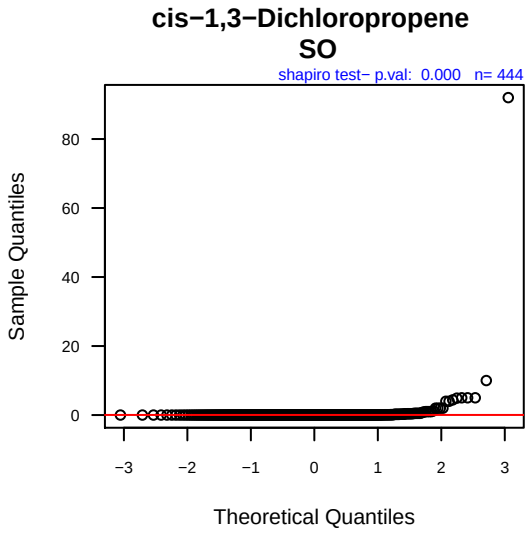

Chrysene
WG (log)
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

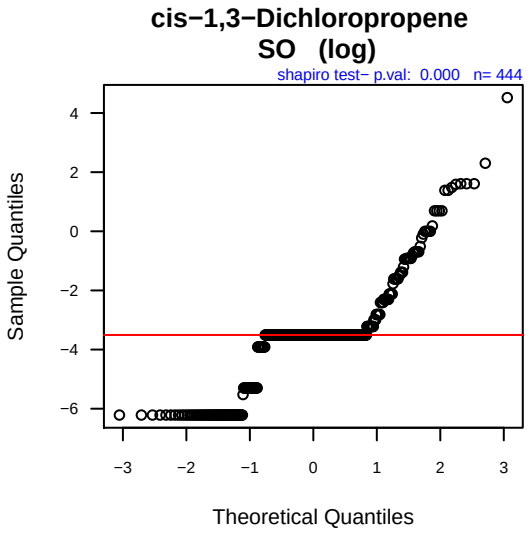

cis−1,2−Dichloroethene
SO
shapiro test− p.val: 0.000 n= 441
Sample Quantiles
Theoretical Quantiles

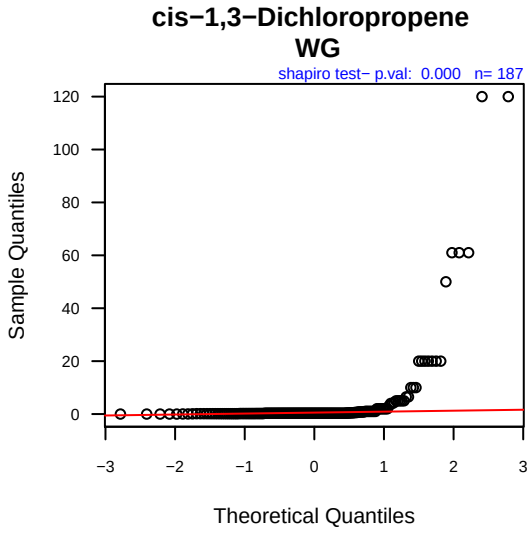

cis−1,2−Dichloroethene
SO (log)
shapiro test− p.val: 0.000 n= 441
Sample Quantiles
Theoretical Quantiles

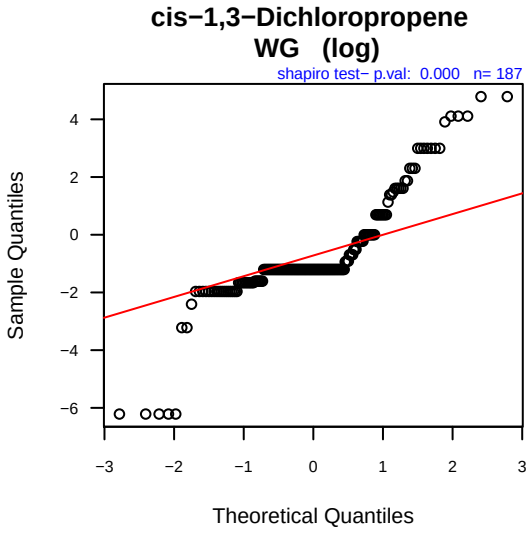

cis−1,2−Dichloroethene
WG
shapiro test− p.val: 0.000 n= 183
Sample Quantiles
Theoretical Quantiles

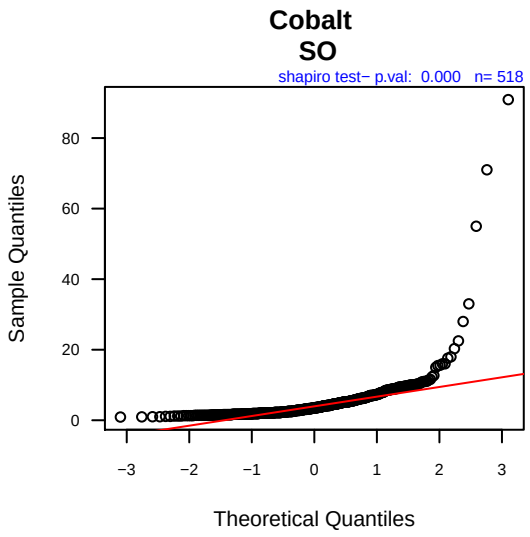

cis−1,2−Dichloroethene
WG (log)
shapiro test− p.val: 0.000 n= 183
Sample Quantiles
Theoretical Quantiles

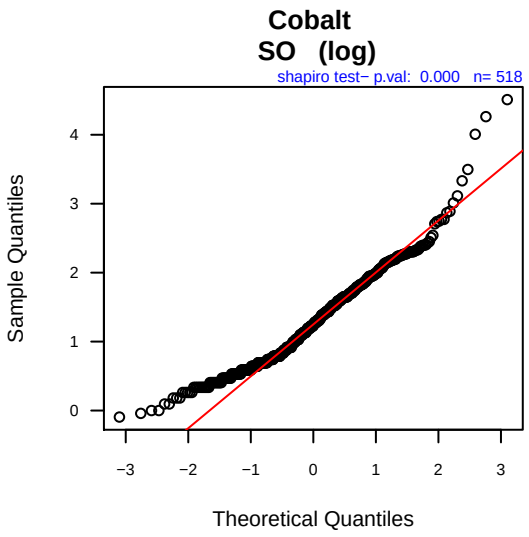

cis−1,3−Dichloropropene
SO
shapiro test− p.val: 0.000 n= 444
Sample Quantiles
Theoretical Quantiles

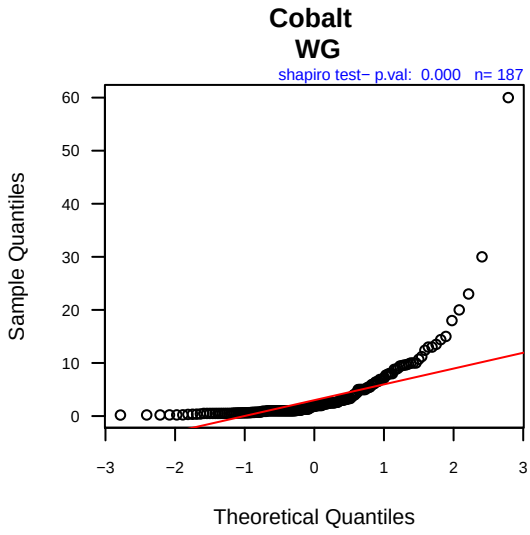

cis−1,3−Dichloropropene
SO (log)
shapiro test− p.val: 0.000 n= 444
Sample Quantiles
Theoretical Quantiles

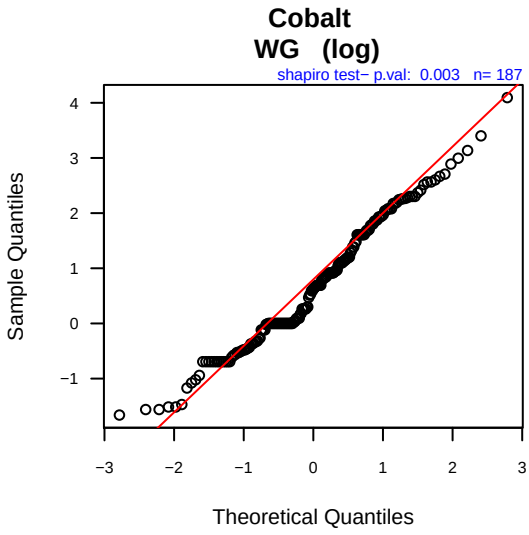

cis−1,3−Dichloropropene
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

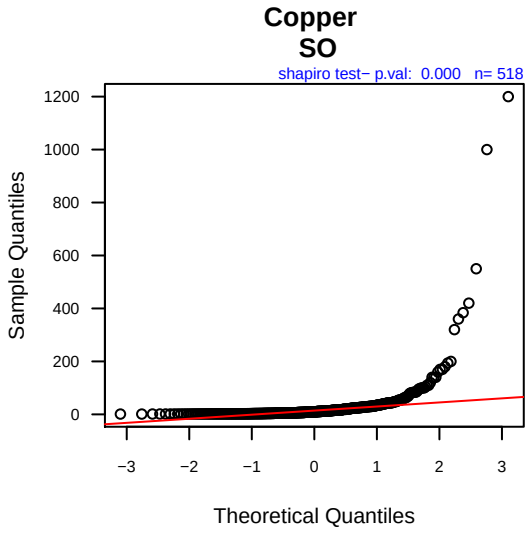

cis−1,3−Dichloropropene
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

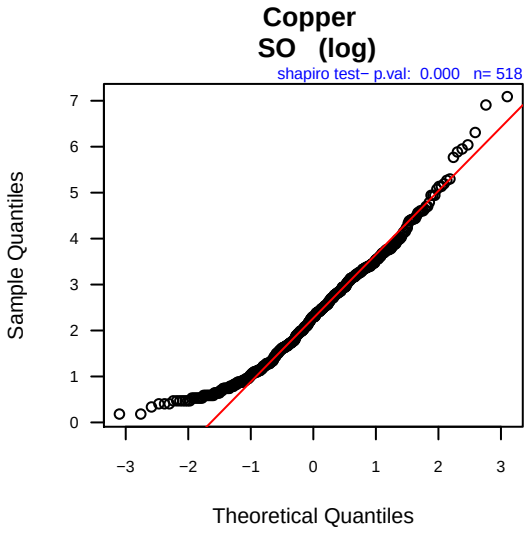

Cobalt
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

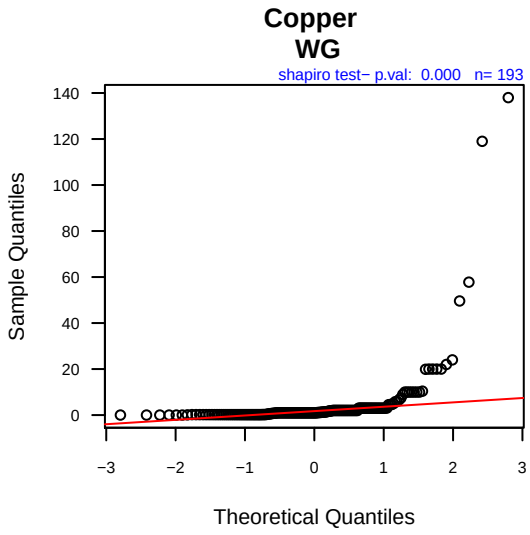

Cobalt
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

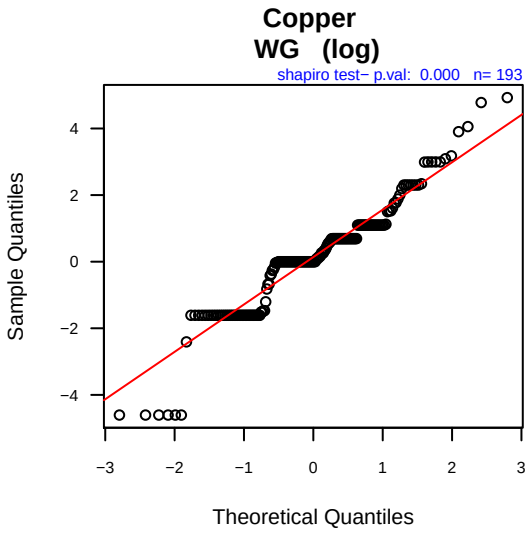

Cobalt
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

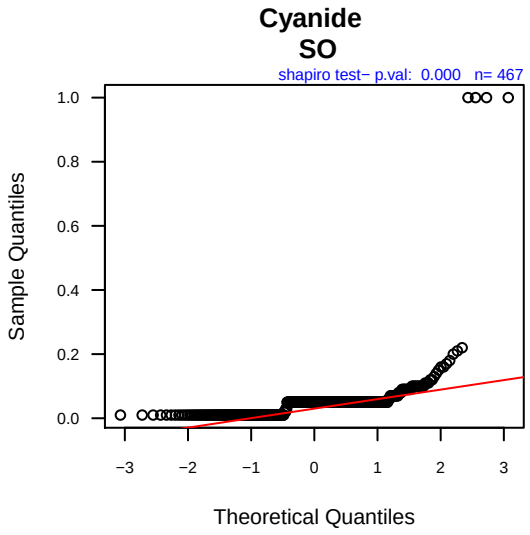

Cobalt
WG (log)
shapiro test− p.val: 0.003 n= 187
Sample Quantiles
Theoretical Quantiles

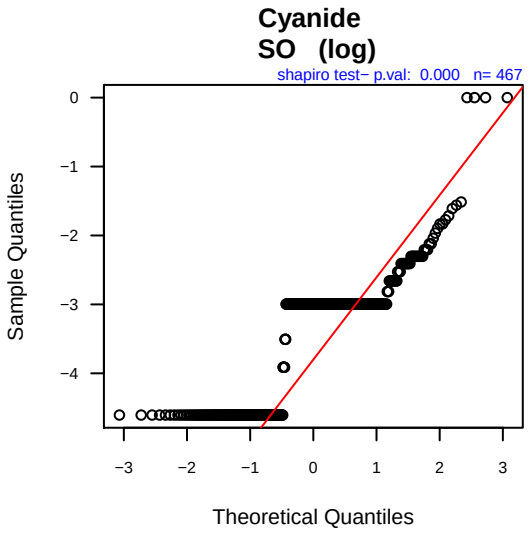

Copper
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

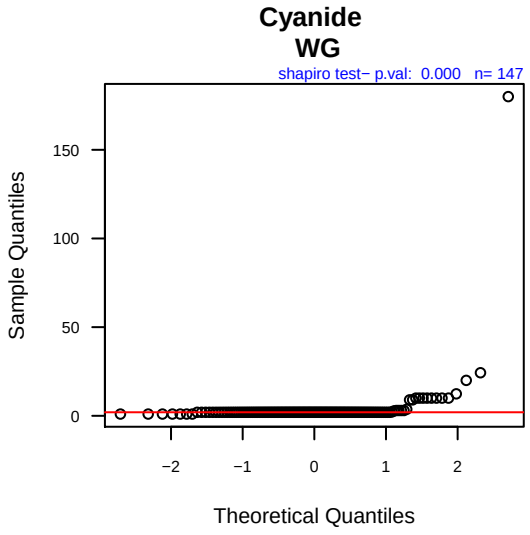

Copper
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

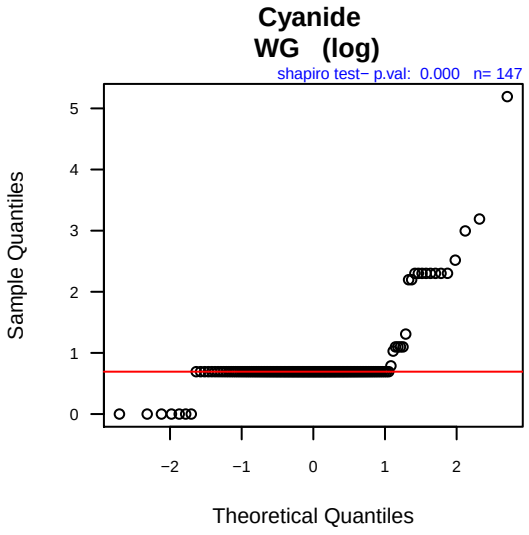

Copper
WG
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

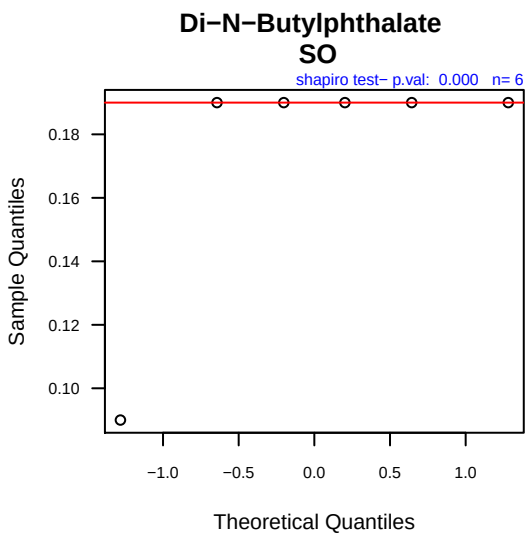

Copper
WG (log)
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

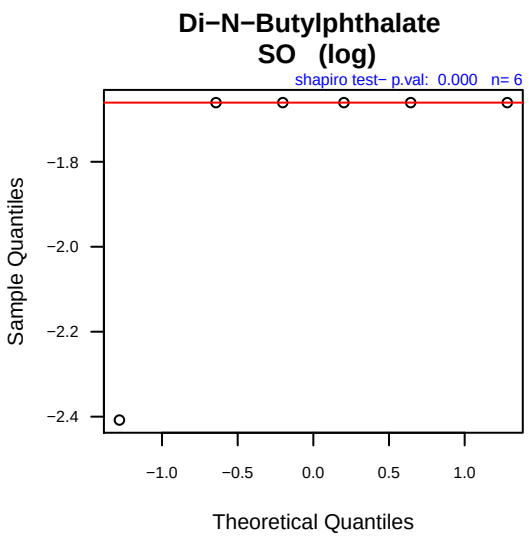

Cyanide
SO
shapiro test− p.val: 0.000 n= 467
Sample Quantiles
Theoretical Quantiles

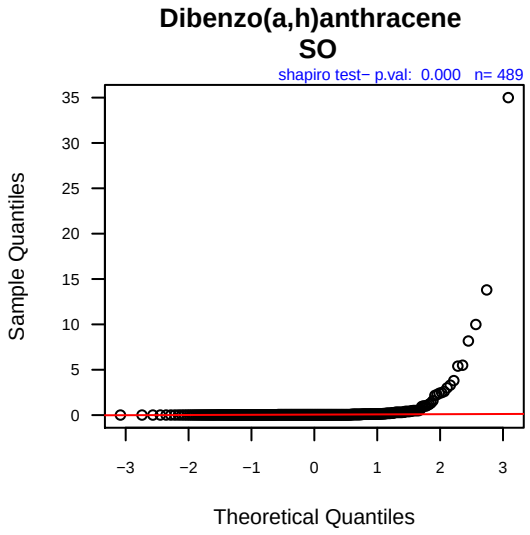

Cyanide
SO (log)
shapiro test− p.val: 0.000 n= 467
Sample Quantiles
Theoretical Quantiles

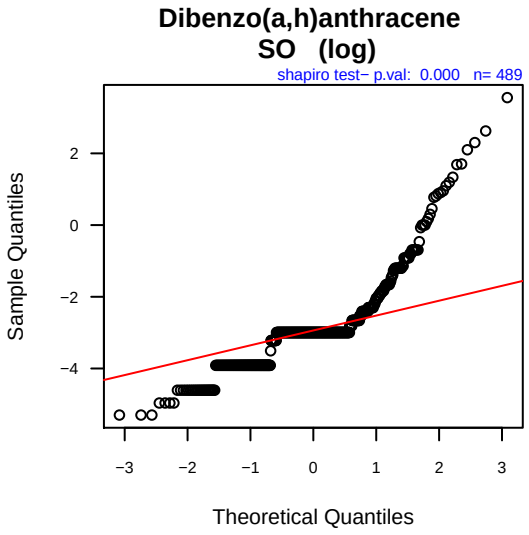

Cyanide
WG
shapiro test− p.val: 0.000 n= 147
Sample Quantiles
Theoretical Quantiles

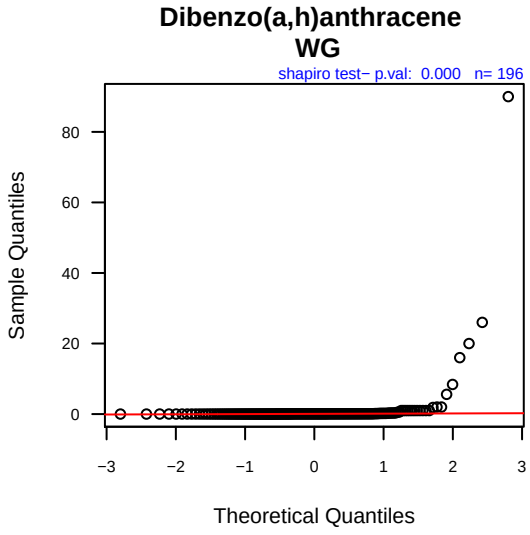

Cyanide
WG (log)
shapiro test− p.val: 0.000 n= 147
Sample Quantiles
Theoretical Quantiles

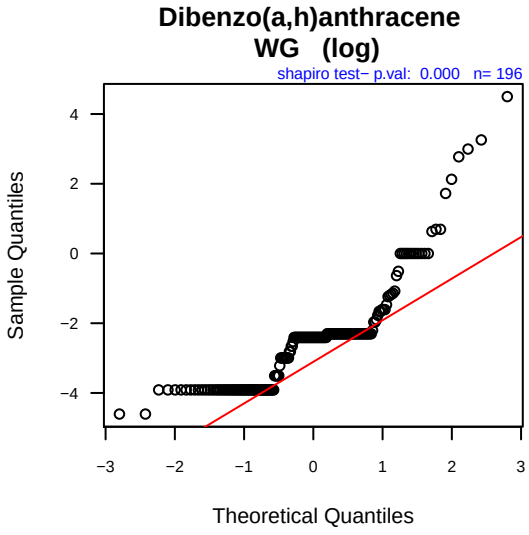

Di−N−Butylphthalate
SO
shapiro test− p.val: 0.000 n= 6
Sample Quantiles
Theoretical Quantiles

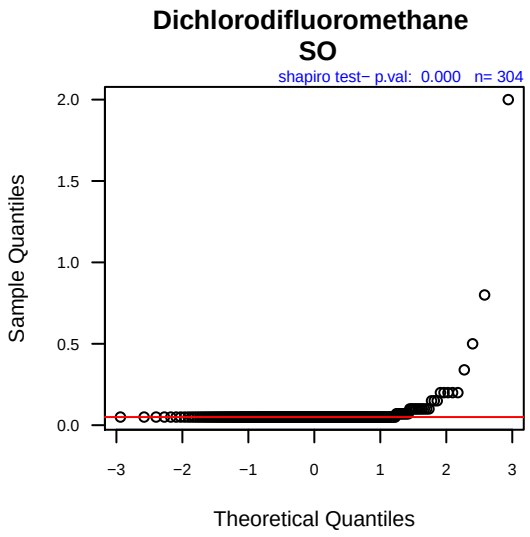

Di−N−Butylphthalate
SO (log)
shapiro test− p.val: 0.000 n= 6
Sample Quantiles
Theoretical Quantiles

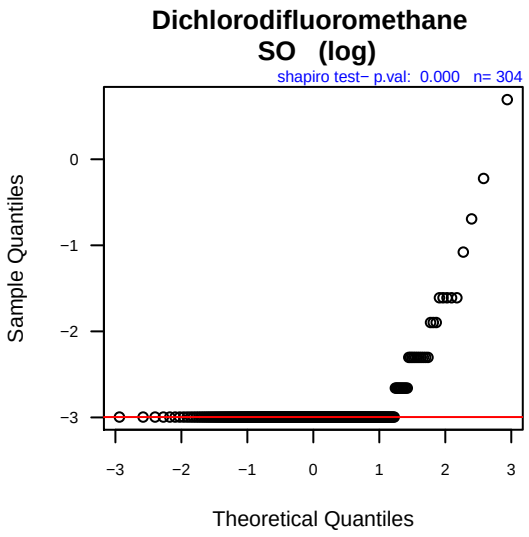

Dibenzo(a,h)anthracene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

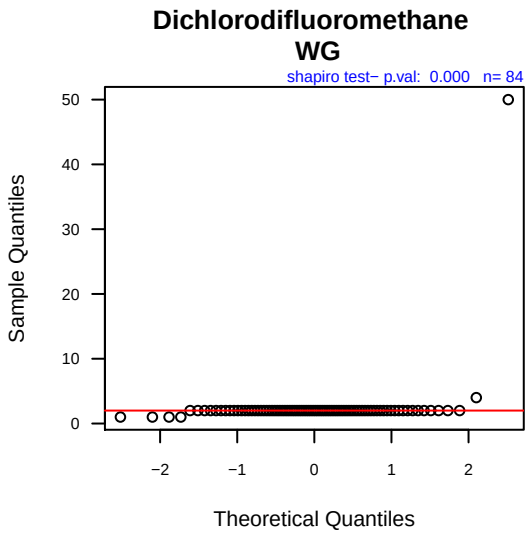

Dibenzo(a,h)anthracene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

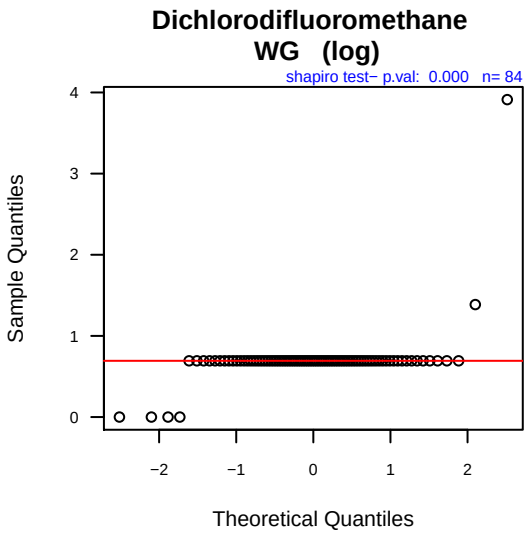

Dibenzo(a,h)anthracene
WG
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

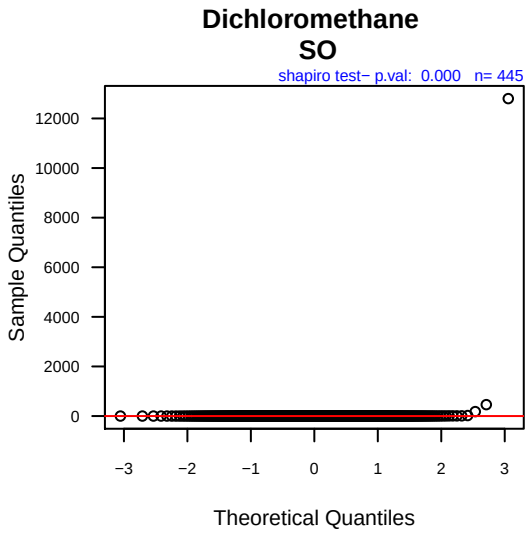

Dibenzo(a,h)anthracene
WG (log)
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

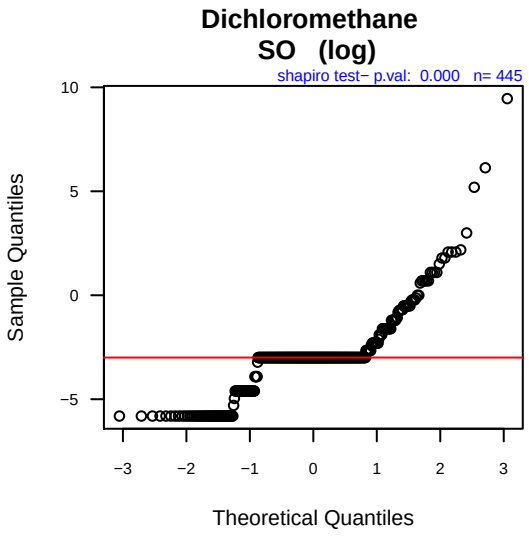

Dichlorodifluoromethane
SO
shapiro test− p.val: 0.000 n= 304
Sample Quantiles
Theoretical Quantiles

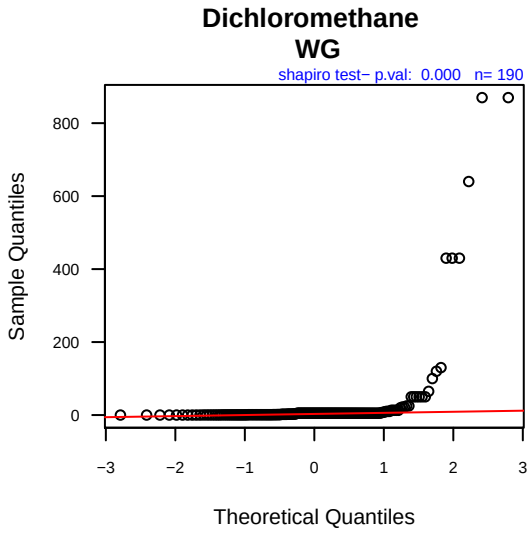

Dichlorodifluoromethane
SO (log)
shapiro test− p.val: 0.000 n= 304
Sample Quantiles
Theoretical Quantiles

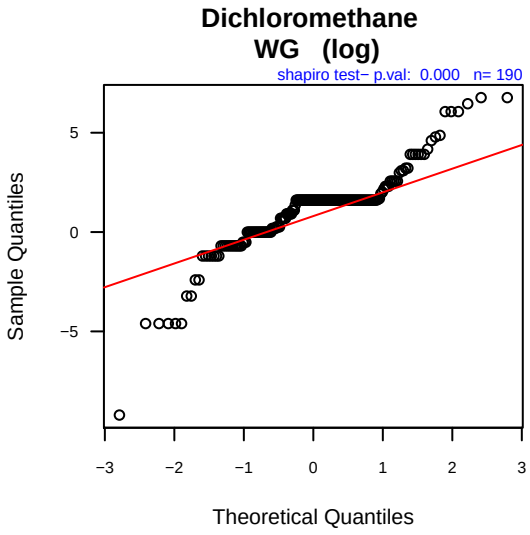

Dichlorodifluoromethane
WG
shapiro test− p.val: 0.000 n= 84
Sample Quantiles
Theoretical Quantiles

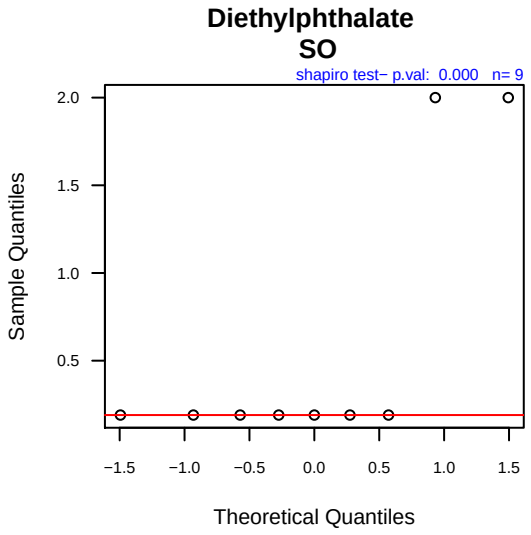

Dichlorodifluoromethane
WG (log)
shapiro test− p.val: 0.000 n= 84
Sample Quantiles
Theoretical Quantiles

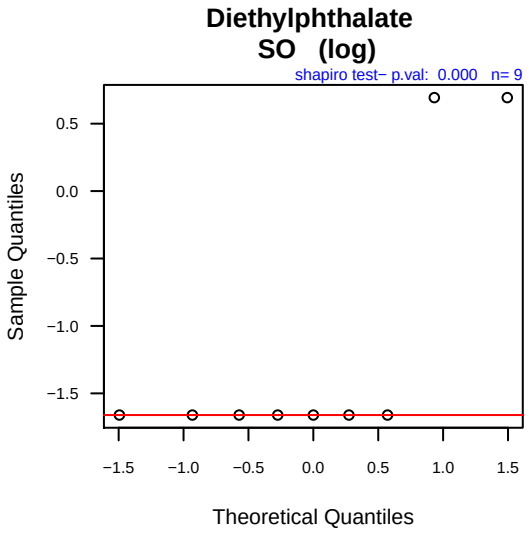

Dichloromethane
SO
shapiro test− p.val: 0.000 n= 445
Sample Quantiles
Theoretical Quantiles

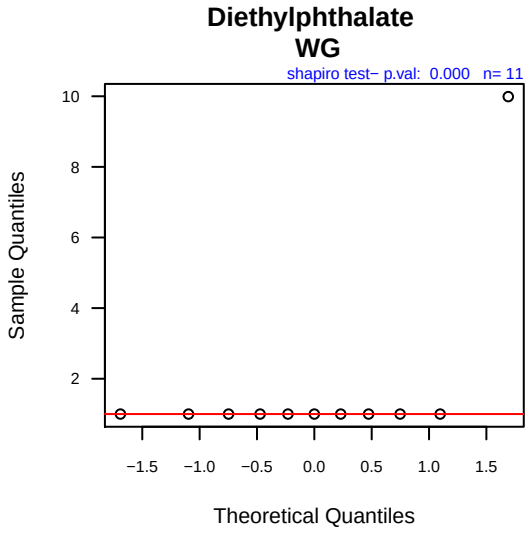

Dichloromethane
SO (log)
shapiro test− p.val: 0.000 n= 445
Sample Quantiles
Theoretical Quantiles

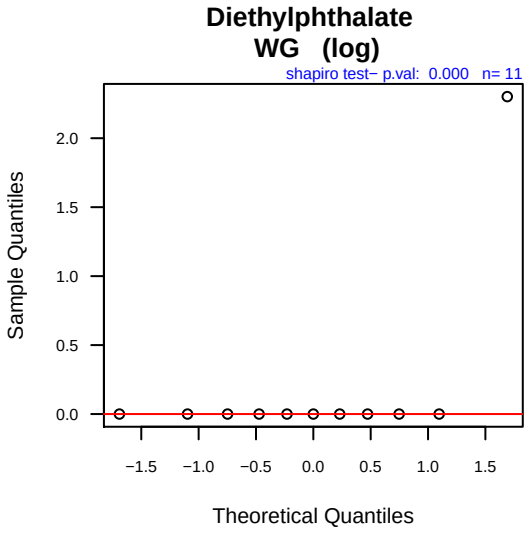

Dichloromethane
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

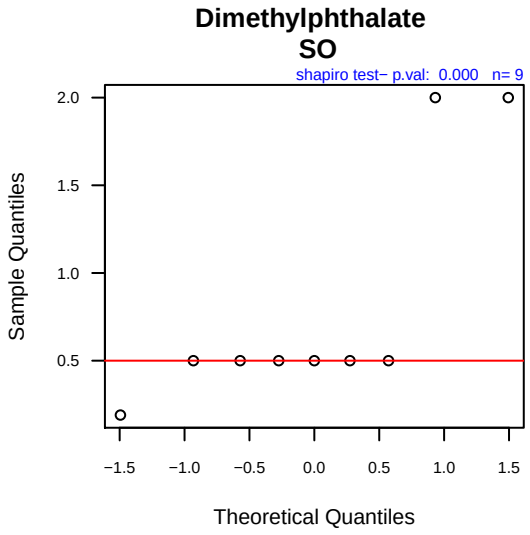

Dichloromethane
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

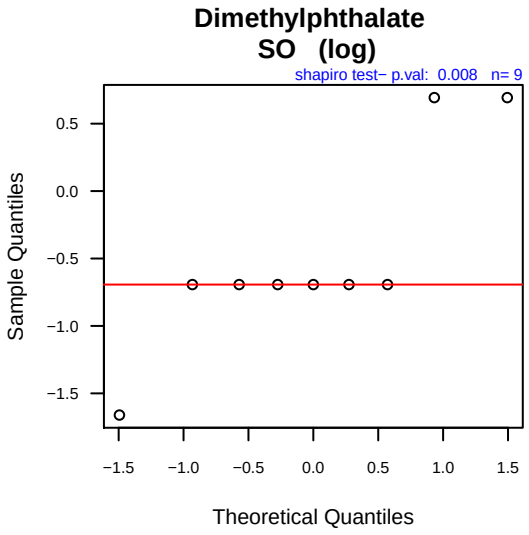

Diethylphthalate
SO
shapiro test− p.val: 0.000 n= 9
Sample Quantiles
Theoretical Quantiles

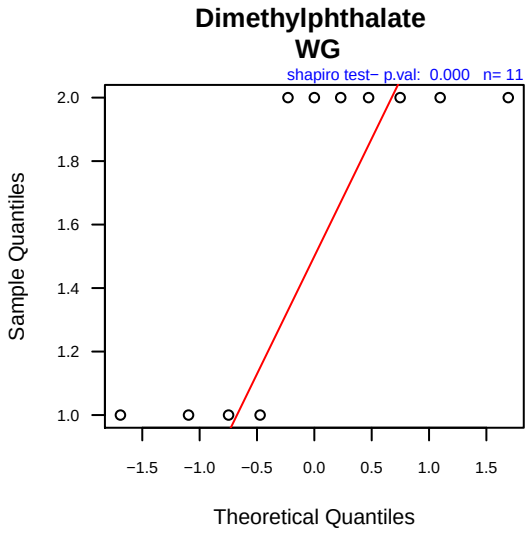

Diethylphthalate
SO (log)
shapiro test− p.val: 0.000 n= 9
Sample Quantiles
Theoretical Quantiles

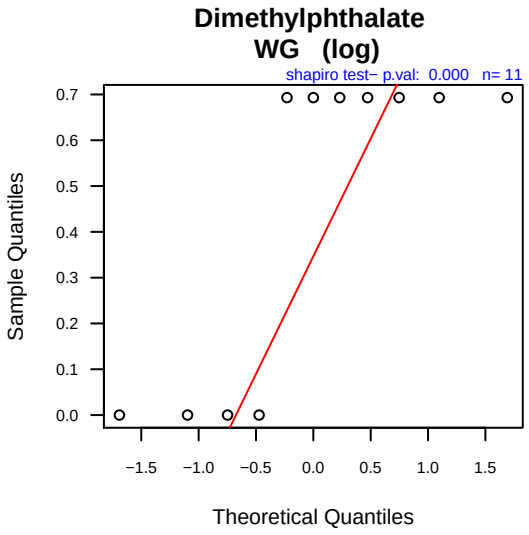

Diethylphthalate
WG
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

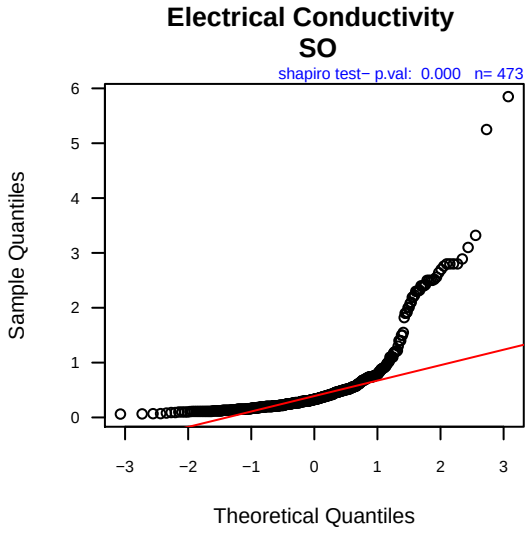

Diethylphthalate
WG (log)
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

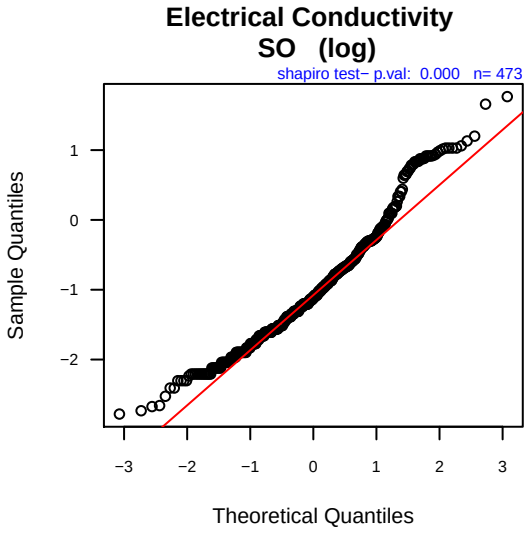

Dimethylphthalate
SO
shapiro test− p.val: 0.000 n= 9
Sample Quantiles
Theoretical Quantiles

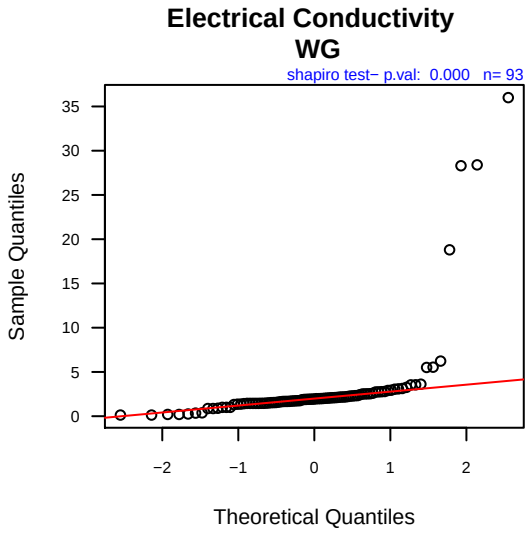

Dimethylphthalate
SO (log)
shapiro test− p.val: 0.008 n= 9
Sample Quantiles
Theoretical Quantiles

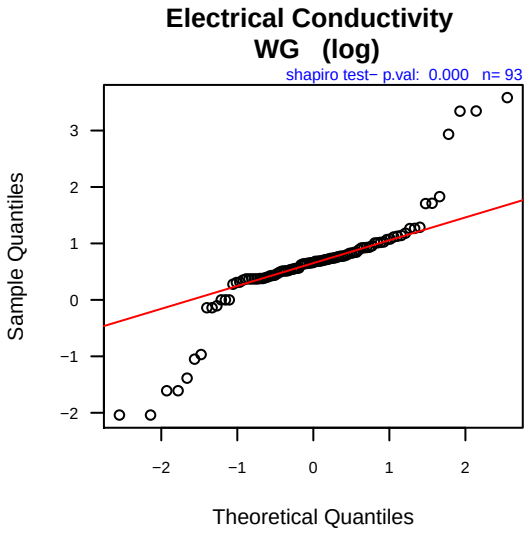

Dimethylphthalate
WG
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

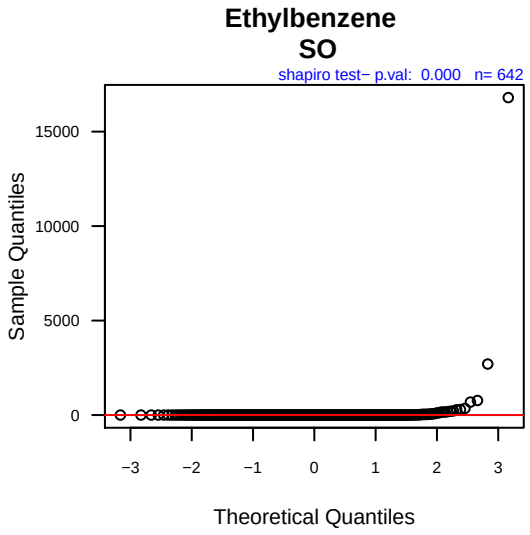

Dimethylphthalate
WG (log)
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

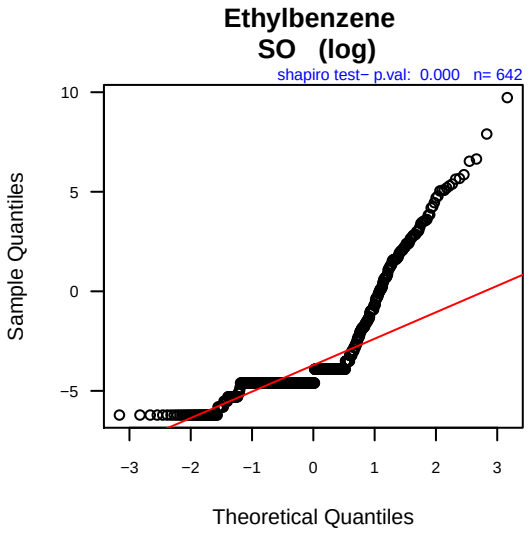

Electrical Conductivity
SO
shapiro test− p.val: 0.000 n= 473
Sample Quantiles
Theoretical Quantiles

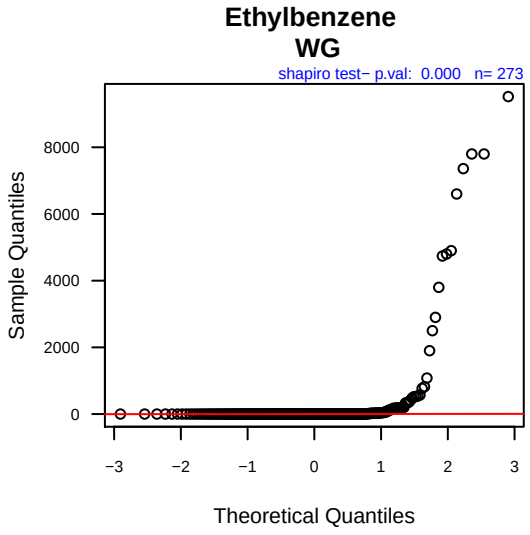

Electrical Conductivity
SO (log)
shapiro test− p.val: 0.000 n= 473
Sample Quantiles
Theoretical Quantiles

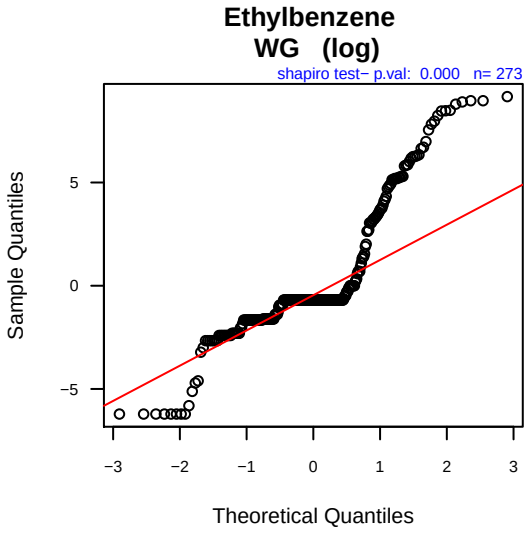

Electrical Conductivity
WG
shapiro test− p.val: 0.000 n= 93
Sample Quantiles
Theoretical Quantiles

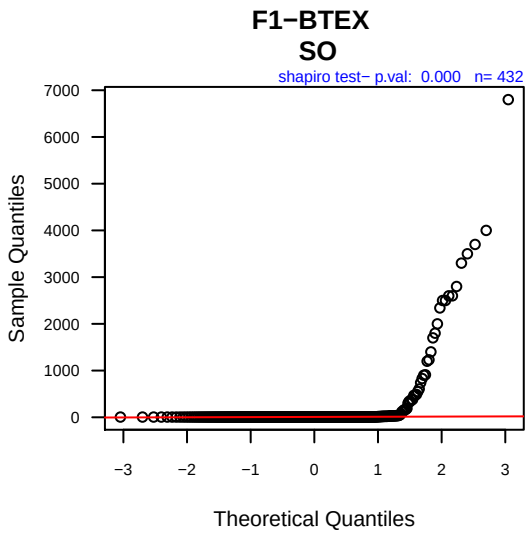

Electrical Conductivity
WG (log)
shapiro test− p.val: 0.000 n= 93
Sample Quantiles
Theoretical Quantiles

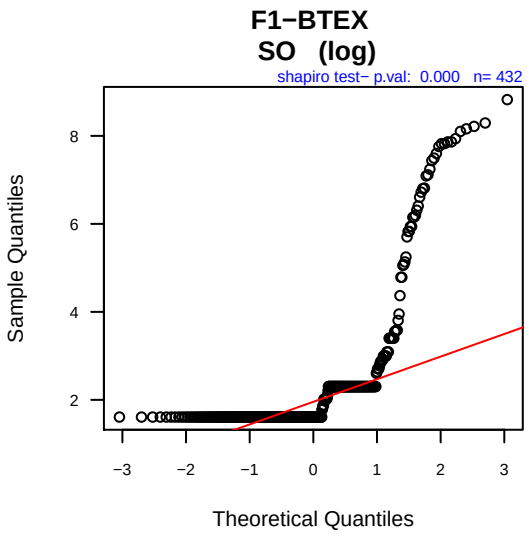

Ethylbenzene
SO
shapiro test− p.val: 0.000 n= 642
Sample Quantiles
Theoretical Quantiles

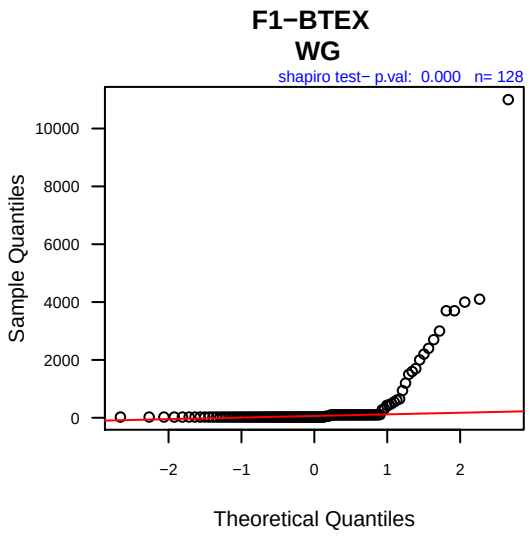

Ethylbenzene
SO (log)
shapiro test− p.val: 0.000 n= 642
Sample Quantiles
Theoretical Quantiles

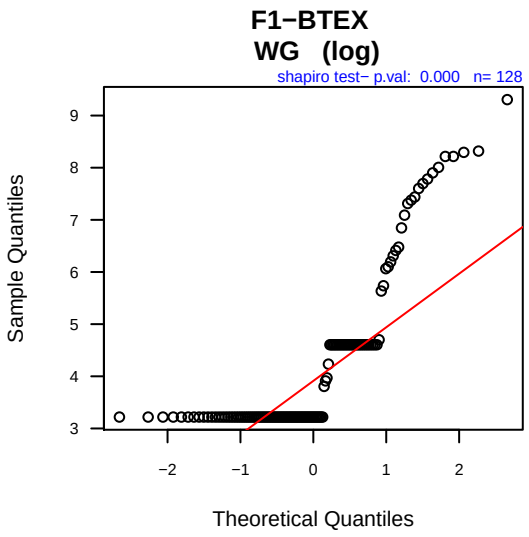

Ethylbenzene
WG
shapiro test− p.val: 0.000 n= 273
Sample Quantiles
Theoretical Quantiles

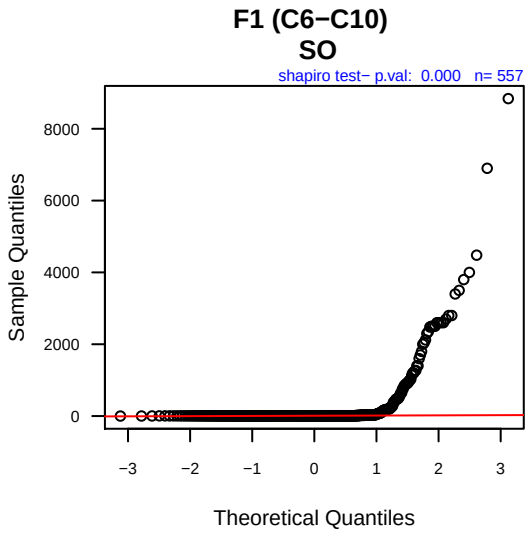

Ethylbenzene
WG (log)
shapiro test− p.val: 0.000 n= 273
Sample Quantiles
Theoretical Quantiles

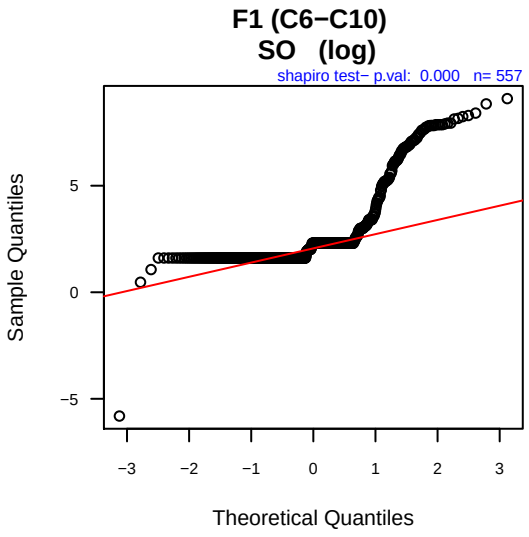

F1−BTEX
SO
shapiro test− p.val: 0.000 n= 432
Sample Quantiles
Theoretical Quantiles

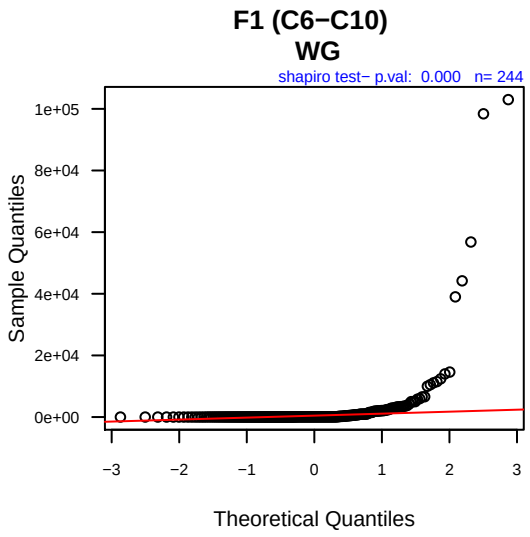

F1−BTEX
SO (log)
shapiro test− p.val: 0.000 n= 432
Sample Quantiles
Theoretical Quantiles

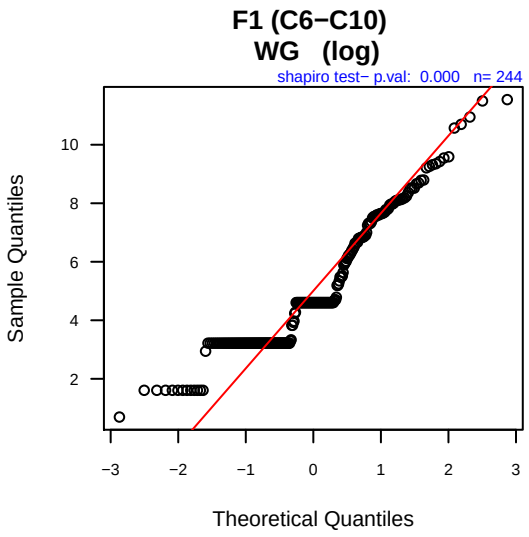

F1−BTEX
WG
shapiro test− p.val: 0.000 n= 128
Sample Quantiles
Theoretical Quantiles

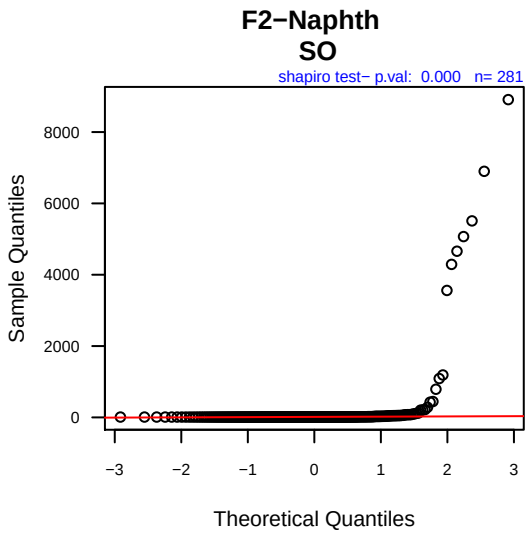

F1−BTEX
WG (log)
shapiro test− p.val: 0.000 n= 128
Sample Quantiles
Theoretical Quantiles

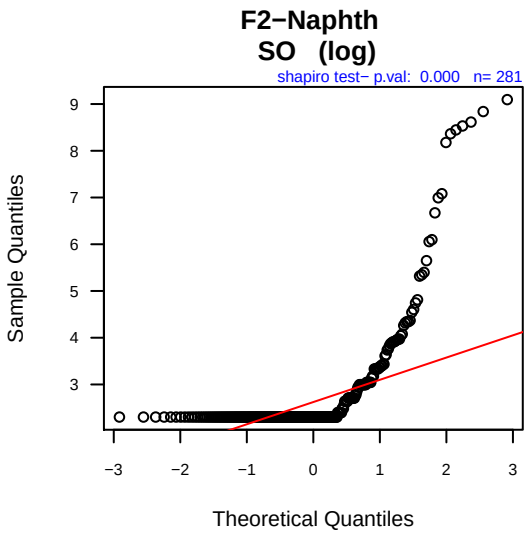

F1 (C6−C10)
SO
shapiro test− p.val: 0.000 n= 557
Sample Quantiles
Theoretical Quantiles

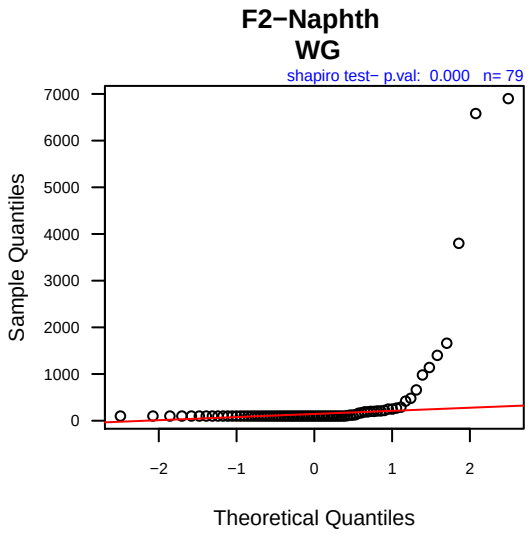

F1 (C6−C10)
SO (log)
shapiro test− p.val: 0.000 n= 557
Sample Quantiles
Theoretical Quantiles

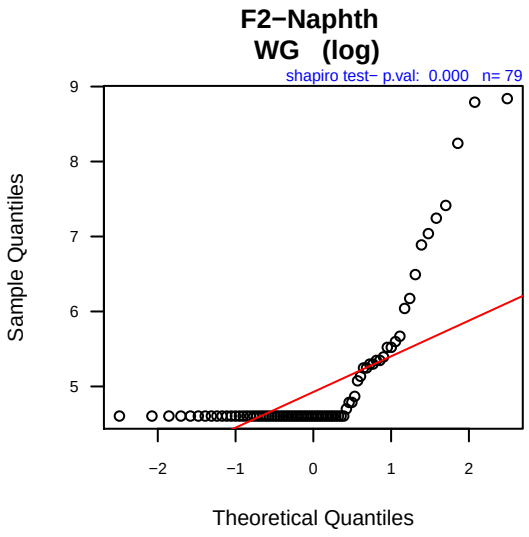

F1 (C6−C10)
WG
shapiro test− p.val: 0.000 n= 244
Sample Quantiles
Theoretical Quantiles

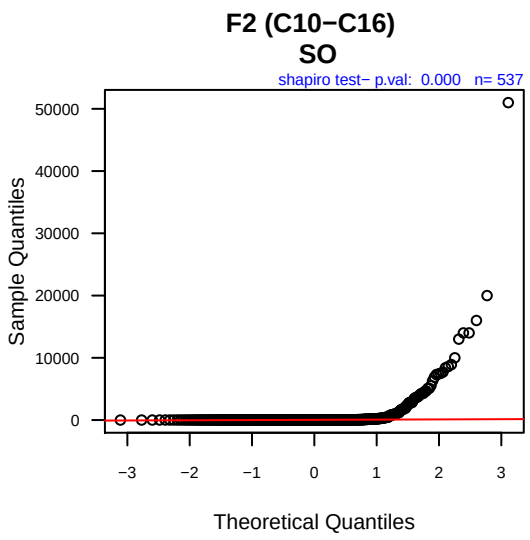

F1 (C6−C10)
WG (log)
shapiro test− p.val: 0.000 n= 244
Sample Quantiles
Theoretical Quantiles

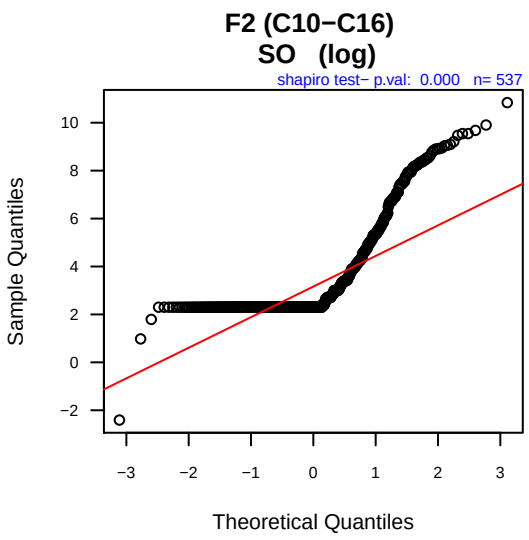

F2−Naphth
SO
shapiro test− p.val: 0.000 n= 281
Sample Quantiles
Theoretical Quantiles

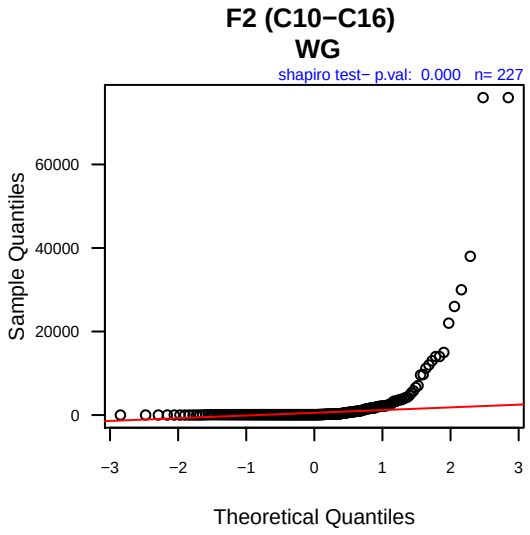

F2−Naphth
SO (log)
shapiro test− p.val: 0.000 n= 281
Sample Quantiles
Theoretical Quantiles

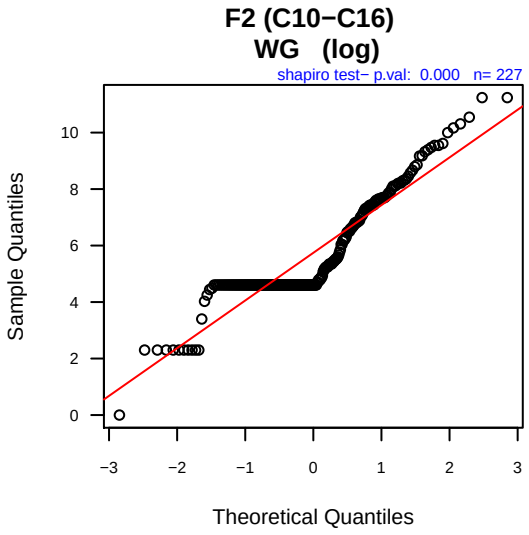

F2−Naphth
WG
shapiro test− p.val: 0.000 n= 79
Sample Quantiles
Theoretical Quantiles

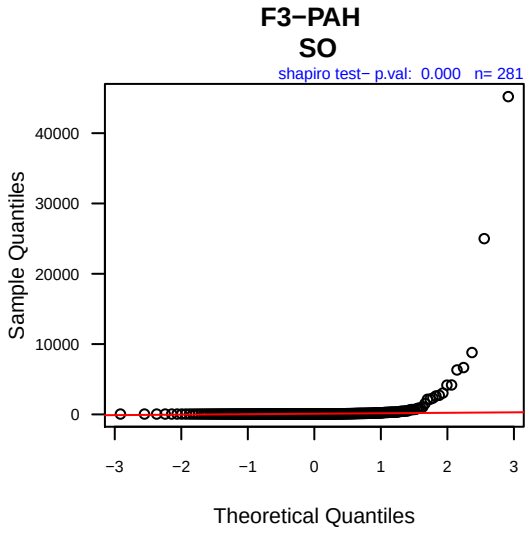

F2−Naphth
WG (log)
shapiro test− p.val: 0.000 n= 79
Sample Quantiles
Theoretical Quantiles

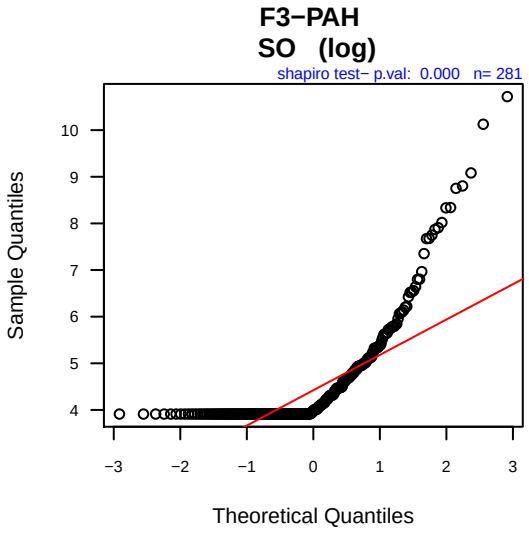

F2 (C10−C16)
SO
shapiro test− p.val: 0.000 n= 537
Sample Quantiles
Theoretical Quantiles

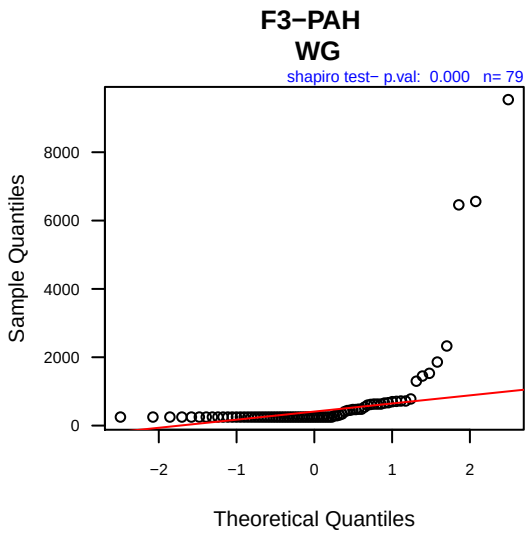

F2 (C10−C16)
SO (log)
shapiro test− p.val: 0.000 n= 537
Sample Quantiles
Theoretical Quantiles

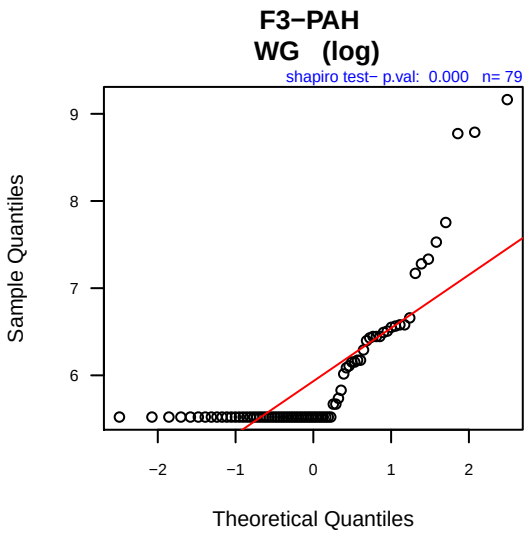

F2 (C10−C16)
WG
shapiro test− p.val: 0.000 n= 227
Sample Quantiles
Theoretical Quantiles

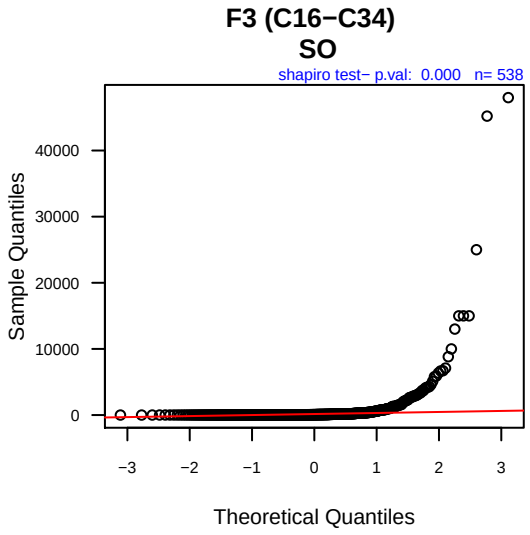

F2 (C10−C16)
WG (log)
shapiro test− p.val: 0.000 n= 227
Sample Quantiles
Theoretical Quantiles

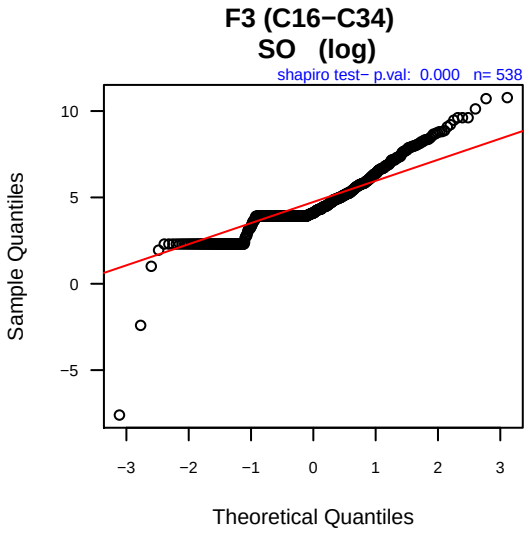

F3−PAH
SO
shapiro test− p.val: 0.000 n= 281
Sample Quantiles
Theoretical Quantiles

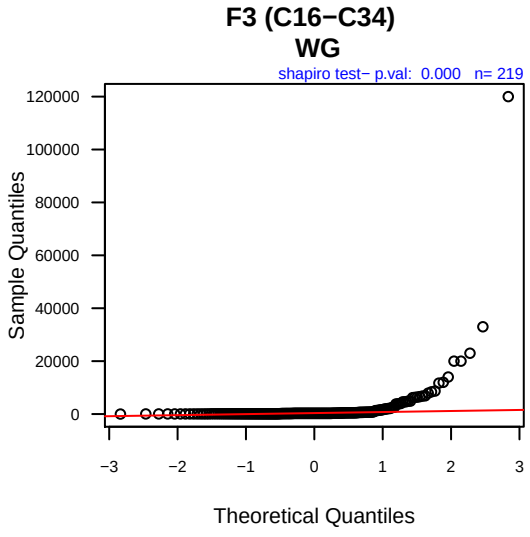

F3−PAH
SO (log)
shapiro test− p.val: 0.000 n= 281
Sample Quantiles
Theoretical Quantiles

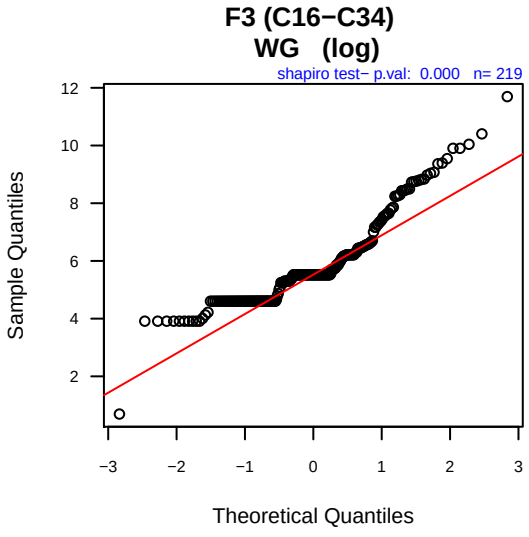

F3−PAH
WG
shapiro test− p.val: 0.000 n= 79
Sample Quantiles
Theoretical Quantiles

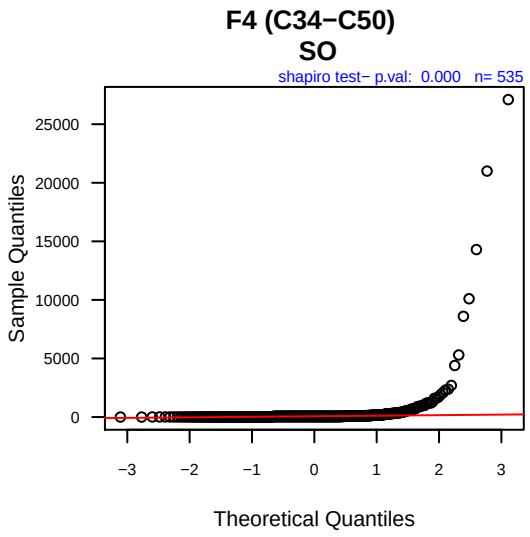

F3−PAH
WG (log)
shapiro test− p.val: 0.000 n= 79
Sample Quantiles
Theoretical Quantiles

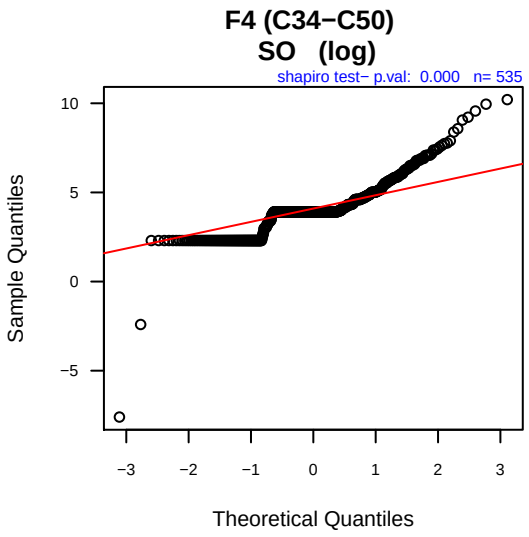

F3 (C16−C34)
SO
shapiro test− p.val: 0.000 n= 538
Sample Quantiles
Theoretical Quantiles

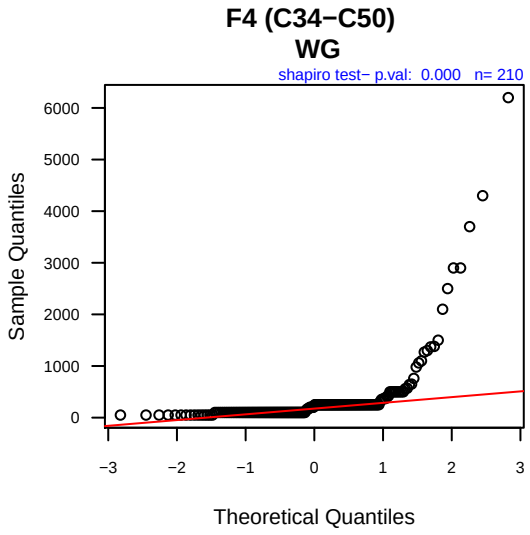

F3 (C16−C34)
SO (log)
shapiro test− p.val: 0.000 n= 538
Sample Quantiles
Theoretical Quantiles

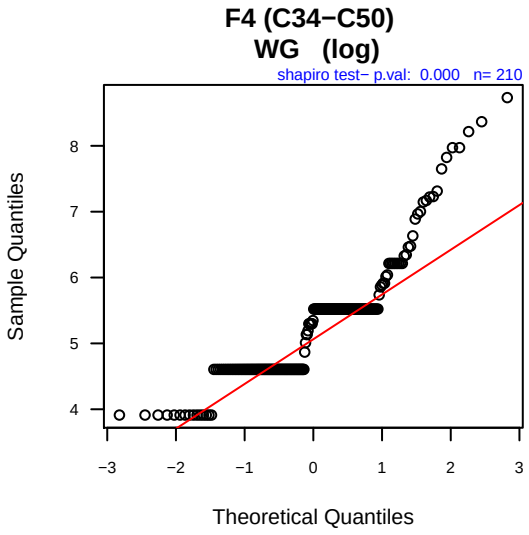

F3 (C16−C34)
WG
shapiro test− p.val: 0.000 n= 219
Sample Quantiles
Theoretical Quantiles

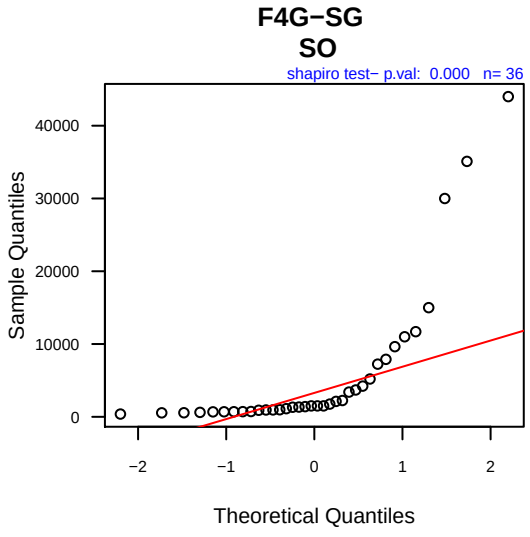

F3 (C16−C34)
WG (log)
shapiro test− p.val: 0.000 n= 219
Sample Quantiles
Theoretical Quantiles

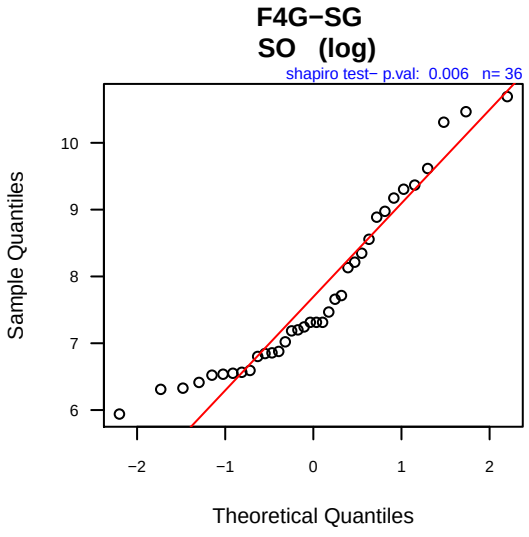

F4 (C34−C50)
SO
shapiro test− p.val: 0.000 n= 535
Sample Quantiles
Theoretical Quantiles

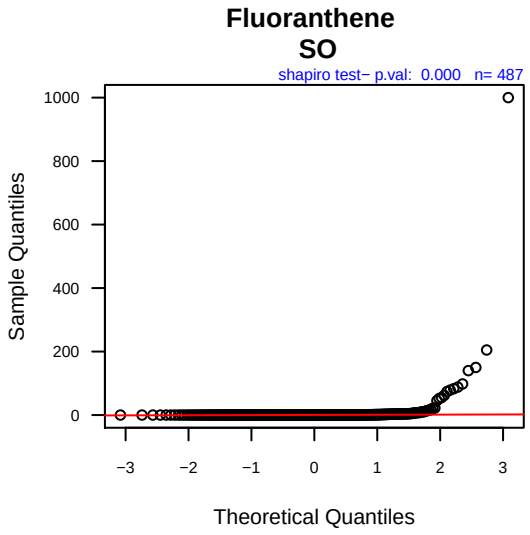

F4 (C34−C50)
SO (log)
shapiro test− p.val: 0.000 n= 535
Sample Quantiles
Theoretical Quantiles

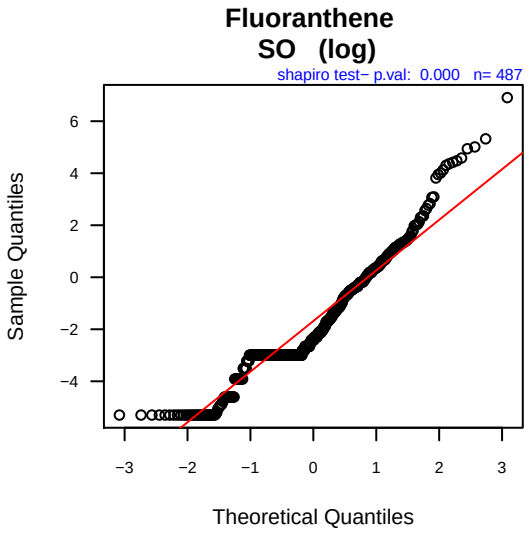

F4 (C34−C50)
WG
shapiro test− p.val: 0.000 n= 210
Sample Quantiles
Theoretical Quantiles

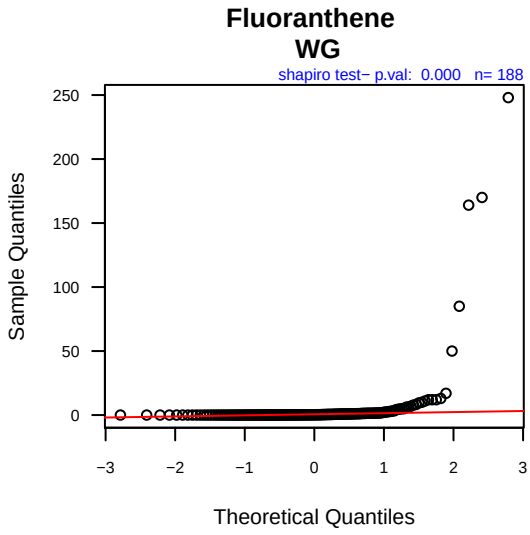

F4 (C34−C50)
WG (log)
shapiro test− p.val: 0.000 n= 210
Sample Quantiles
Theoretical Quantiles

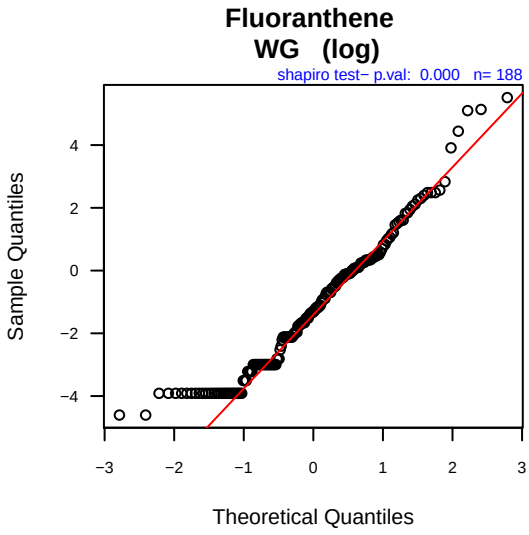

F4G−SG
SO
shapiro test− p.val: 0.000 n= 36
Sample Quantiles
Theoretical Quantiles

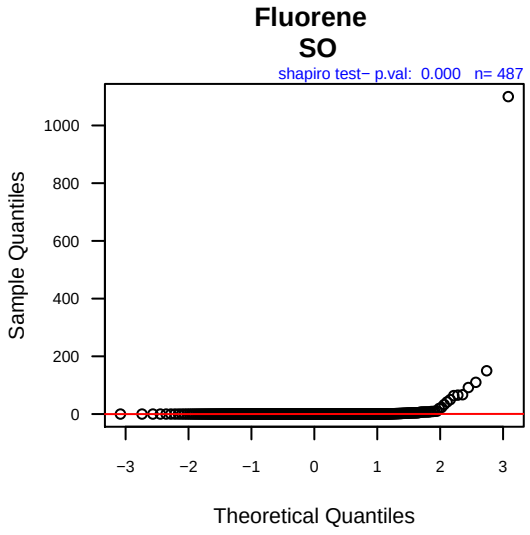

F4G−SG
SO (log)
shapiro test− p.val: 0.006 n= 36
Sample Quantiles
Theoretical Quantiles

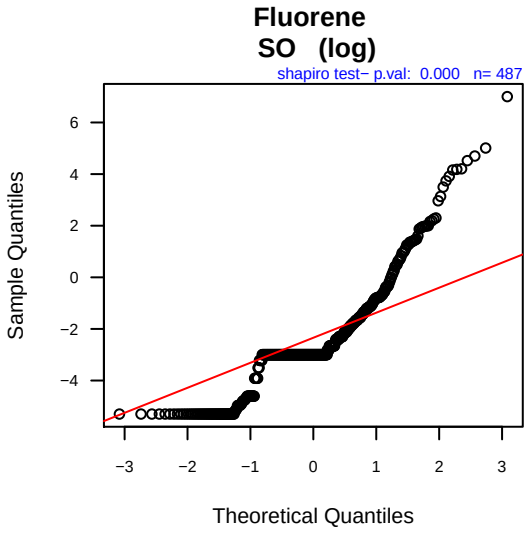

Fluoranthene
SO
shapiro test− p.val: 0.000 n= 487
Sample Quantiles
Theoretical Quantiles

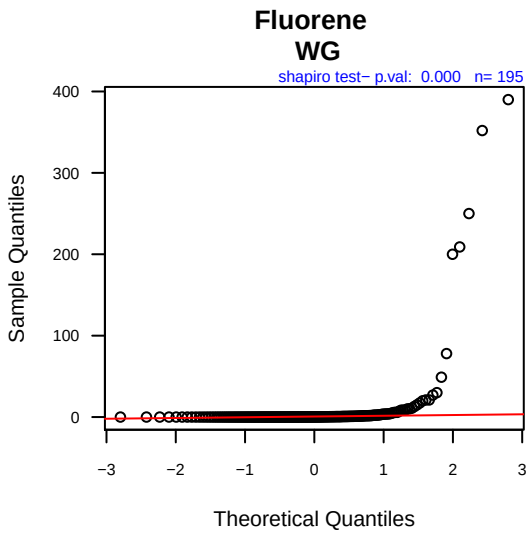

Fluoranthene
SO (log)
shapiro test− p.val: 0.000 n= 487
Sample Quantiles
Theoretical Quantiles

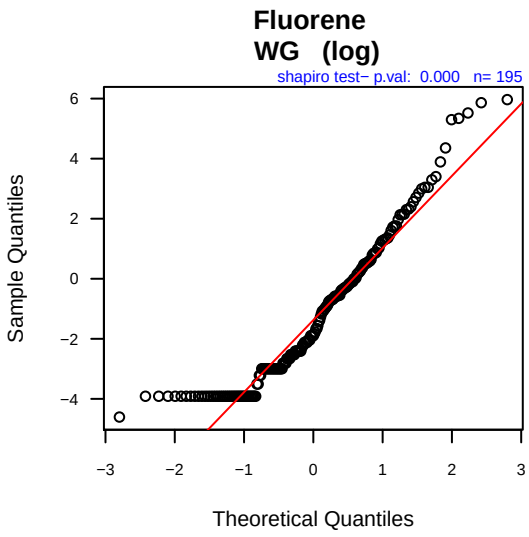

Fluoranthene
WG
shapiro test− p.val: 0.000 n= 188
Sample Quantiles
Theoretical Quantiles

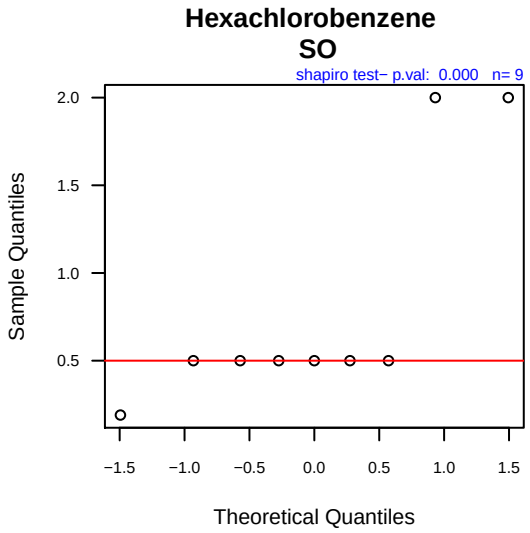

Fluoranthene
WG (log)
shapiro test− p.val: 0.000 n= 188
Sample Quantiles
Theoretical Quantiles

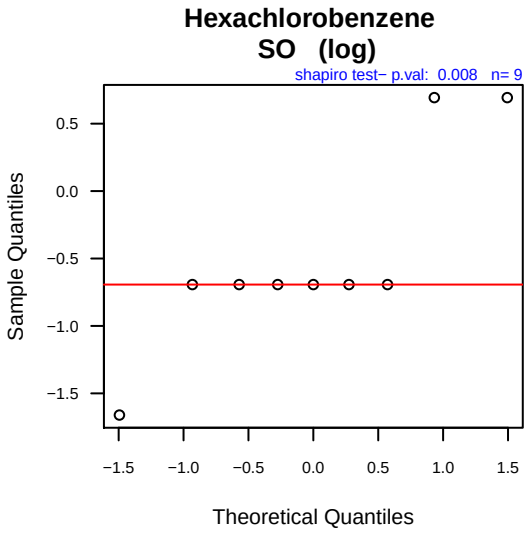

Fluorene
SO
shapiro test− p.val: 0.000 n= 487
Sample Quantiles
Theoretical Quantiles

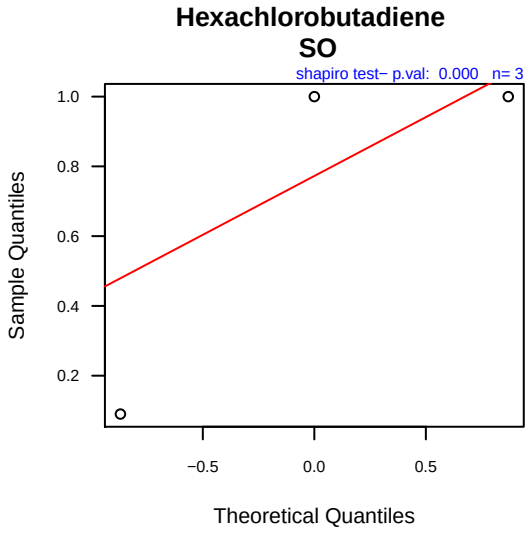

Fluorene
SO (log)
shapiro test− p.val: 0.000 n= 487
Sample Quantiles
Theoretical Quantiles

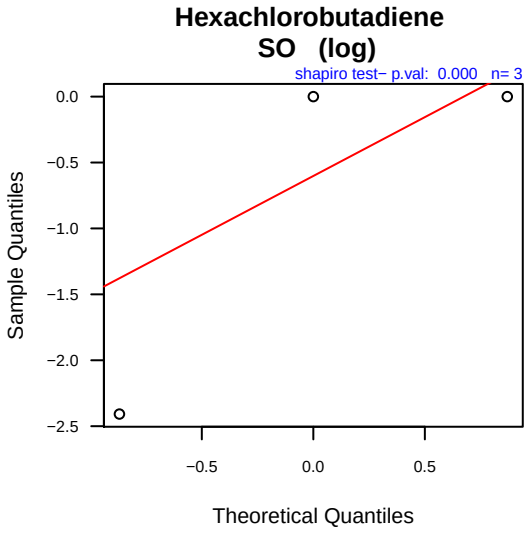

Fluorene
WG
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

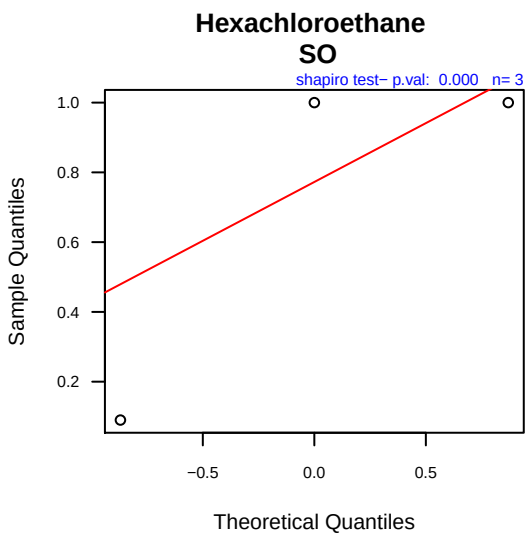

Fluorene
WG (log)
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

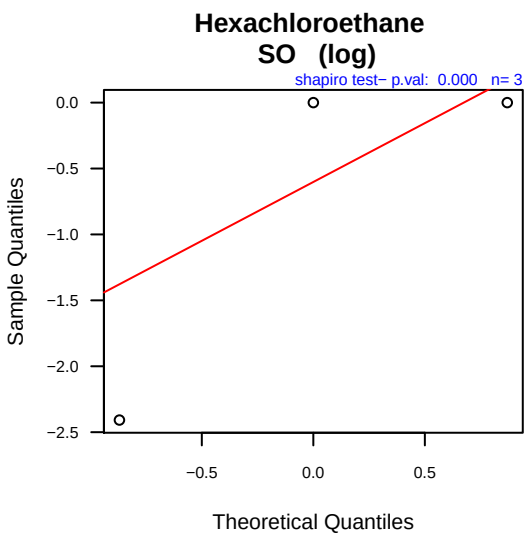

Hexachlorobenzene
SO
shapiro test− p.val: 0.000 n= 9
Sample Quantiles
Theoretical Quantiles

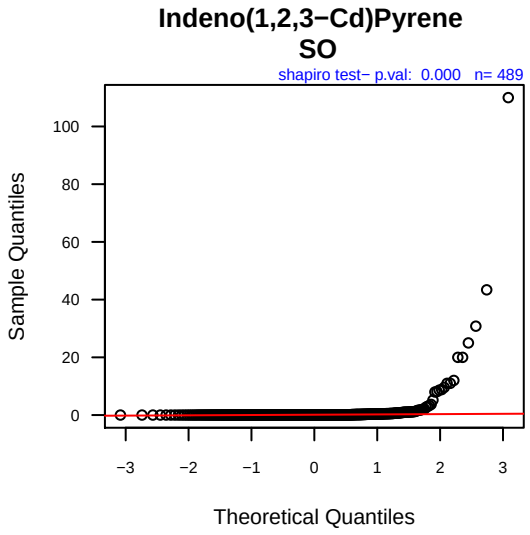

Hexachlorobenzene
SO (log)
shapiro test− p.val: 0.008 n= 9
Sample Quantiles
Theoretical Quantiles

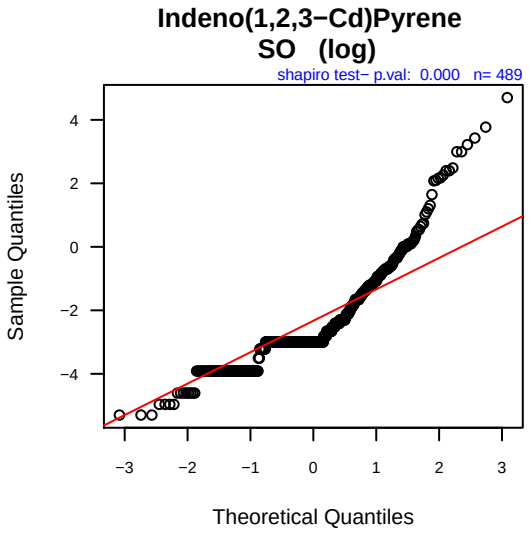

Hexachlorobutadiene
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

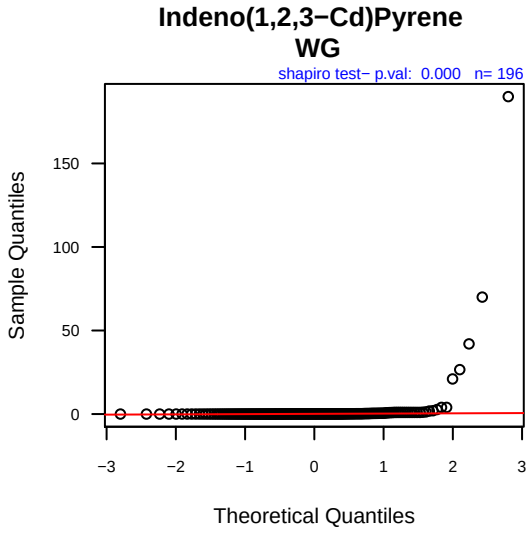

Hexachlorobutadiene
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

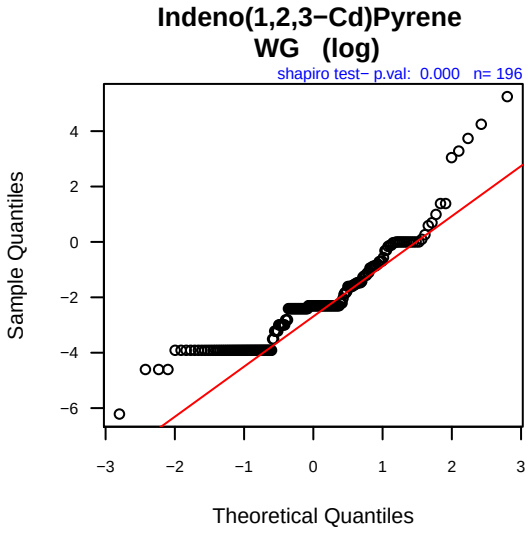

Hexachloroethane
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

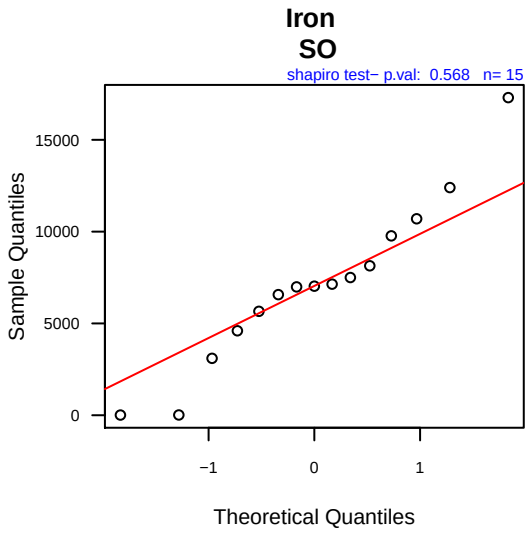

Hexachloroethane
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

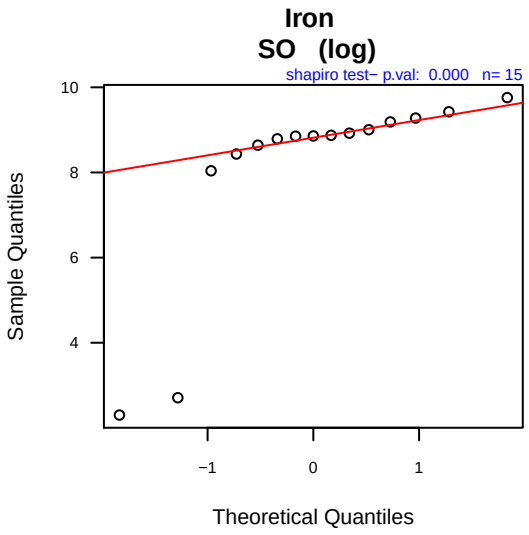

Indeno(1,2,3−Cd)Pyrene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

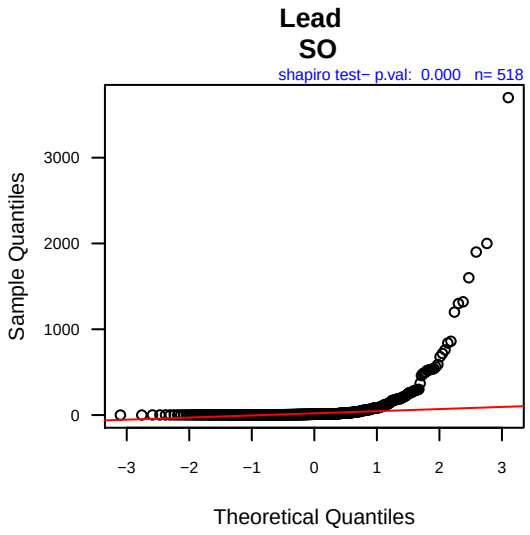

Indeno(1,2,3−Cd)Pyrene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

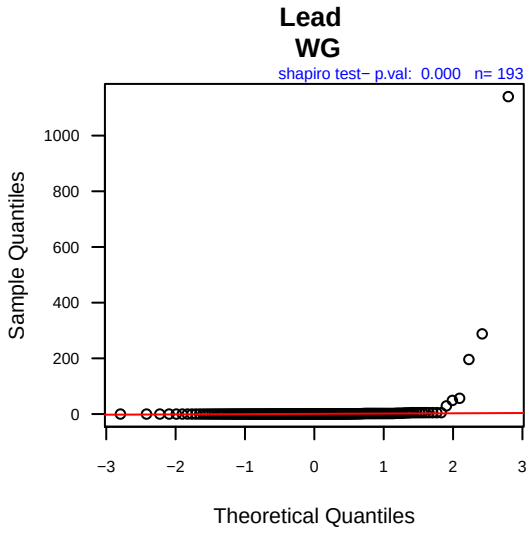

Indeno(1,2,3−Cd)Pyrene
WG
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

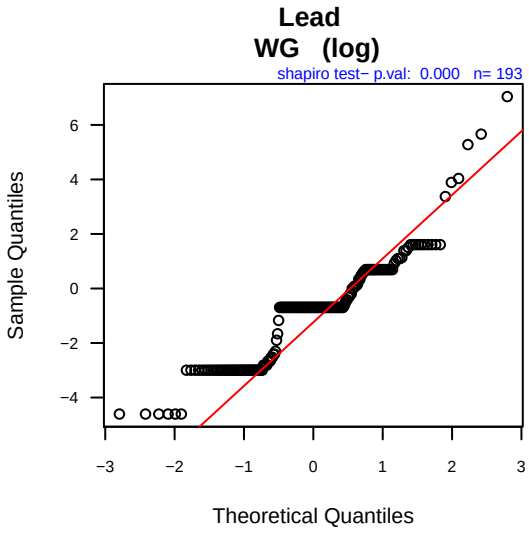

Indeno(1,2,3−Cd)Pyrene
WG (log)
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

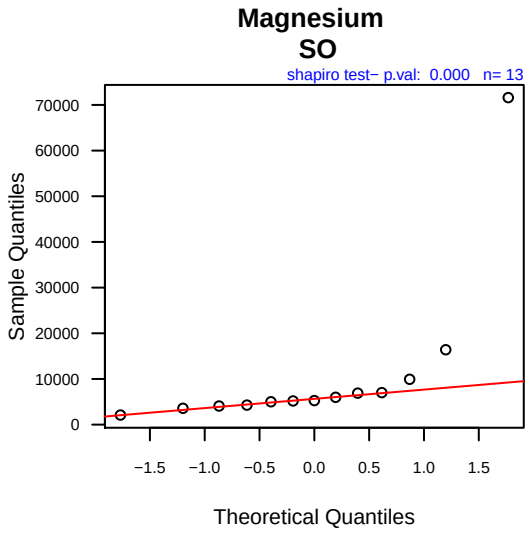

Iron
SO
shapiro test− p.val: 0.568 n= 15
Sample Quantiles
Theoretical Quantiles

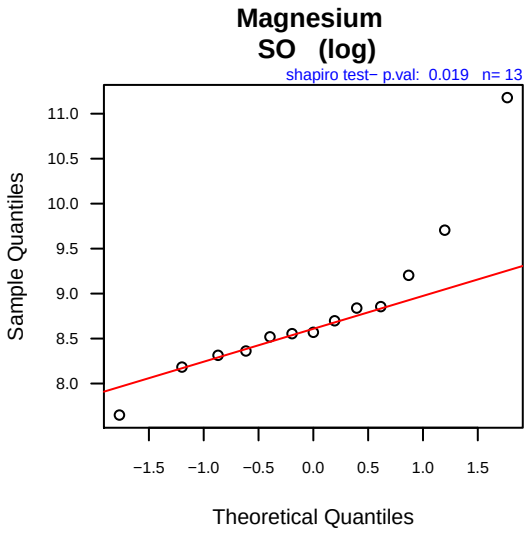

Iron
SO (log)
shapiro test− p.val: 0.000 n= 15
Sample Quantiles
Theoretical Quantiles

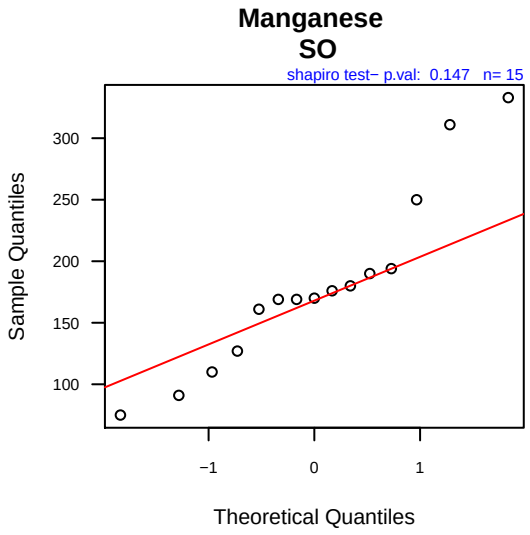

Lead
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

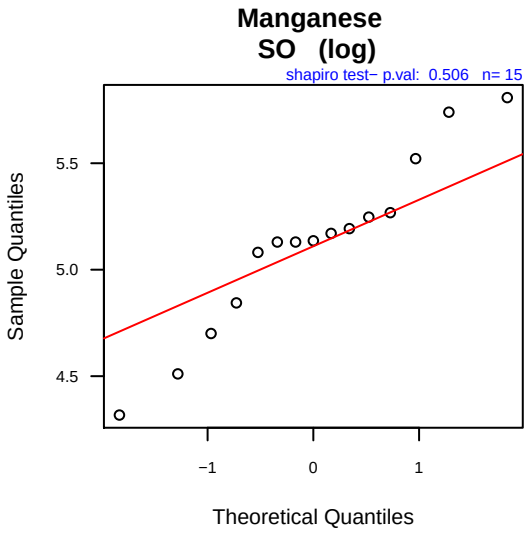

Lead
WG
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

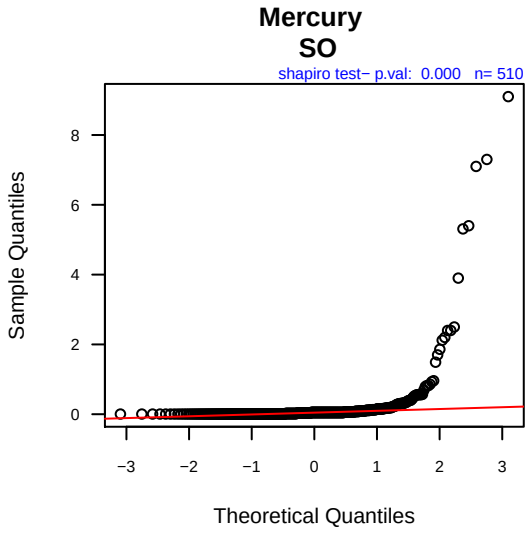

Lead
WG (log)
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

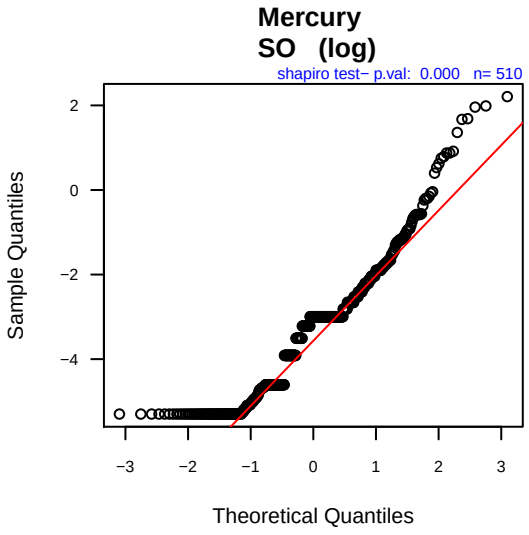

Magnesium
SO
shapiro test− p.val: 0.000 n= 13
Sample Quantiles
Theoretical Quantiles

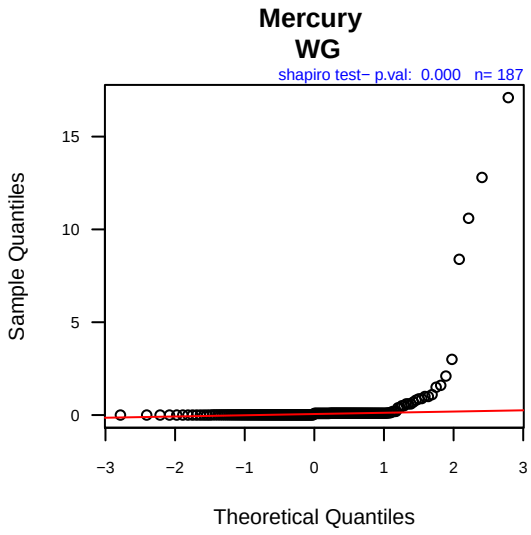

Magnesium
SO (log)
shapiro test− p.val: 0.019 n= 13
Sample Quantiles
Theoretical Quantiles

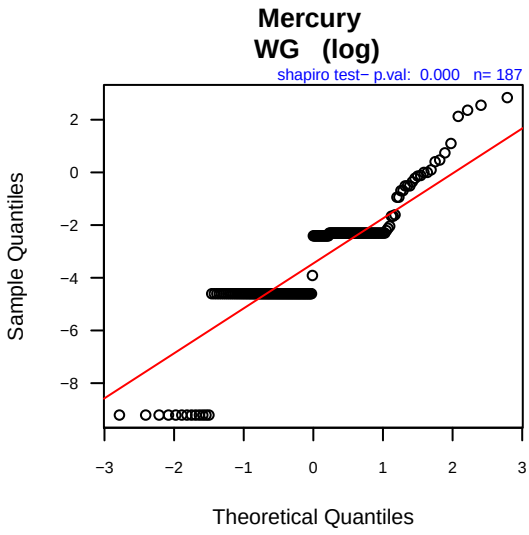

Manganese
SO
shapiro test− p.val: 0.147 n= 15
Sample Quantiles
Theoretical Quantiles

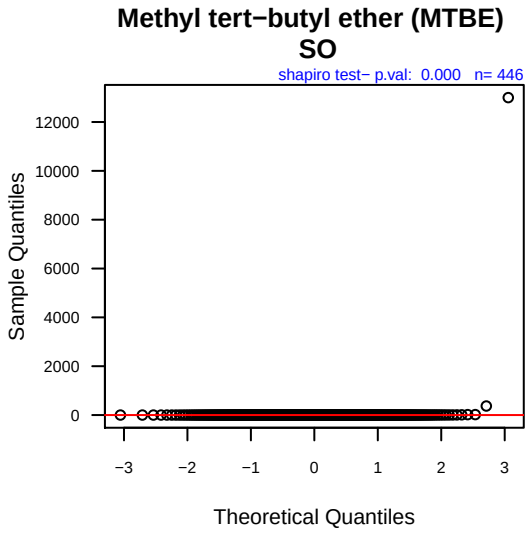

Manganese
SO (log)
shapiro test− p.val: 0.506 n= 15
Sample Quantiles
Theoretical Quantiles

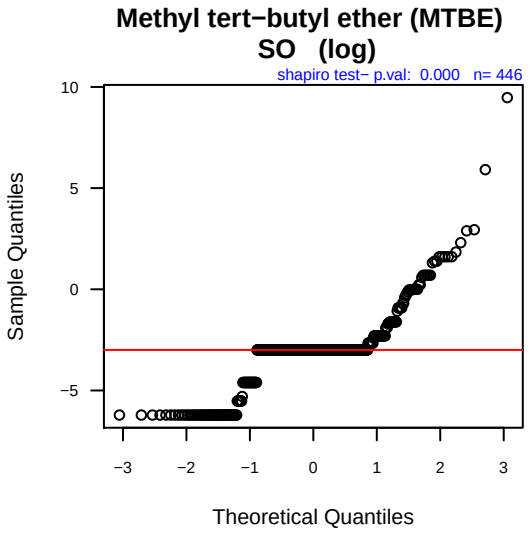

Mercury
SO
shapiro test− p.val: 0.000 n= 510
Sample Quantiles
Theoretical Quantiles

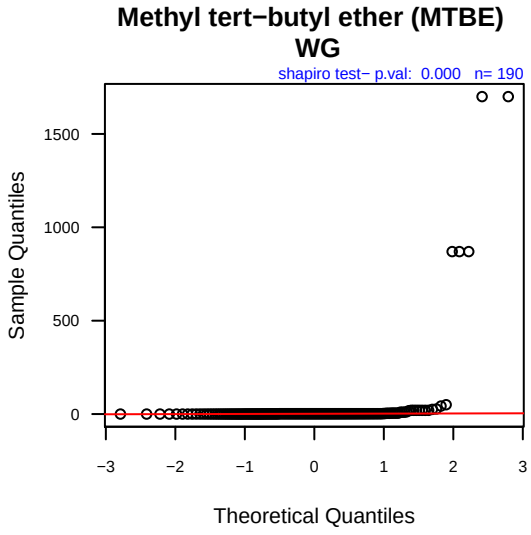

Mercury
SO (log)
shapiro test− p.val: 0.000 n= 510
Sample Quantiles
Theoretical Quantiles

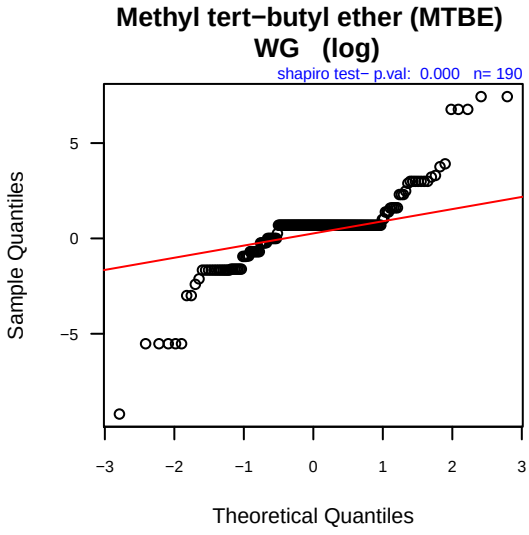

Mercury
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

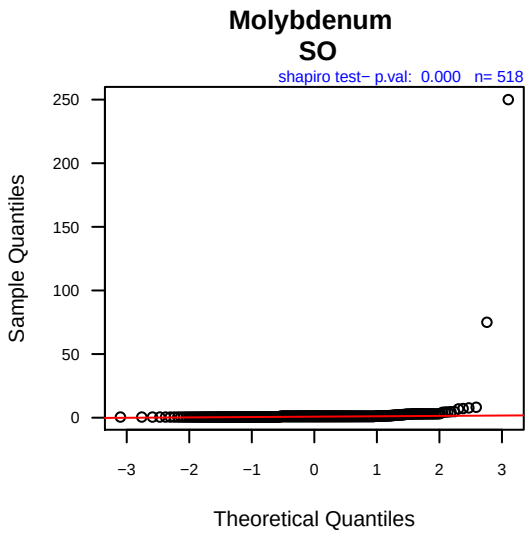

Mercury
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

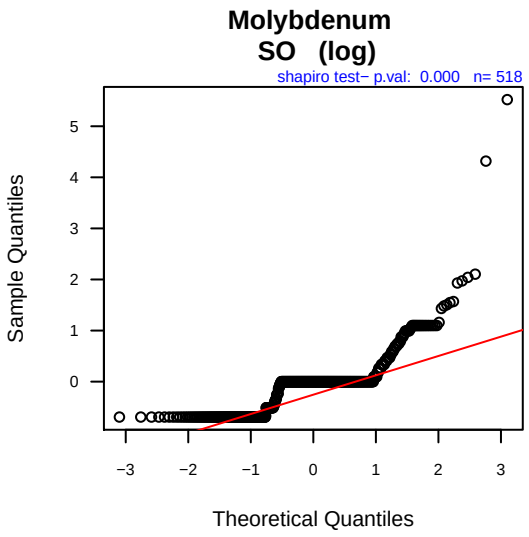

Methyl tert−butyl ether (MTBE)
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

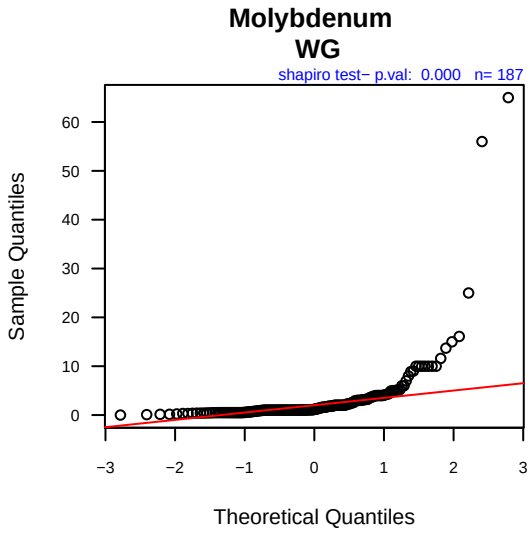

Methyl tert−butyl ether (MTBE)
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

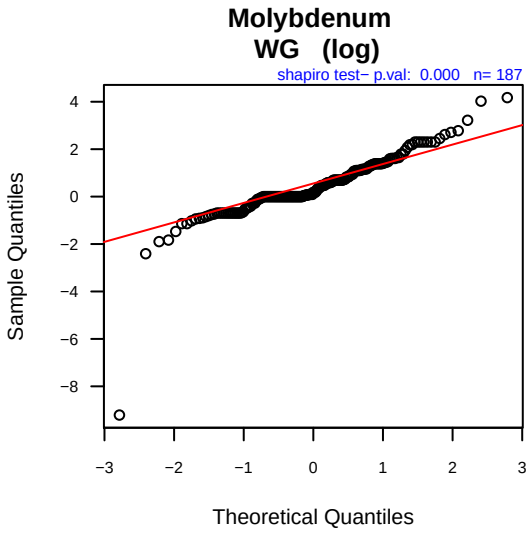

Methyl tert−butyl ether (MTBE)
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

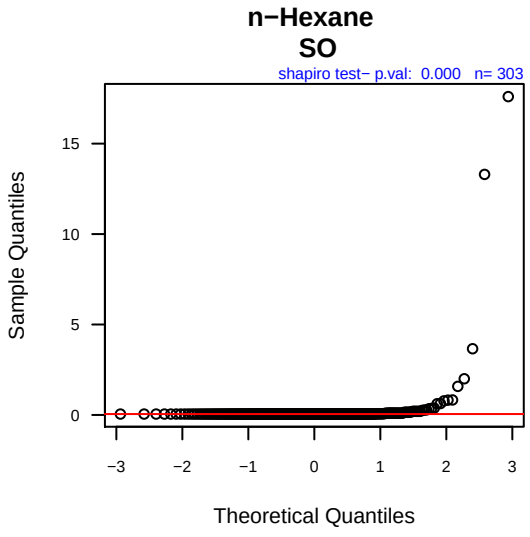

Methyl tert−butyl ether (MTBE)
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

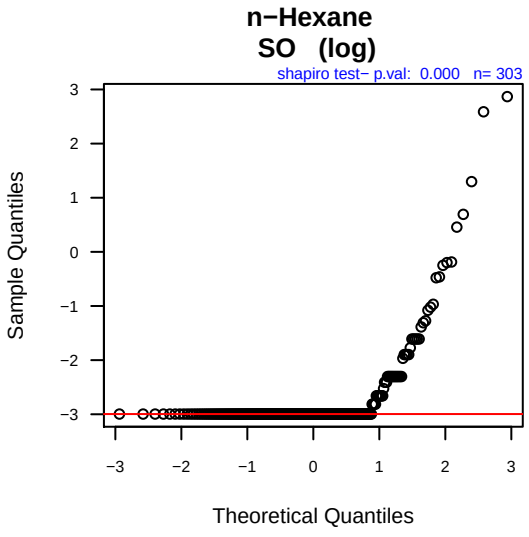

Molybdenum
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

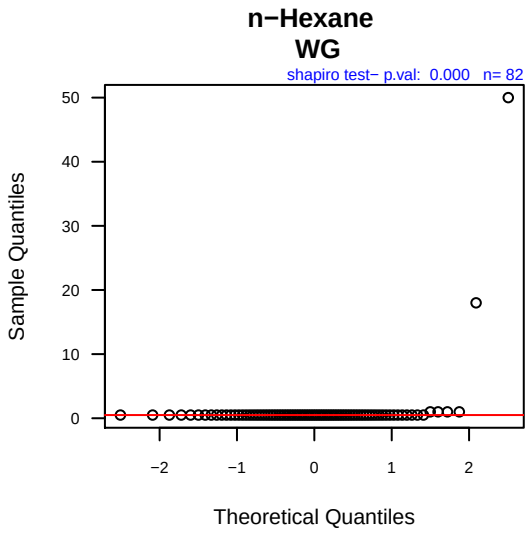

Molybdenum
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

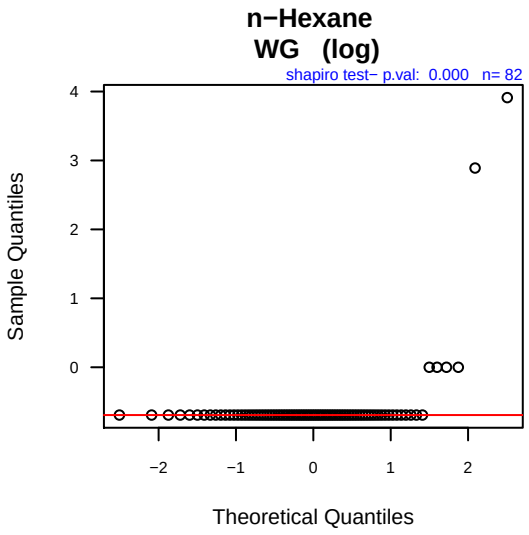

Molybdenum
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

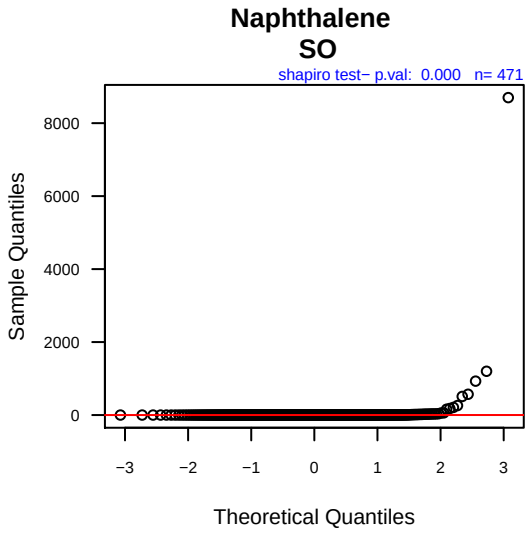

Molybdenum
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

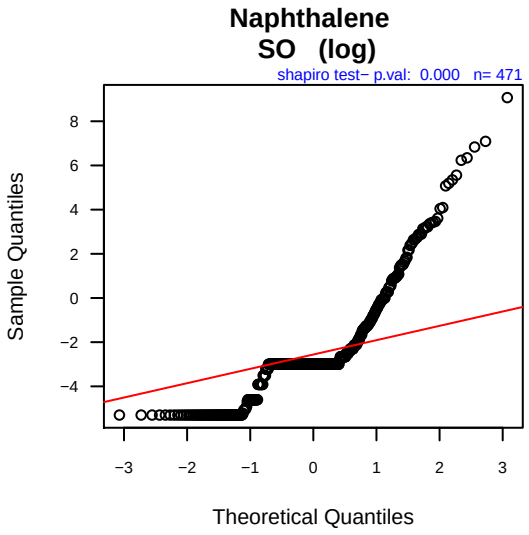

n−Hexane
SO
shapiro test− p.val: 0.000 n= 303
Sample Quantiles
Theoretical Quantiles

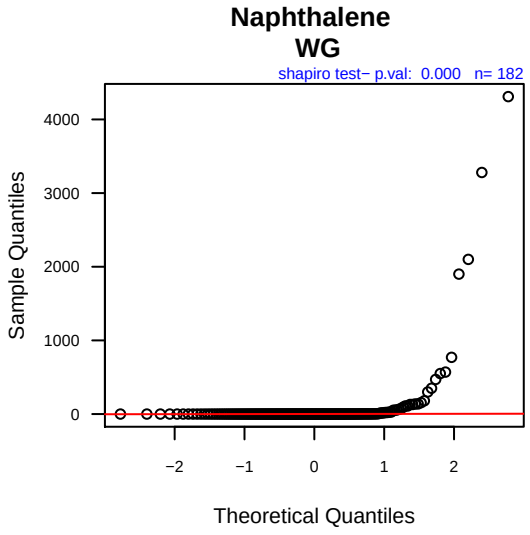

n−Hexane
SO (log)
shapiro test− p.val: 0.000 n= 303
Sample Quantiles
Theoretical Quantiles

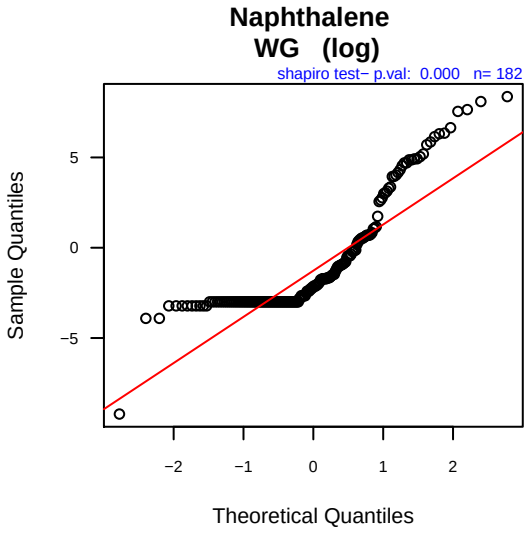

n−Hexane
WG
shapiro test− p.val: 0.000 n= 82
Sample Quantiles
Theoretical Quantiles

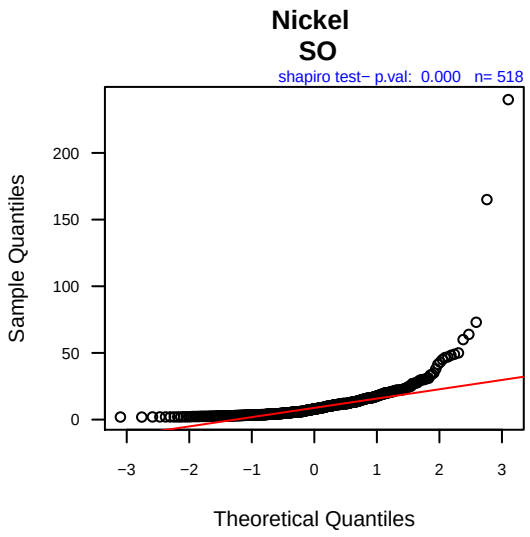

n−Hexane
WG (log)
shapiro test− p.val: 0.000 n= 82
Sample Quantiles
Theoretical Quantiles

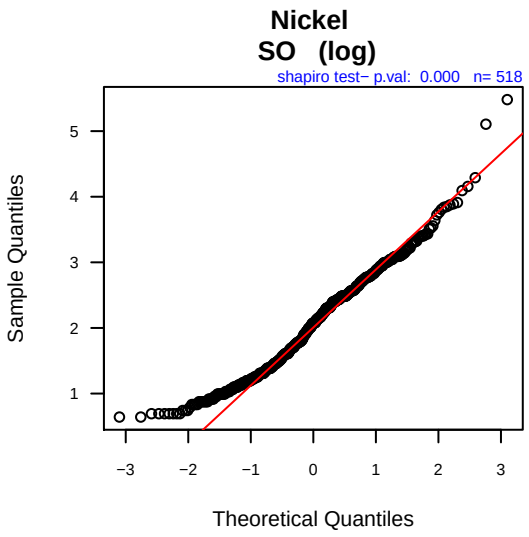

Naphthalene
SO
shapiro test− p.val: 0.000 n= 471
Sample Quantiles
Theoretical Quantiles

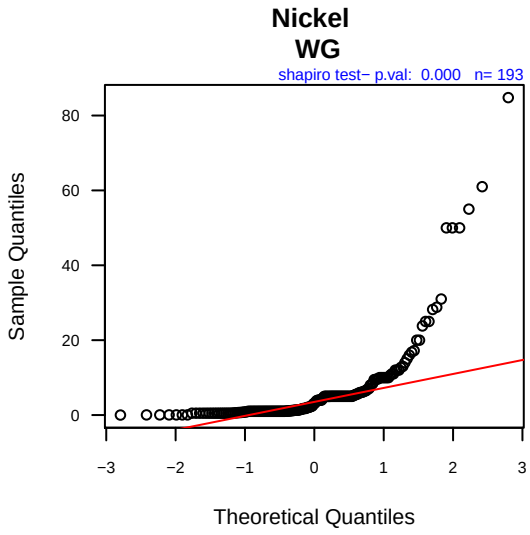

Naphthalene
SO (log)
shapiro test− p.val: 0.000 n= 471
Sample Quantiles
Theoretical Quantiles

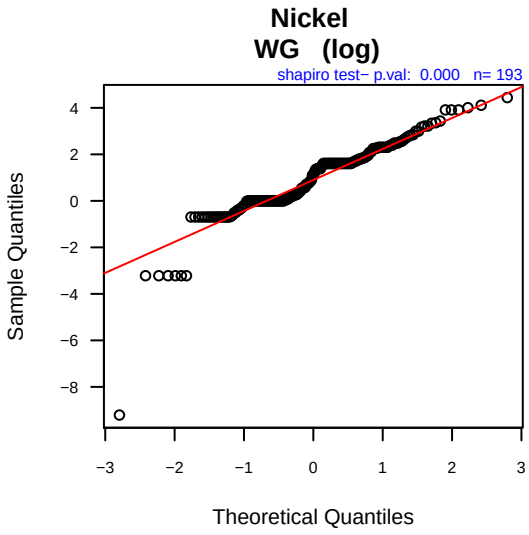

Naphthalene
WG
shapiro test− p.val: 0.000 n= 182
Sample Quantiles
Theoretical Quantiles

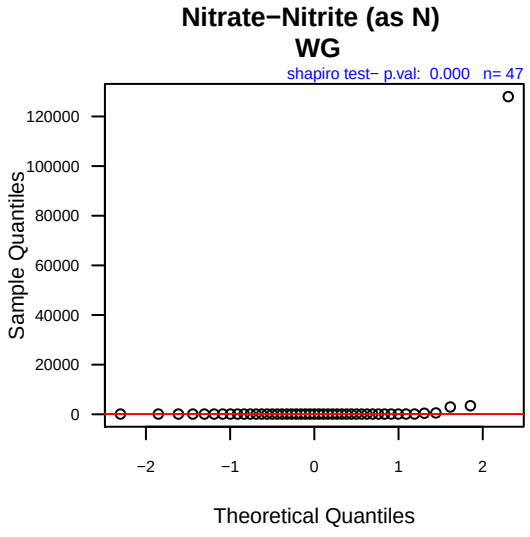

Naphthalene
WG (log)
shapiro test− p.val: 0.000 n= 182
Sample Quantiles
Theoretical Quantiles

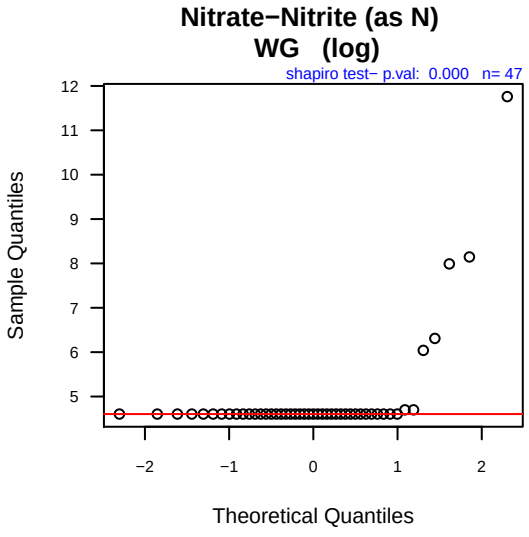

Nickel
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

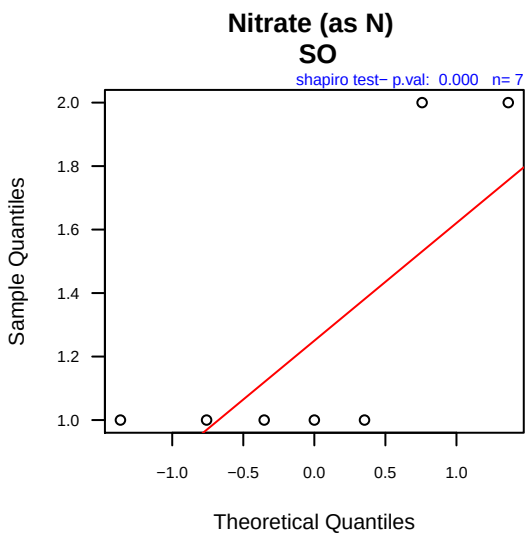

Nickel
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

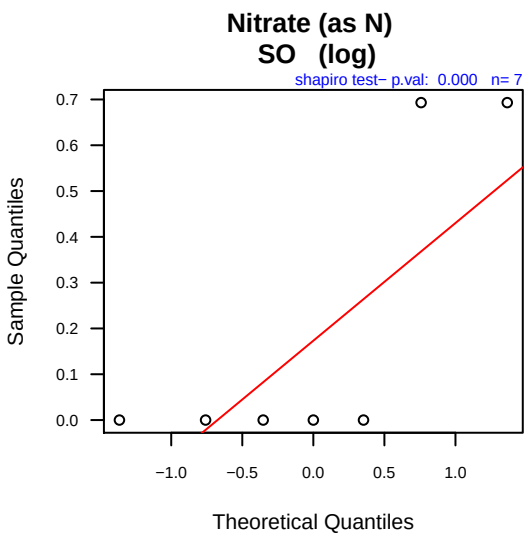

Nickel
WG
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

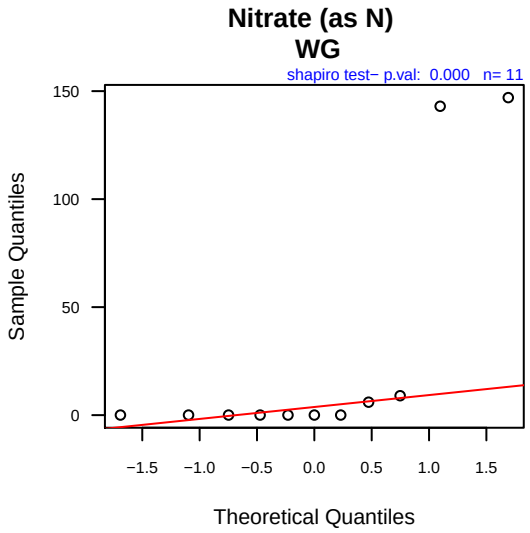

Nickel
WG (log)
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

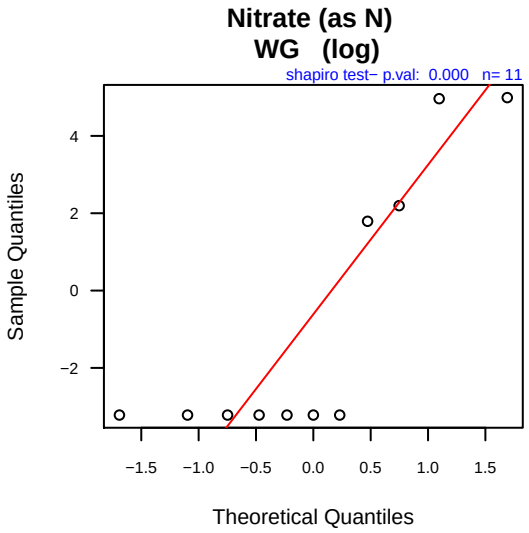

Nitrate−Nitrite (as N)
WG
shapiro test− p.val: 0.000 n= 47
Sample Quantiles
Theoretical Quantiles

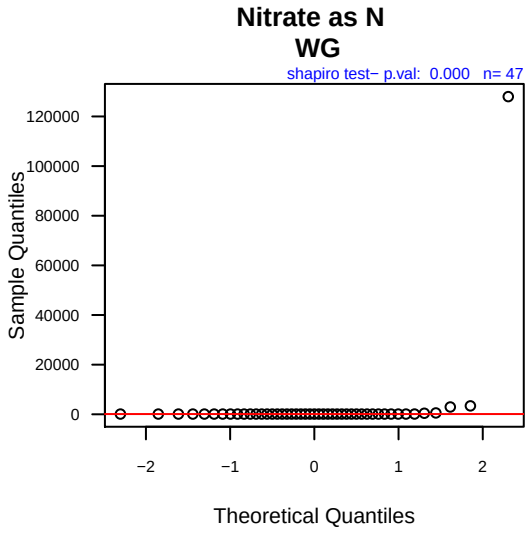

Nitrate−Nitrite (as N)
WG (log)
shapiro test− p.val: 0.000 n= 47
Sample Quantiles
Theoretical Quantiles

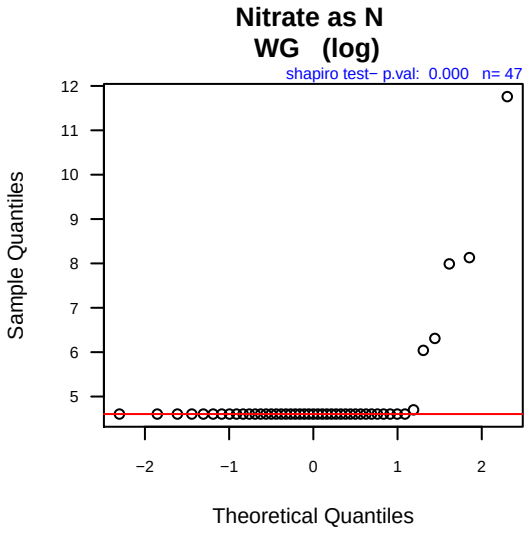

Nitrate (as N)
SO
shapiro test− p.val: 0.000 n= 7
Sample Quantiles
Theoretical Quantiles

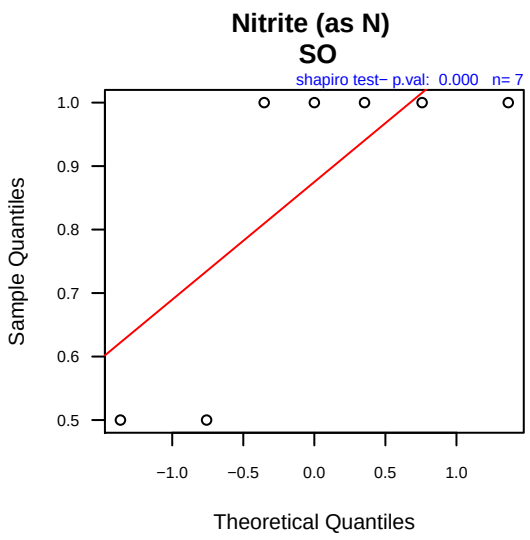

Nitrate (as N)
SO (log)
shapiro test− p.val: 0.000 n= 7
Sample Quantiles
Theoretical Quantiles

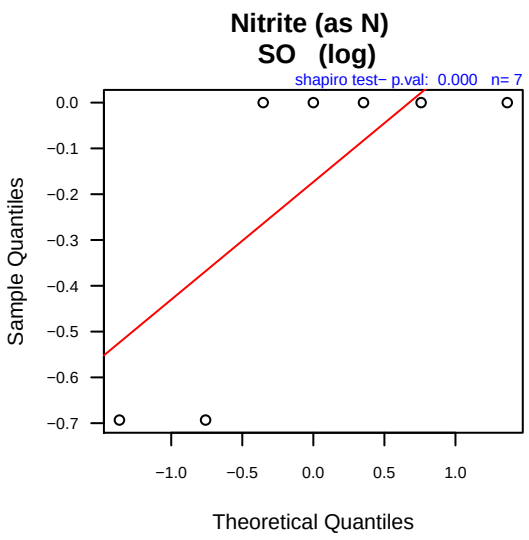

Nitrate (as N)
WG
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

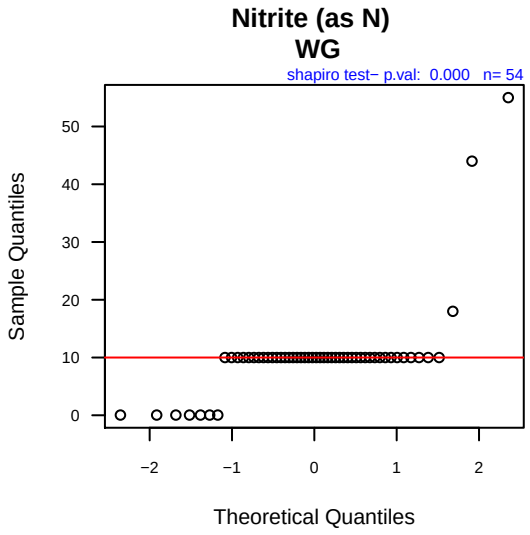

Nitrate (as N)
WG (log)
shapiro test− p.val: 0.000 n= 11
Sample Quantiles
Theoretical Quantiles

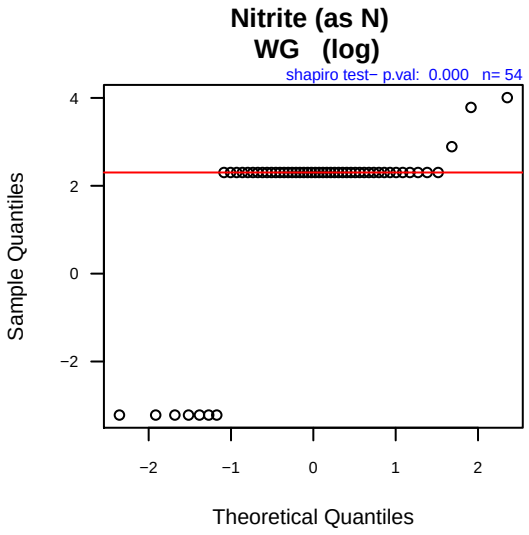

Nitrate as N
WG
shapiro test− p.val: 0.000 n= 47
Sample Quantiles
Theoretical Quantiles

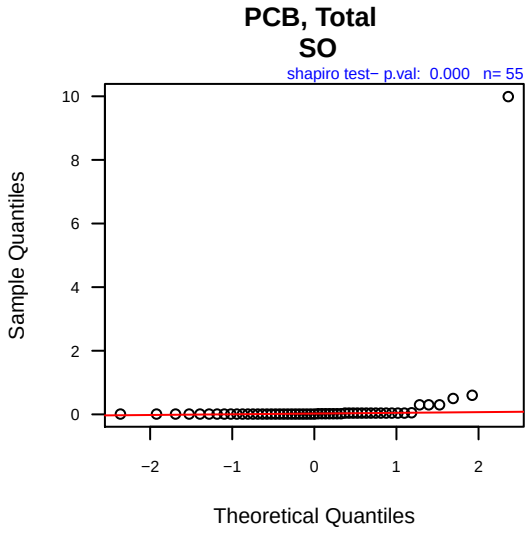

Nitrate as N
WG (log)
shapiro test− p.val: 0.000 n= 47
Sample Quantiles
Theoretical Quantiles

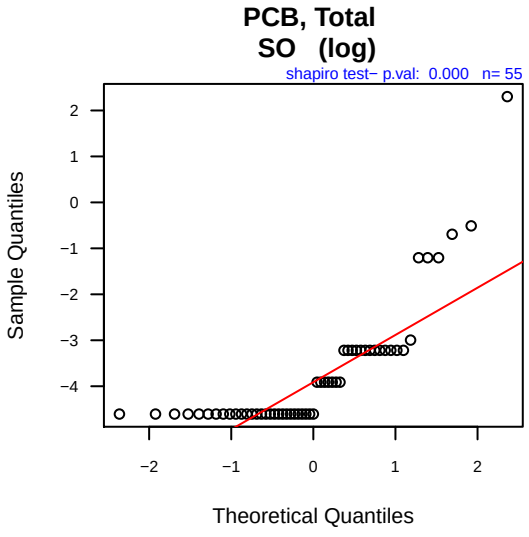

Nitrite (as N)
SO
shapiro test− p.val: 0.000 n= 7
Sample Quantiles
Theoretical Quantiles

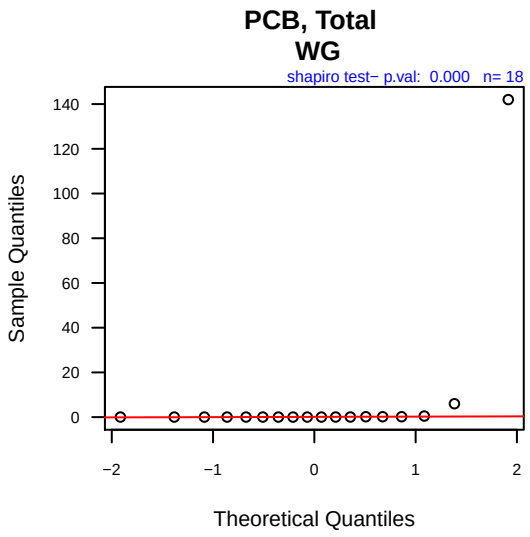

Nitrite (as N)
SO (log)
shapiro test− p.val: 0.000 n= 7
Sample Quantiles
Theoretical Quantiles

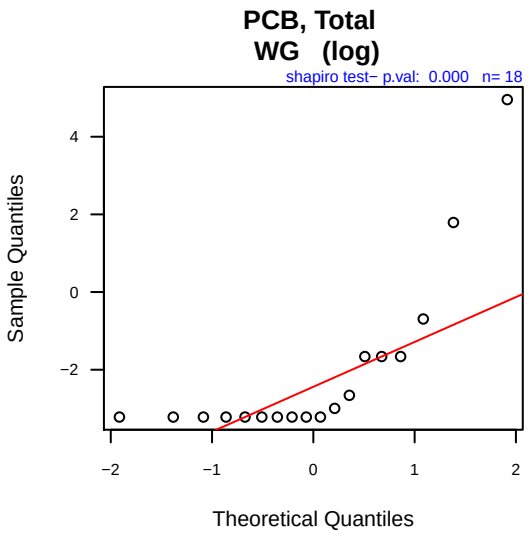

Nitrite (as N)
WG
shapiro test− p.val: 0.000 n= 54
Sample Quantiles
Theoretical Quantiles

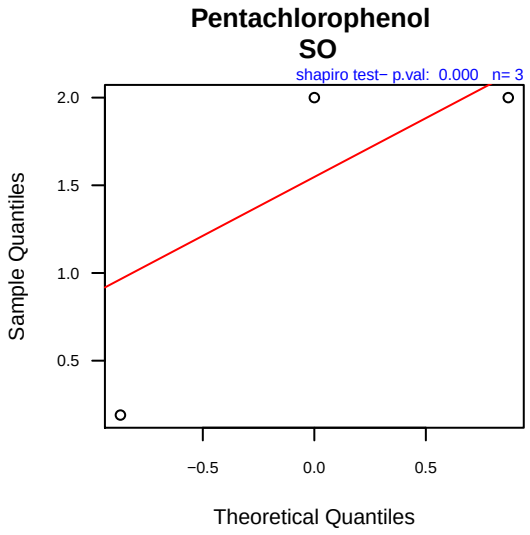

Nitrite (as N)
WG (log)
shapiro test− p.val: 0.000 n= 54
Sample Quantiles
Theoretical Quantiles

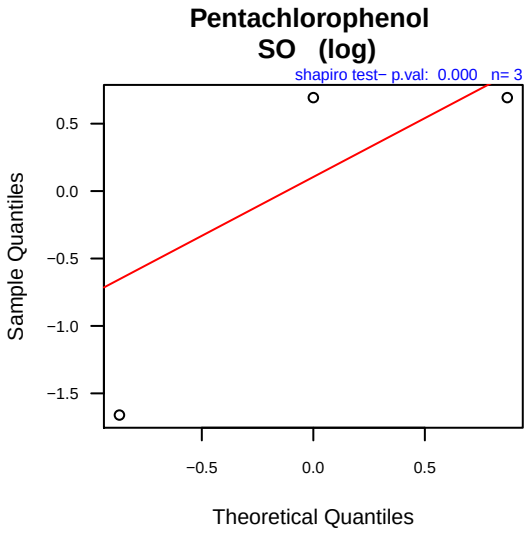

PCB, Total
SO
shapiro test− p.val: 0.000 n= 55
Sample Quantiles
Theoretical Quantiles

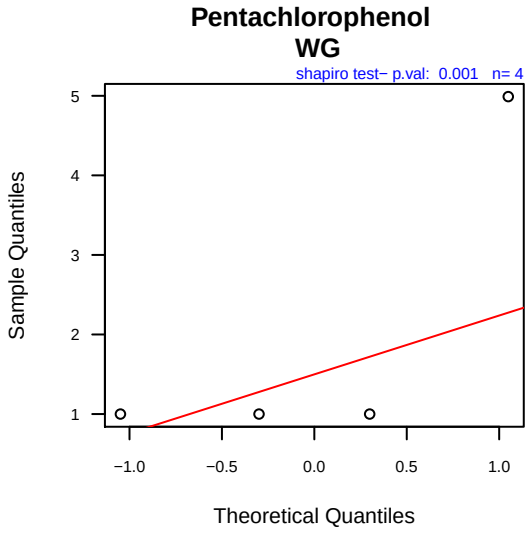

PCB, Total
SO (log)
shapiro test− p.val: 0.000 n= 55
Sample Quantiles
Theoretical Quantiles

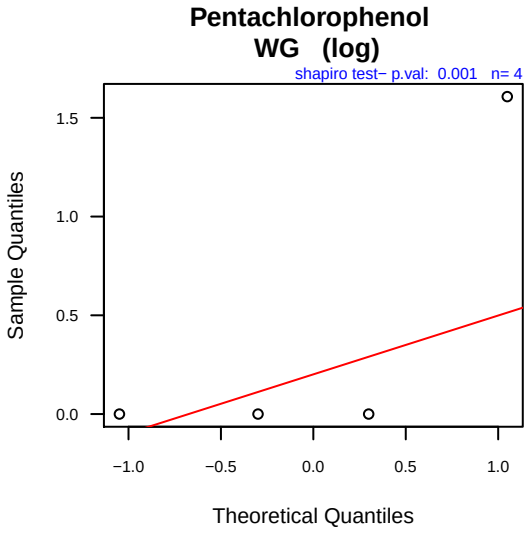

PCB, Total
WG
shapiro test− p.val: 0.000 n= 18
Sample Quantiles
Theoretical Quantiles

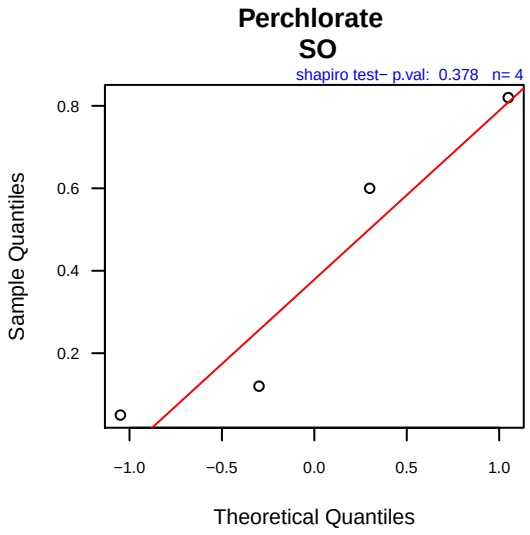

PCB, Total
WG (log)
shapiro test− p.val: 0.000 n= 18
Sample Quantiles
Theoretical Quantiles

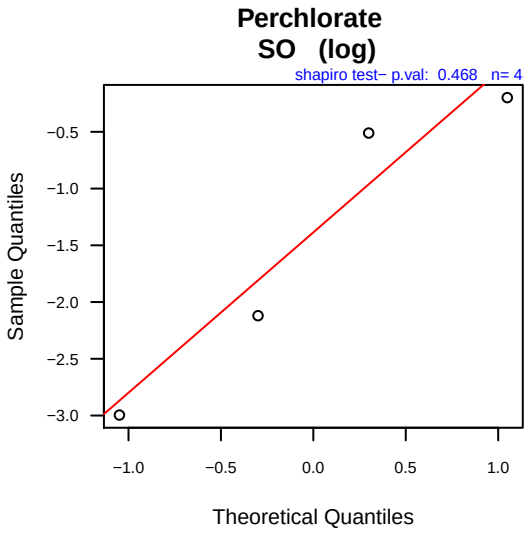

Pentachlorophenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

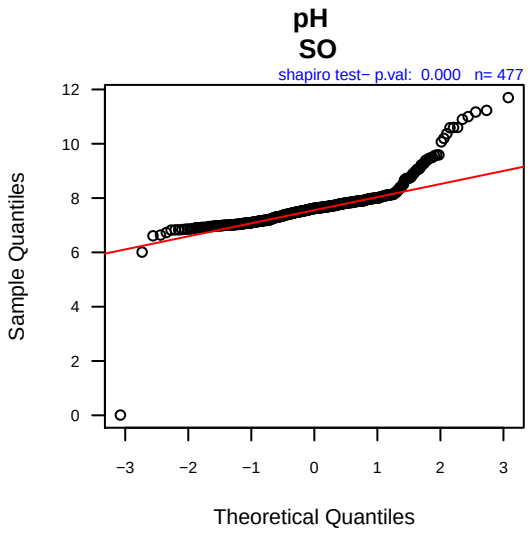

Pentachlorophenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

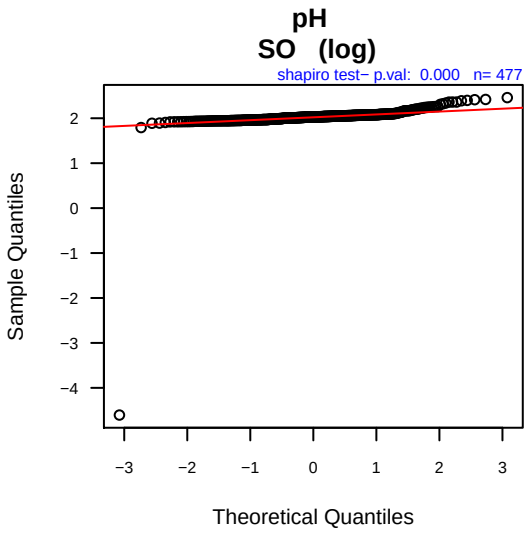

Pentachlorophenol
WG
shapiro test− p.val: 0.001 n= 4
Sample Quantiles
Theoretical Quantiles

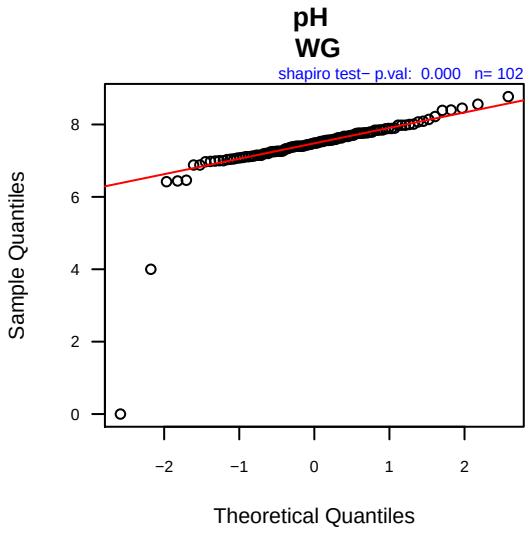

Pentachlorophenol
WG (log)
shapiro test− p.val: 0.001 n= 4
Sample Quantiles
Theoretical Quantiles

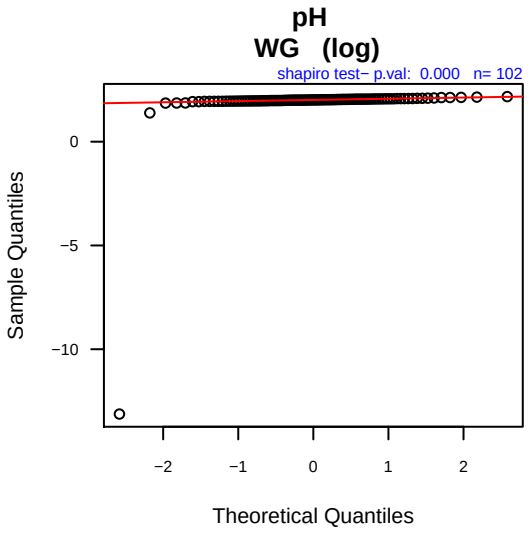

Perchlorate
SO
shapiro test− p.val: 0.378 n= 4
Sample Quantiles
Theoretical Quantiles

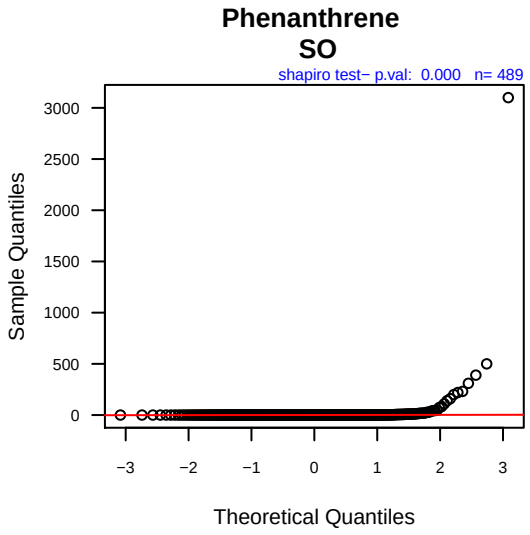

Perchlorate
SO (log)
shapiro test− p.val: 0.468 n= 4
Sample Quantiles
Theoretical Quantiles

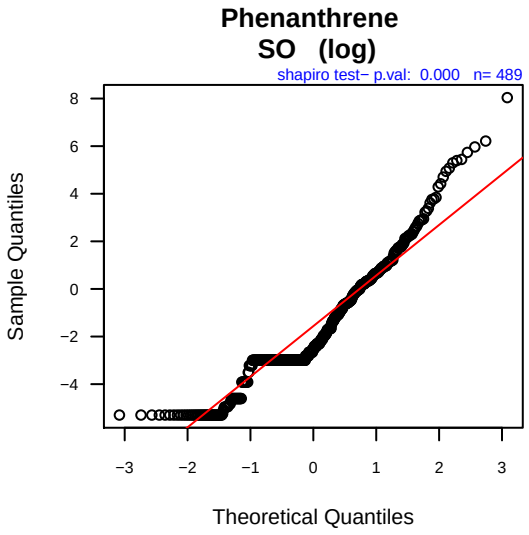

pH
SO
shapiro test− p.val: 0.000 n= 477
Sample Quantiles
Theoretical Quantiles

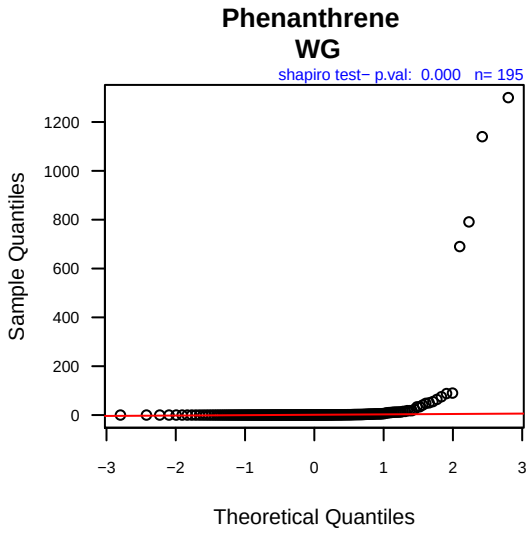

pH
SO (log)
shapiro test− p.val: 0.000 n= 477
Sample Quantiles
Theoretical Quantiles

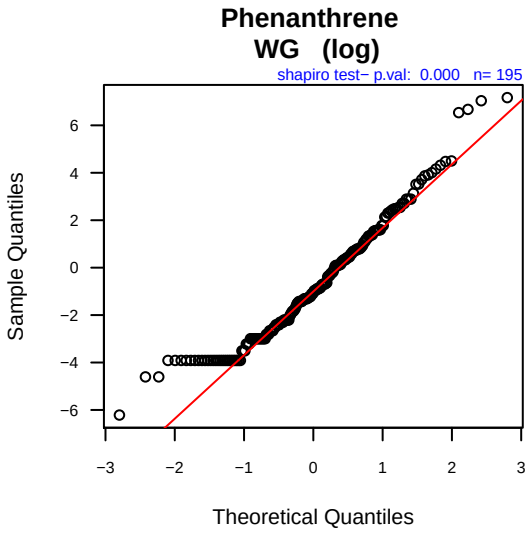

pH
WG
shapiro test− p.val: 0.000 n= 102
Sample Quantiles
Theoretical Quantiles

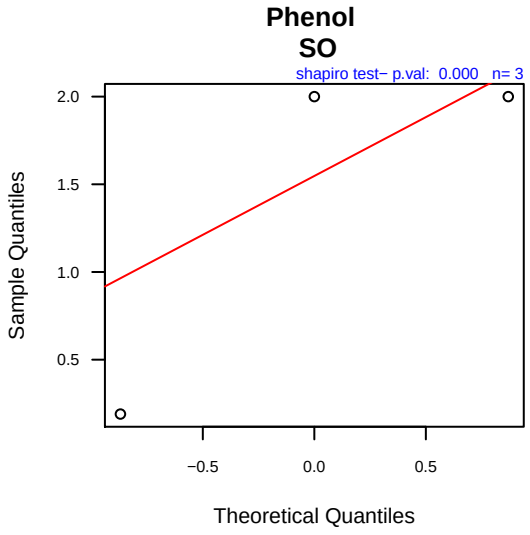

pH
WG (log)
shapiro test− p.val: 0.000 n= 102
Sample Quantiles
Theoretical Quantiles

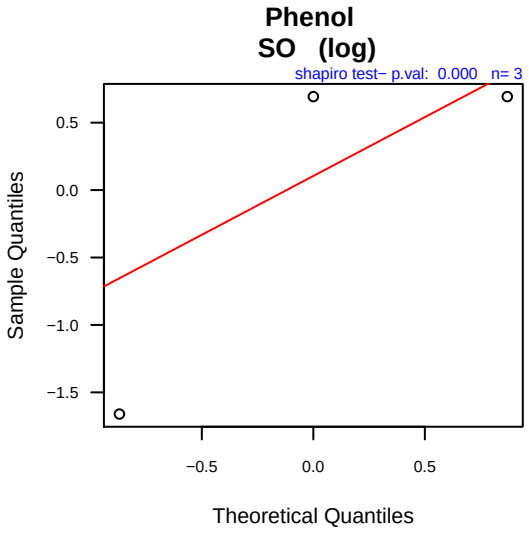

Phenanthrene
SO
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

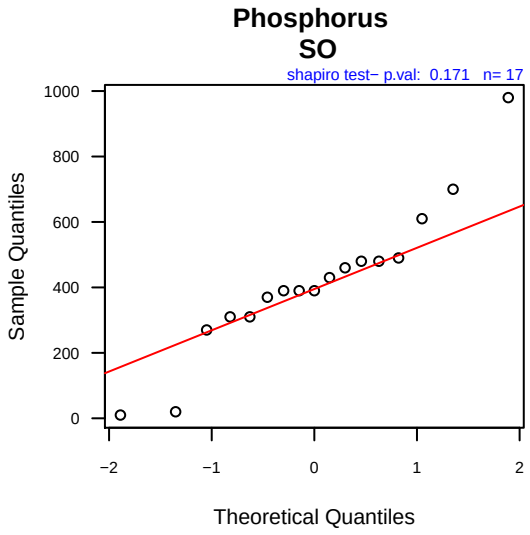

Phenanthrene
SO (log)
shapiro test− p.val: 0.000 n= 489
Sample Quantiles
Theoretical Quantiles

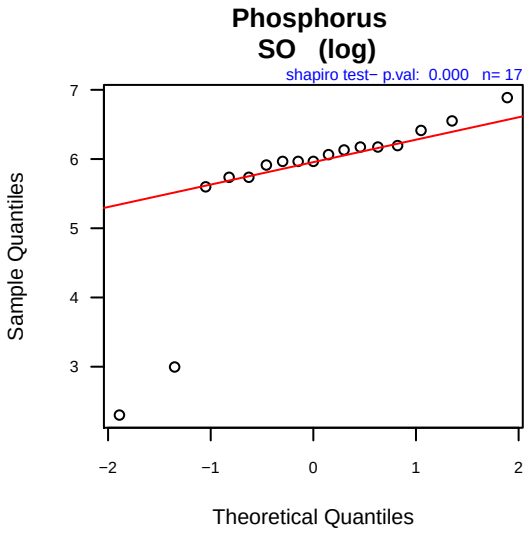

Phenanthrene
WG
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

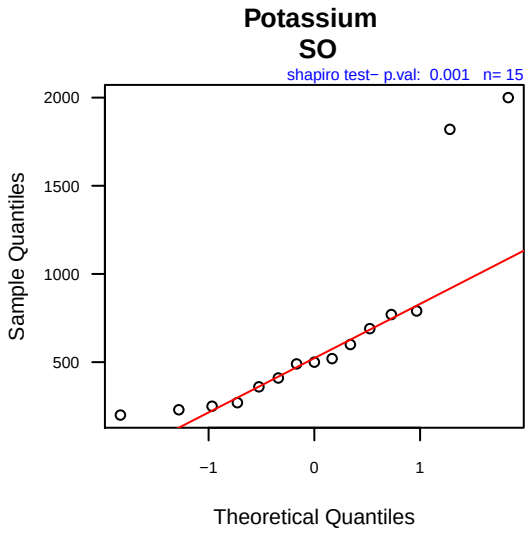

Phenanthrene
WG (log)
shapiro test− p.val: 0.000 n= 195
Sample Quantiles
Theoretical Quantiles

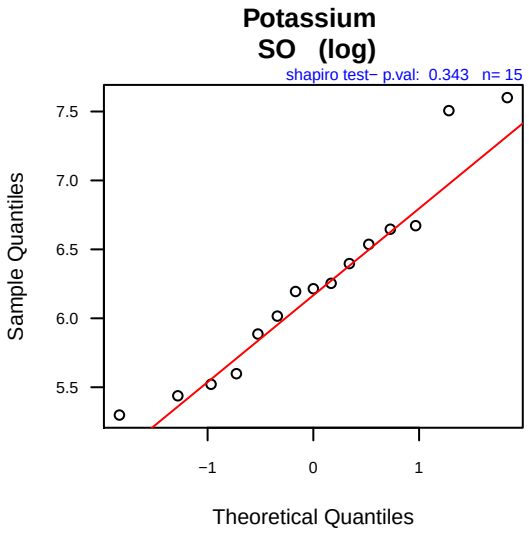

Phenol
SO
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

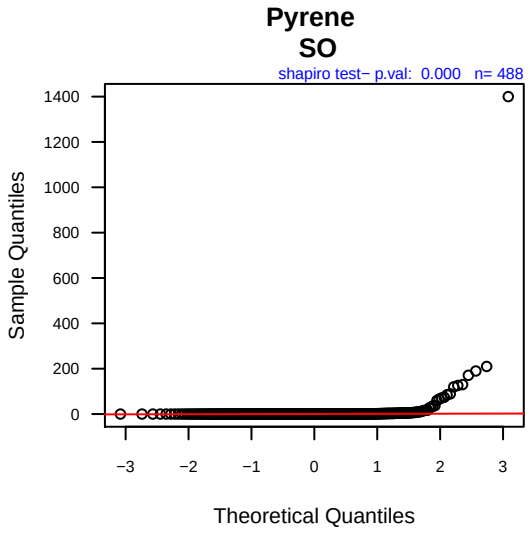

Phenol
SO (log)
shapiro test− p.val: 0.000 n= 3
Sample Quantiles
Theoretical Quantiles

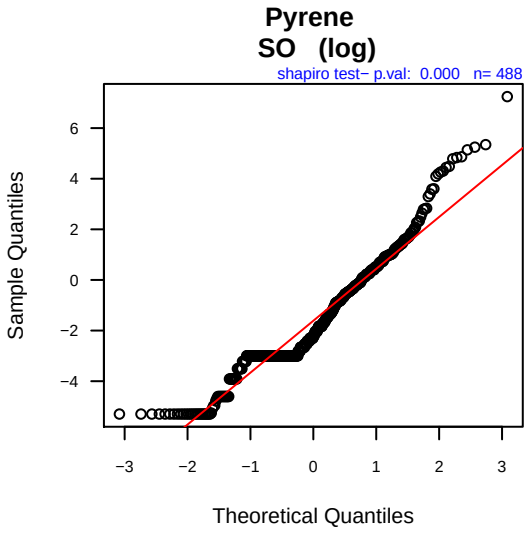

Phosphorus
SO
shapiro test− p.val: 0.171 n= 17
Sample Quantiles
Theoretical Quantiles

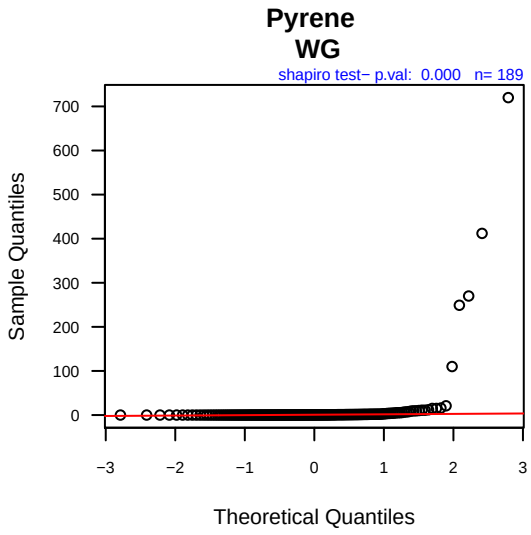

Phosphorus
SO (log)
shapiro test− p.val: 0.000 n= 17
Sample Quantiles
Theoretical Quantiles

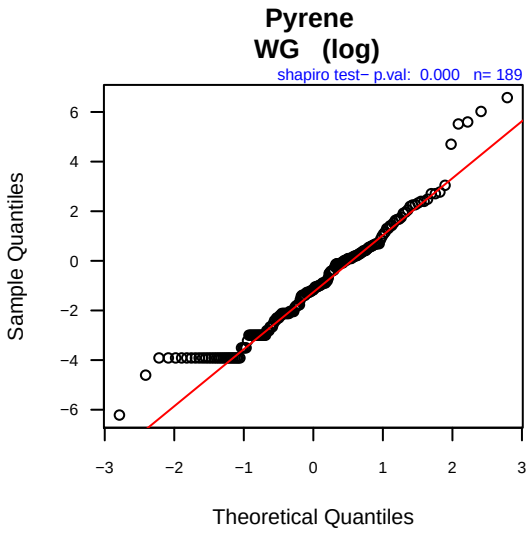

Potassium
SO
shapiro test− p.val: 0.001 n= 15
Sample Quantiles
Theoretical Quantiles

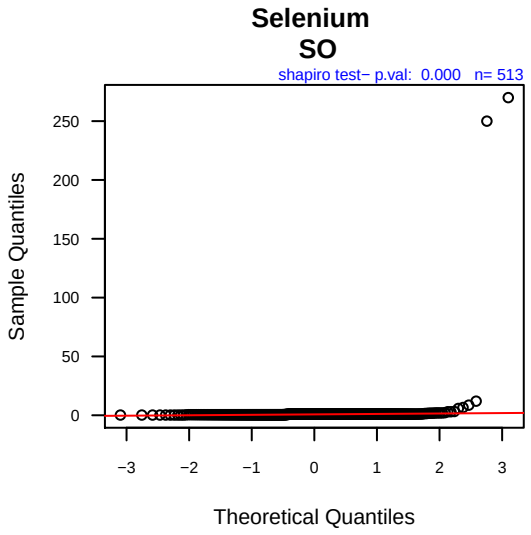

Potassium
SO (log)
shapiro test− p.val: 0.343 n= 15
Sample Quantiles
Theoretical Quantiles

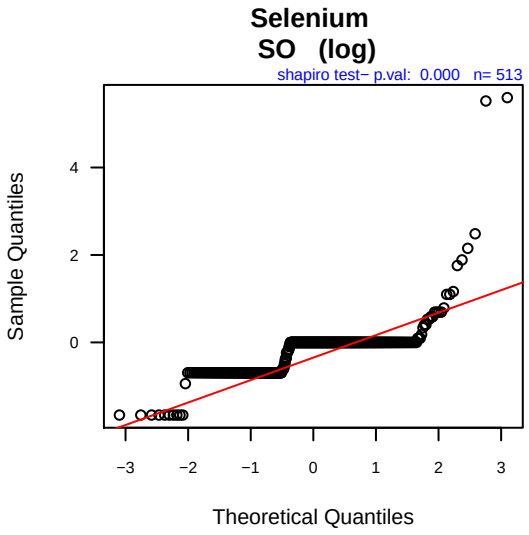

Pyrene
SO
shapiro test− p.val: 0.000 n= 488
Sample Quantiles
Theoretical Quantiles

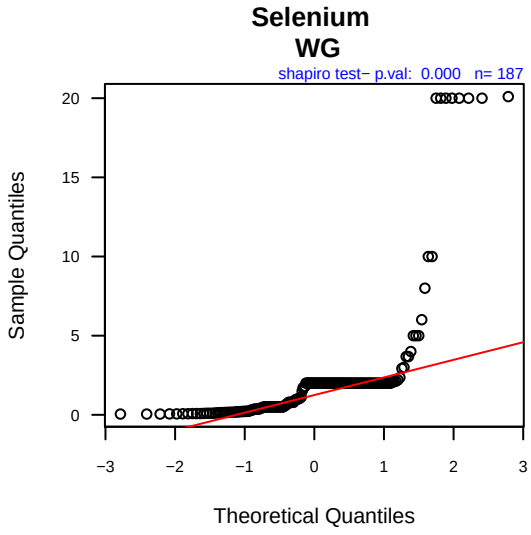

Pyrene
SO (log)
shapiro test− p.val: 0.000 n= 488
Sample Quantiles
Theoretical Quantiles

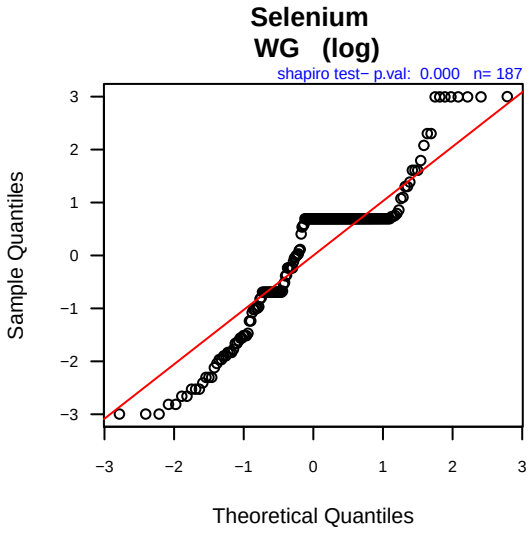

Pyrene
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

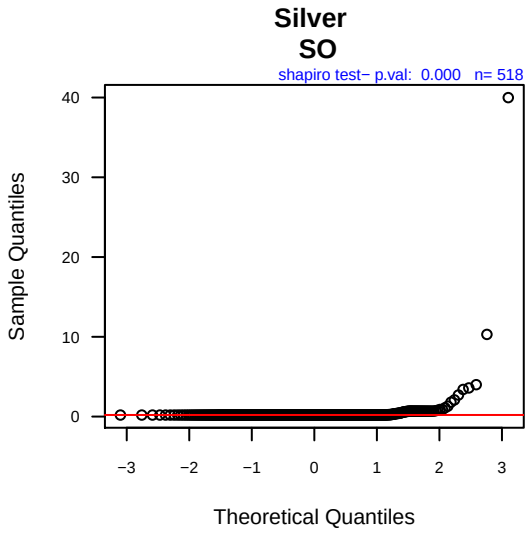

Pyrene
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

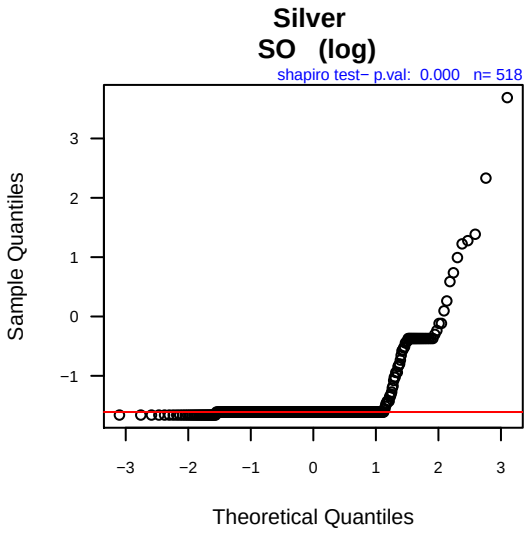

Selenium
SO
shapiro test− p.val: 0.000 n= 513
Sample Quantiles
Theoretical Quantiles

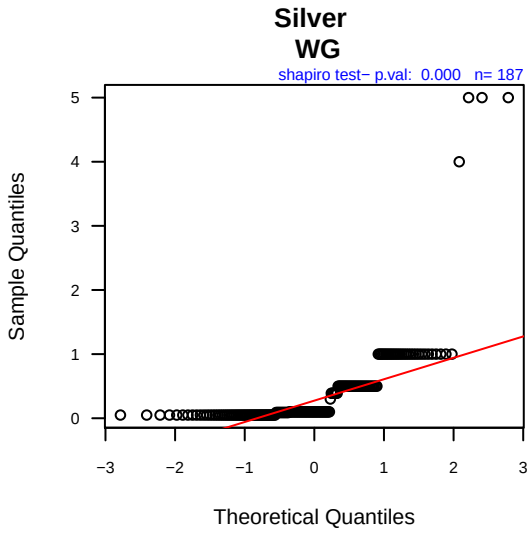

Selenium
SO (log)
shapiro test− p.val: 0.000 n= 513
Sample Quantiles
Theoretical Quantiles

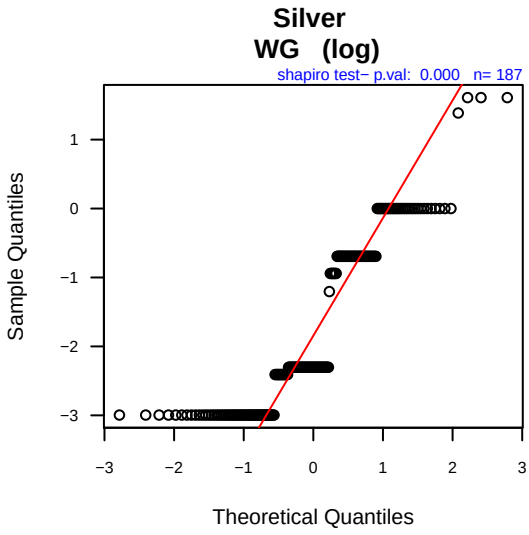

Selenium
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

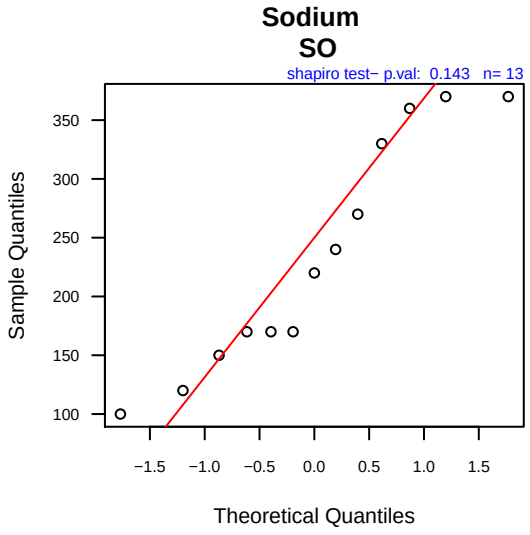

Selenium
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

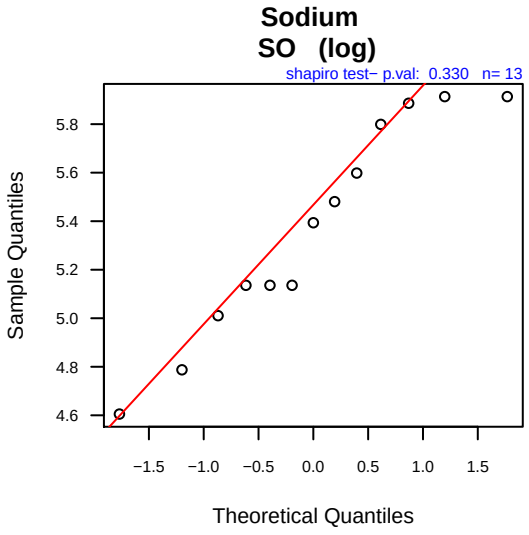

Silver
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

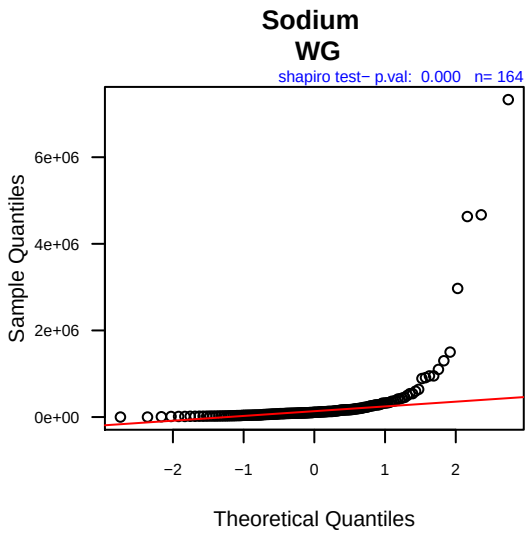

Silver
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

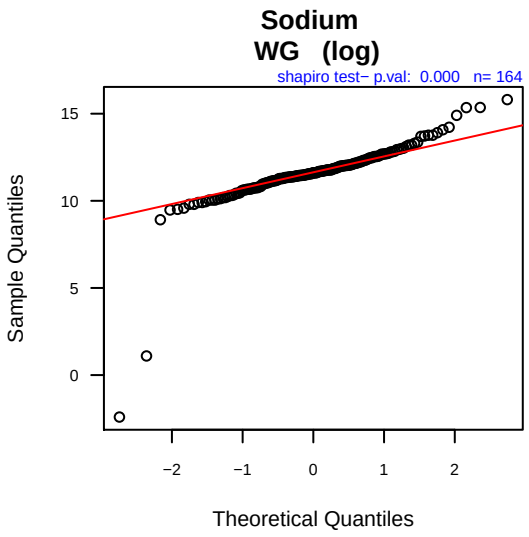

Silver
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

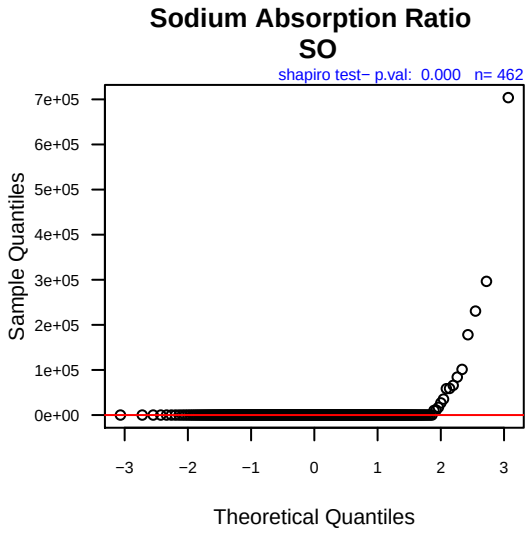

Silver
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

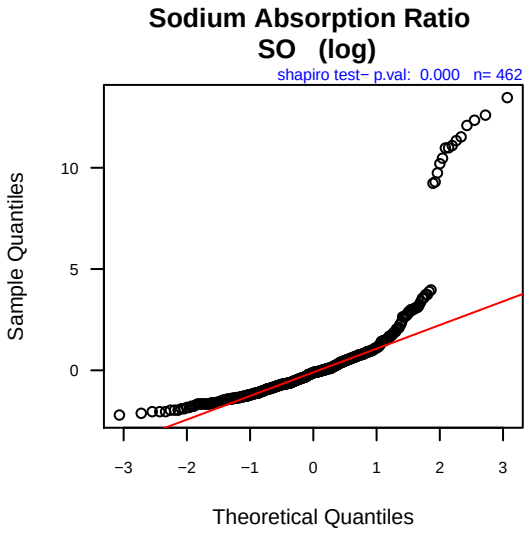

Sodium
SO
shapiro test− p.val: 0.143 n= 13
Sample Quantiles
Theoretical Quantiles

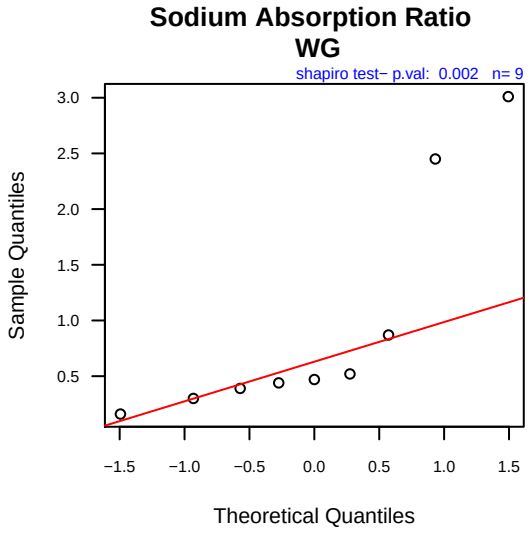

Sodium
SO (log)
shapiro test− p.val: 0.330 n= 13
Sample Quantiles
Theoretical Quantiles

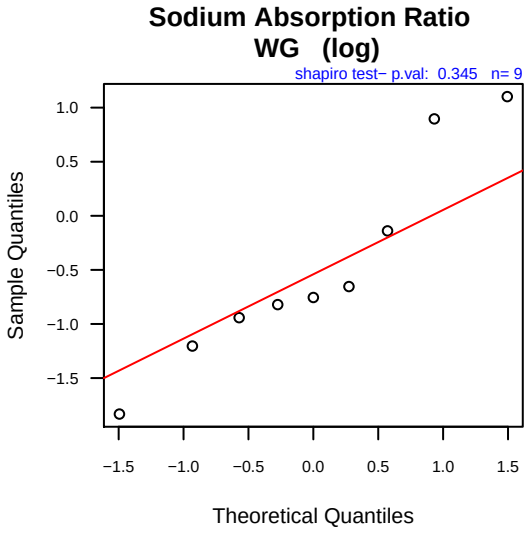

Sodium
WG
shapiro test− p.val: 0.000 n= 164
Sample Quantiles
Theoretical Quantiles

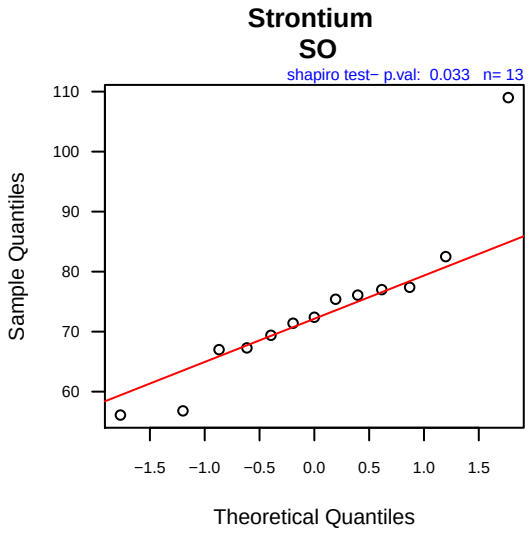

Sodium
WG (log)
shapiro test− p.val: 0.000 n= 164
Sample Quantiles
Theoretical Quantiles

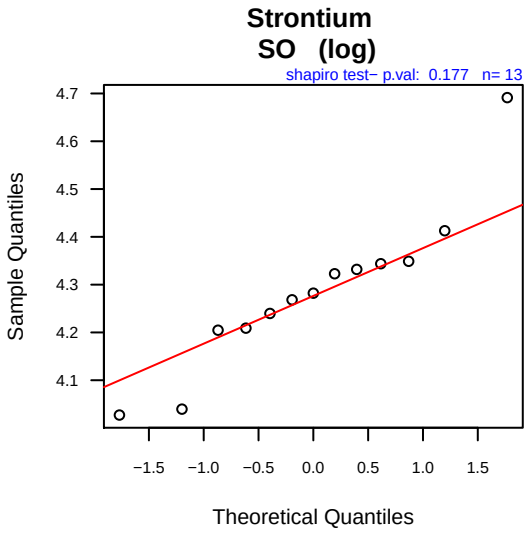

Sodium Absorption Ratio
SO
shapiro test− p.val: 0.000 n= 462
Sample Quantiles
Theoretical Quantiles

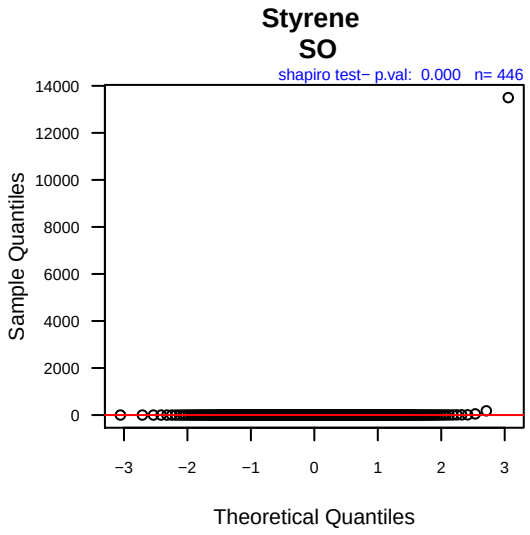

Sodium Absorption Ratio
SO (log)
shapiro test− p.val: 0.000 n= 462
Sample Quantiles
Theoretical Quantiles

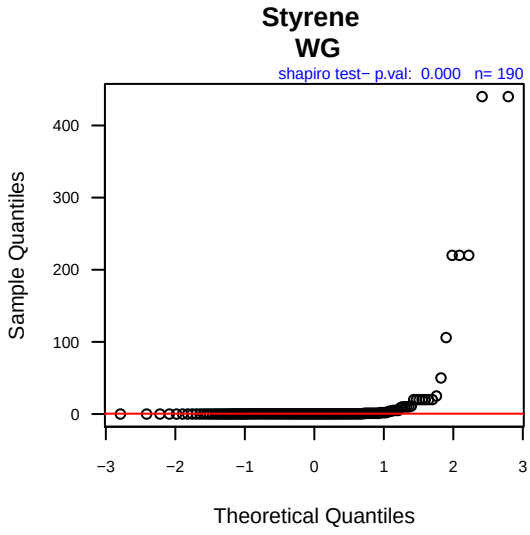

Sodium Absorption Ratio
WG
shapiro test− p.val: 0.002 n= 9
Sample Quantiles
Theoretical Quantiles

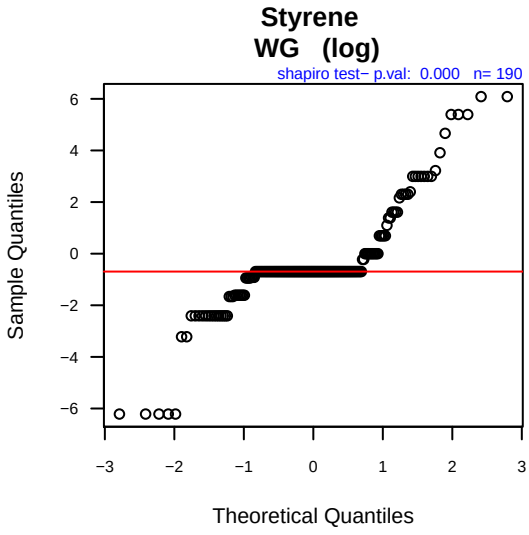

Sodium Absorption Ratio
WG (log)
shapiro test− p.val: 0.345 n= 9
Sample Quantiles
Theoretical Quantiles

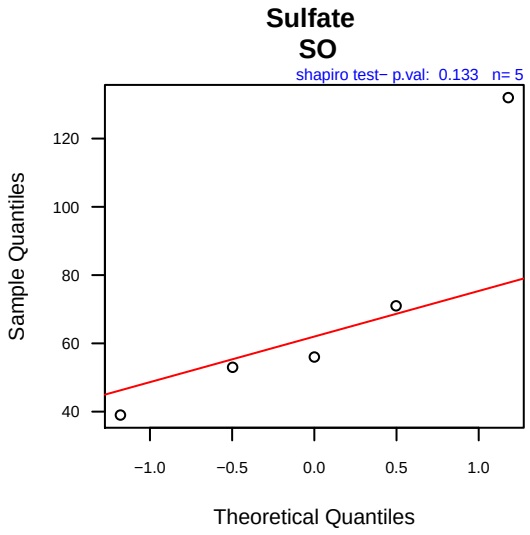

Strontium
SO
shapiro test− p.val: 0.033 n= 13
Sample Quantiles
Theoretical Quantiles

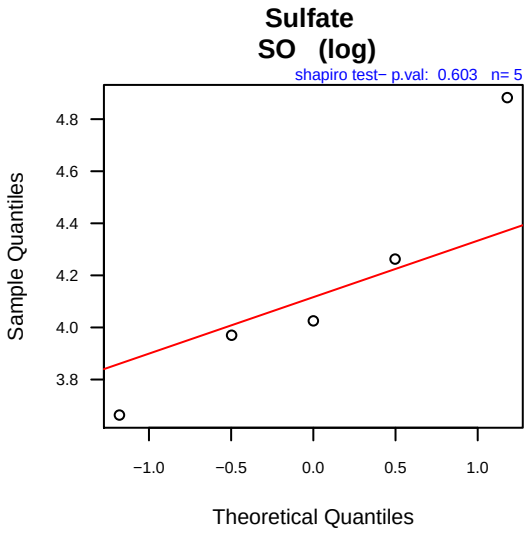

Strontium
SO (log)
shapiro test− p.val: 0.177 n= 13
Sample Quantiles
Theoretical Quantiles

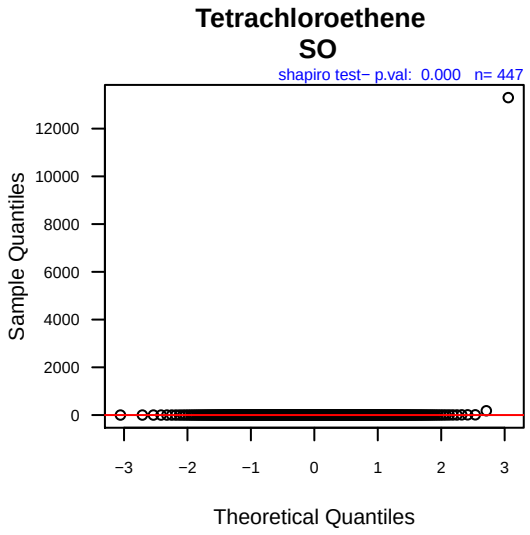

Styrene
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

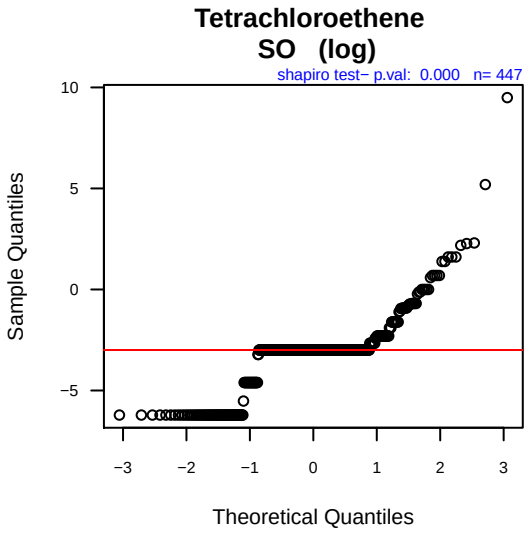

Styrene
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

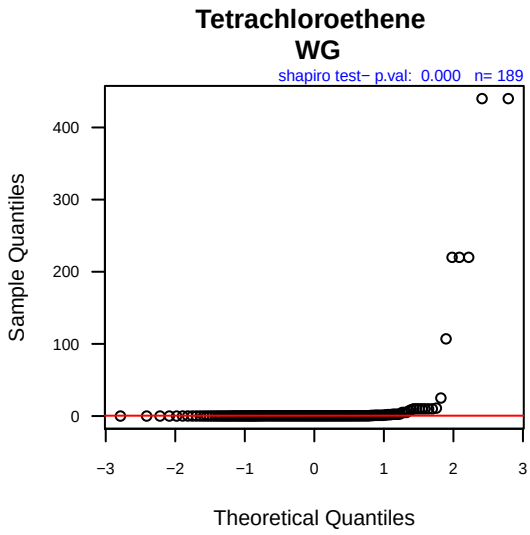

Styrene
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

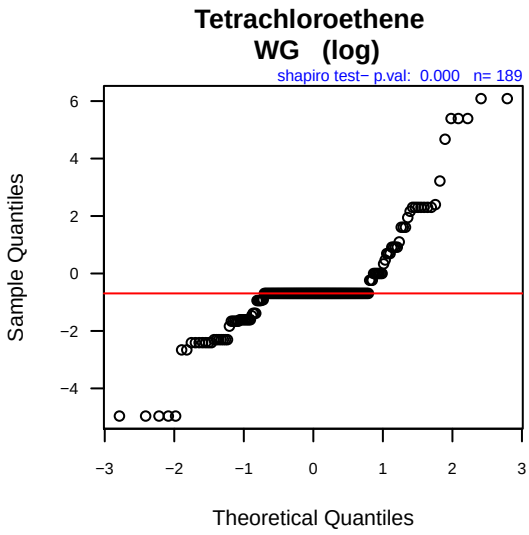

Sulfate
SO
shapiro test− p.val: 0.133 n= 5
Sample Quantiles
Theoretical Quantiles

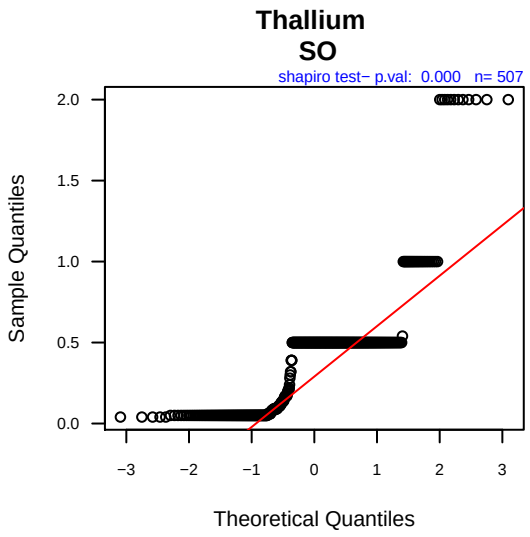

Sulfate
SO (log)
shapiro test− p.val: 0.603 n= 5
Sample Quantiles
Theoretical Quantiles

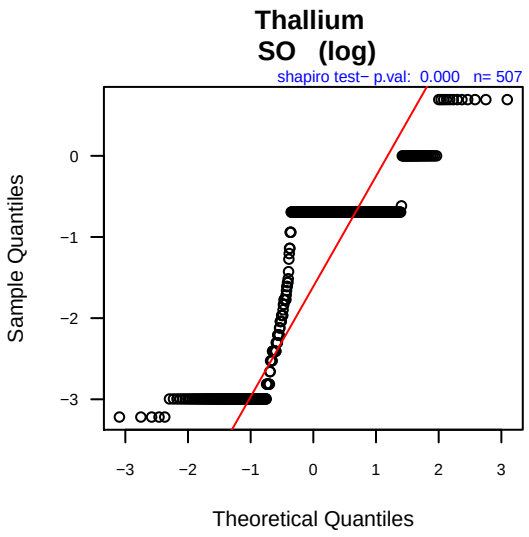

Tetrachloroethene
SO
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles

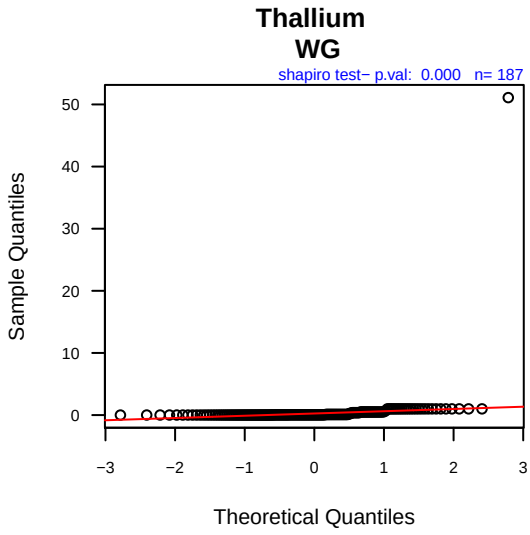

Tetrachloroethene
SO (log)
shapiro test− p.val: 0.000 n= 447
Sample Quantiles
Theoretical Quantiles

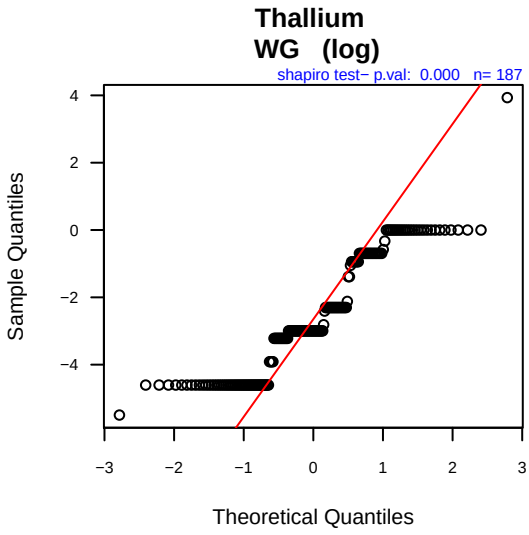

Tetrachloroethene
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

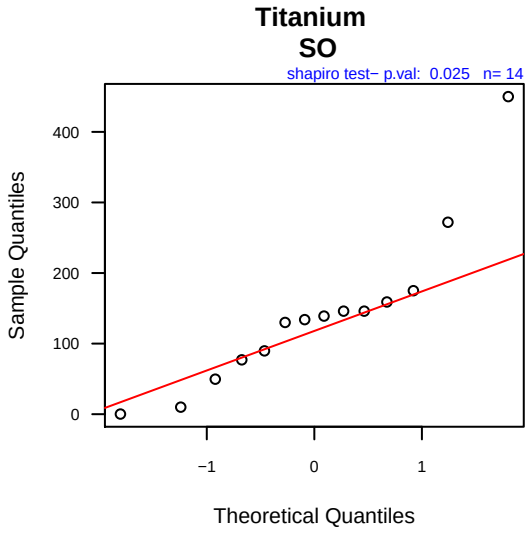

Tetrachloroethene
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

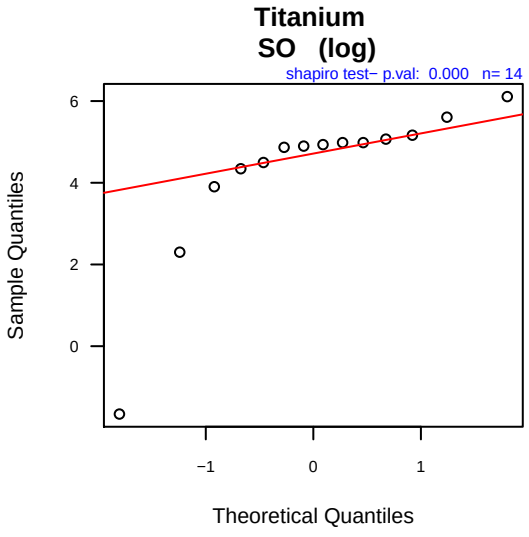

Thallium
SO
shapiro test− p.val: 0.000 n= 507
Sample Quantiles
Theoretical Quantiles

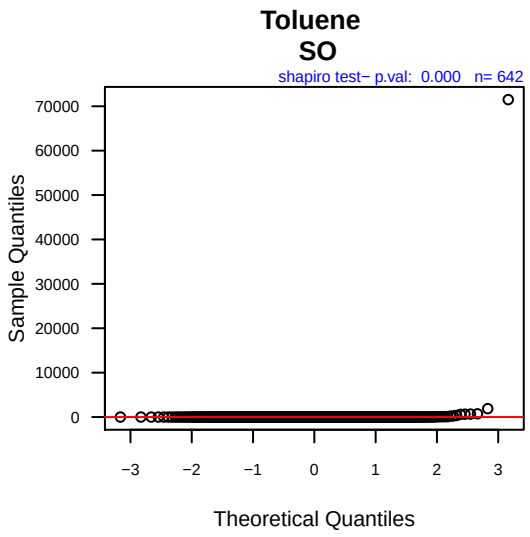

Thallium
SO (log)
shapiro test− p.val: 0.000 n= 507
Sample Quantiles
Theoretical Quantiles

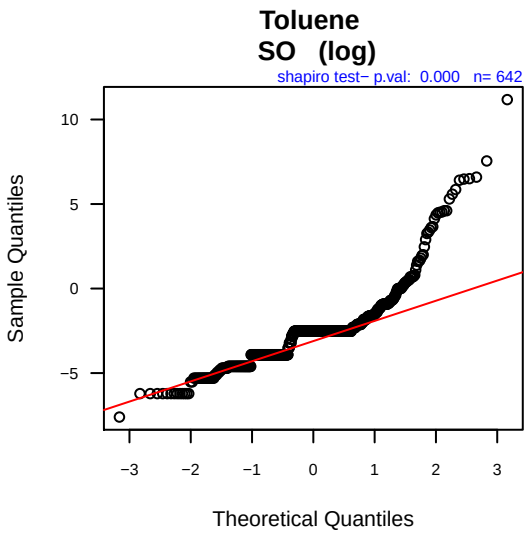

Thallium
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

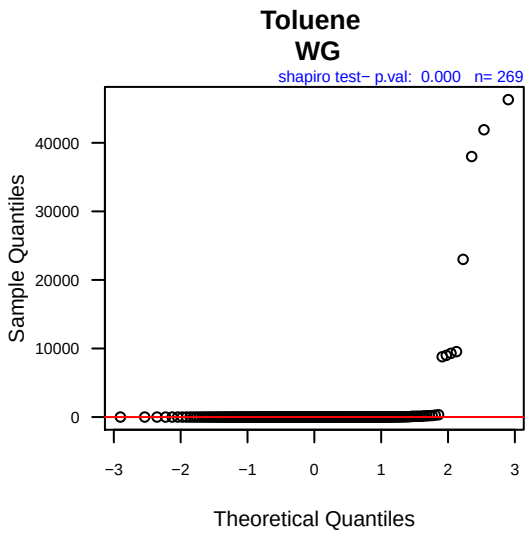

Thallium
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

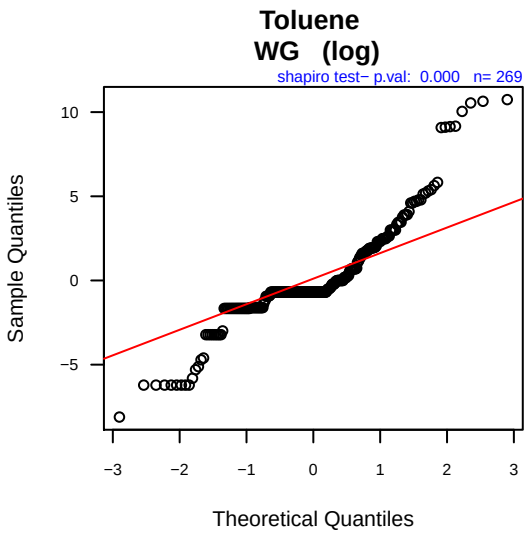

Titanium
SO
shapiro test− p.val: 0.025 n= 14
Sample Quantiles
Theoretical Quantiles

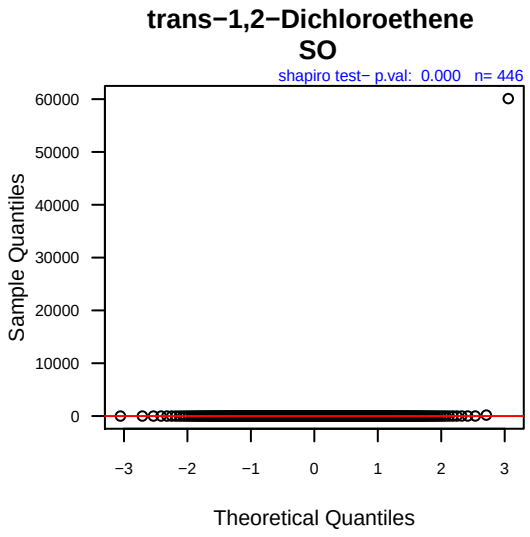

Titanium
SO (log)
shapiro test− p.val: 0.000 n= 14
Sample Quantiles
Theoretical Quantiles

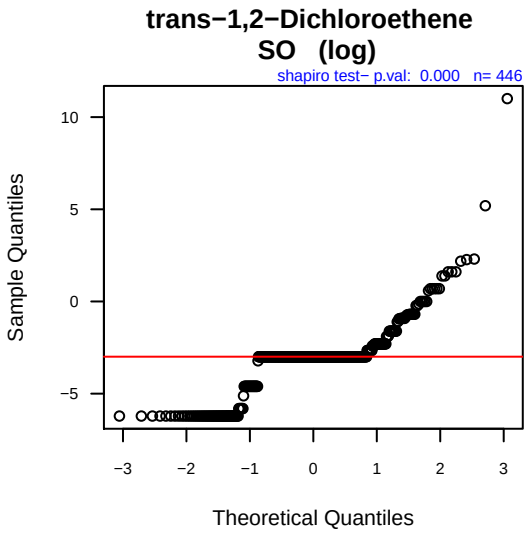

Toluene
SO
shapiro test− p.val: 0.000 n= 642
Sample Quantiles
Theoretical Quantiles

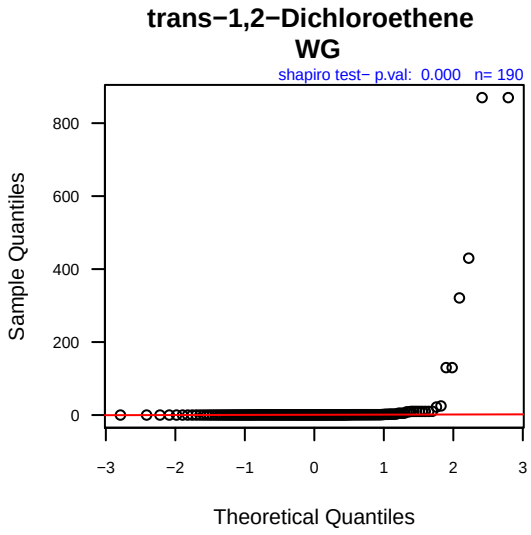

Toluene
SO (log)
shapiro test− p.val: 0.000 n= 642
Sample Quantiles
Theoretical Quantiles

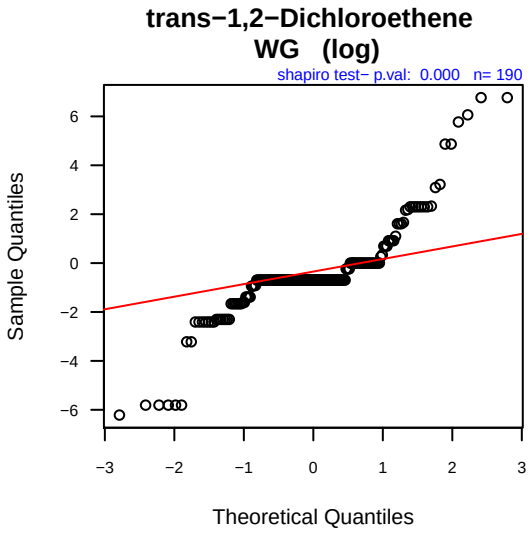

Toluene
WG
shapiro test− p.val: 0.000 n= 269
Sample Quantiles
Theoretical Quantiles

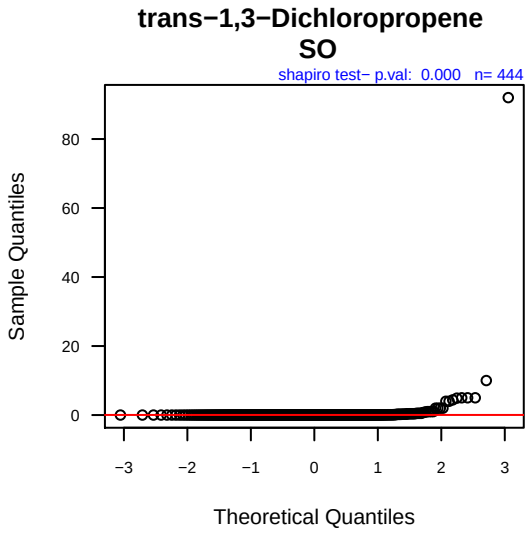

Toluene
WG (log)
shapiro test− p.val: 0.000 n= 269
Sample Quantiles
Theoretical Quantiles

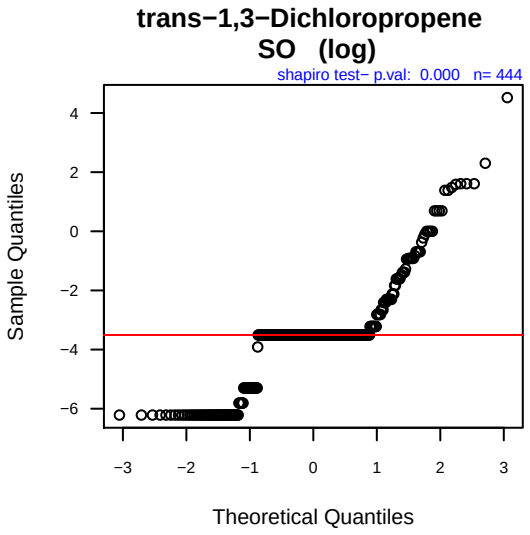

trans−1,2−Dichloroethene
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

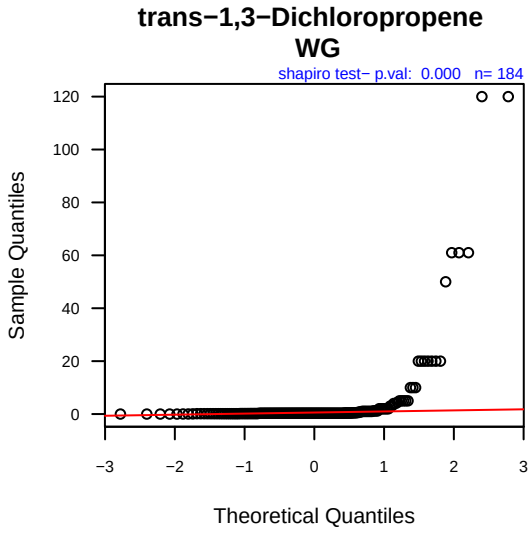

trans−1,2−Dichloroethene
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

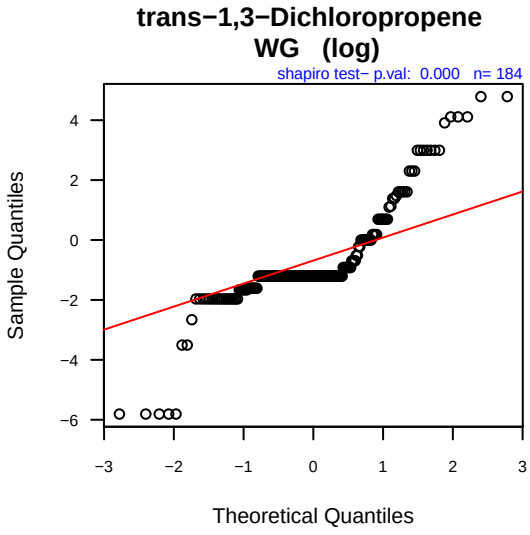

trans−1,2−Dichloroethene
WG
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

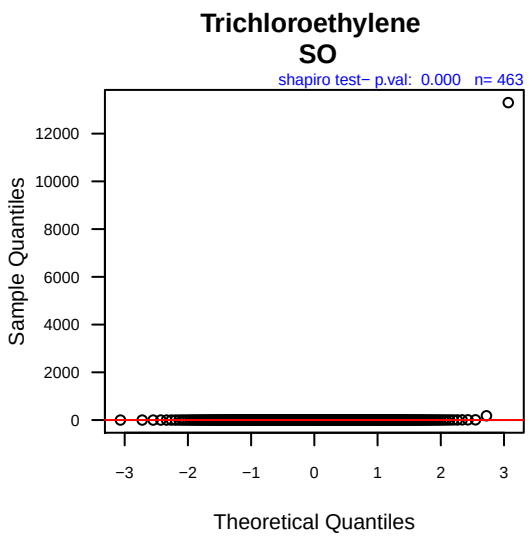

trans−1,2−Dichloroethene
WG (log)
shapiro test− p.val: 0.000 n= 190
Sample Quantiles
Theoretical Quantiles

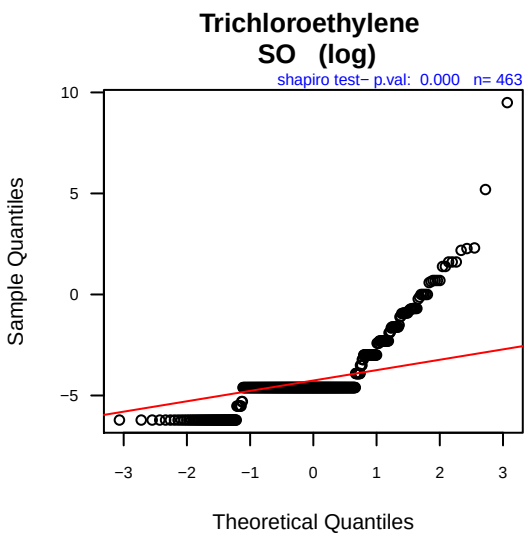

trans−1,3−Dichloropropene
SO
shapiro test− p.val: 0.000 n= 444
Sample Quantiles
Theoretical Quantiles

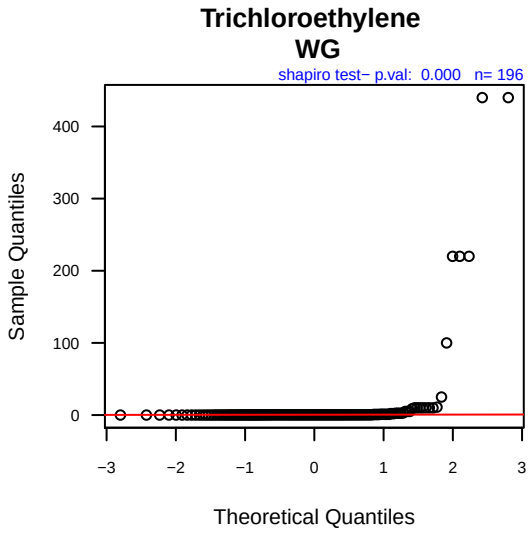

trans−1,3−Dichloropropene
SO (log)
shapiro test− p.val: 0.000 n= 444
Sample Quantiles
Theoretical Quantiles

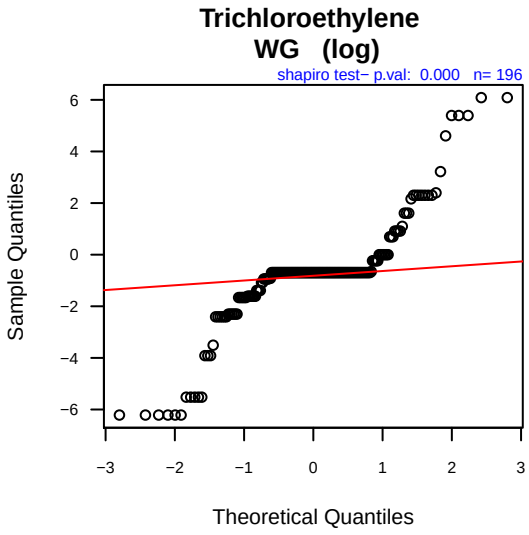

trans−1,3−Dichloropropene
WG
shapiro test− p.val: 0.000 n= 184
Sample Quantiles
Theoretical Quantiles

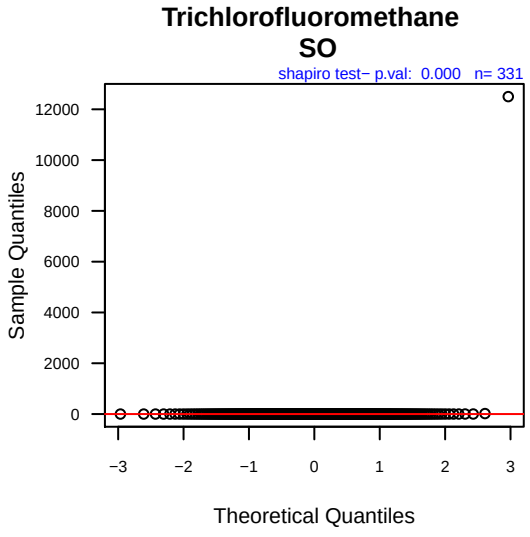

trans−1,3−Dichloropropene
WG (log)
shapiro test− p.val: 0.000 n= 184
Sample Quantiles
Theoretical Quantiles

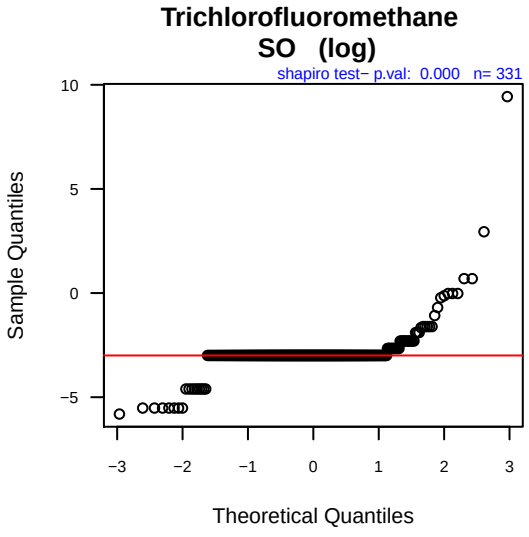

Trichloroethylene
SO
shapiro test− p.val: 0.000 n= 463
Sample Quantiles
Theoretical Quantiles

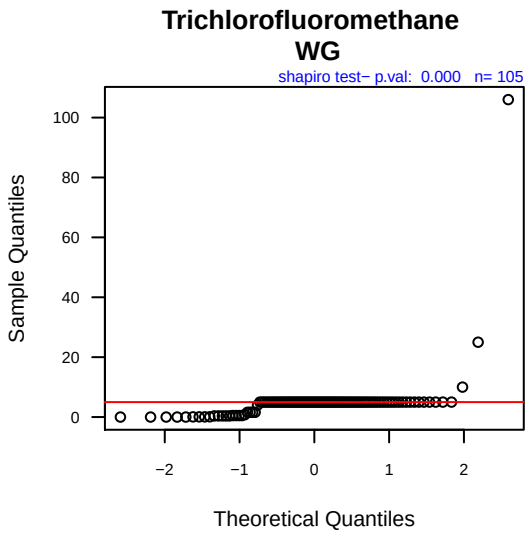

Trichloroethylene
SO (log)
shapiro test− p.val: 0.000 n= 463
Sample Quantiles
Theoretical Quantiles

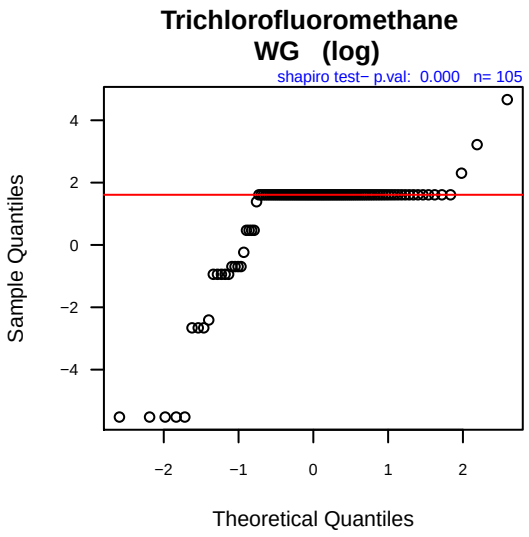

Trichloroethylene
WG
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

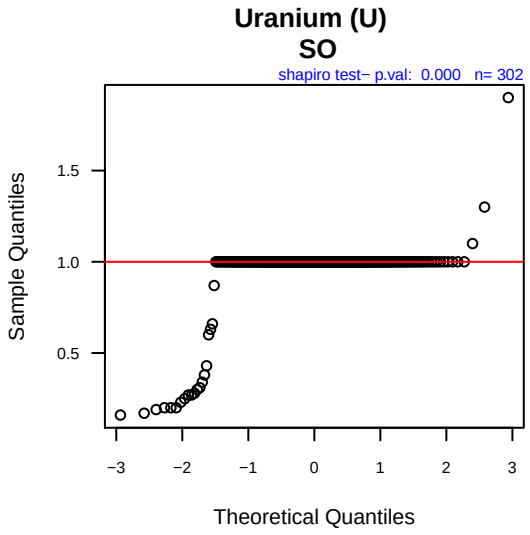

Trichloroethylene
WG (log)
shapiro test− p.val: 0.000 n= 196
Sample Quantiles
Theoretical Quantiles

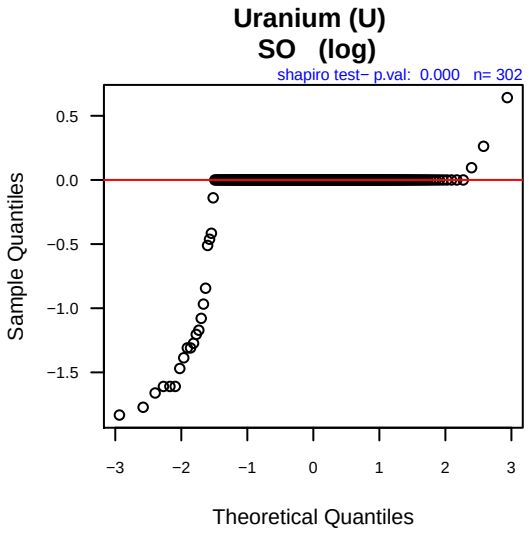

Trichlorofluoromethane
SO
shapiro test− p.val: 0.000 n= 331
Sample Quantiles
Theoretical Quantiles

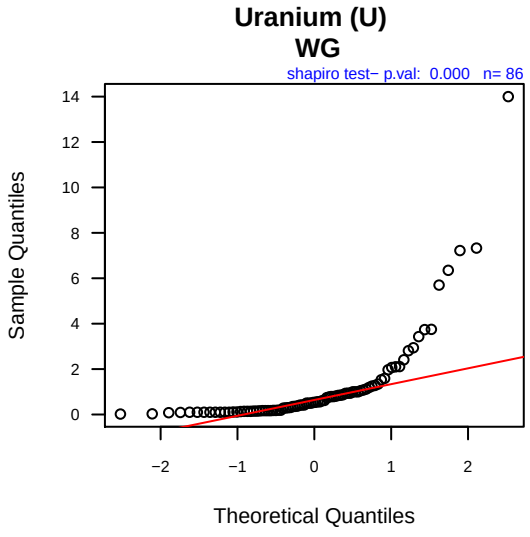

Trichlorofluoromethane
SO (log)
shapiro test− p.val: 0.000 n= 331
Sample Quantiles
Theoretical Quantiles

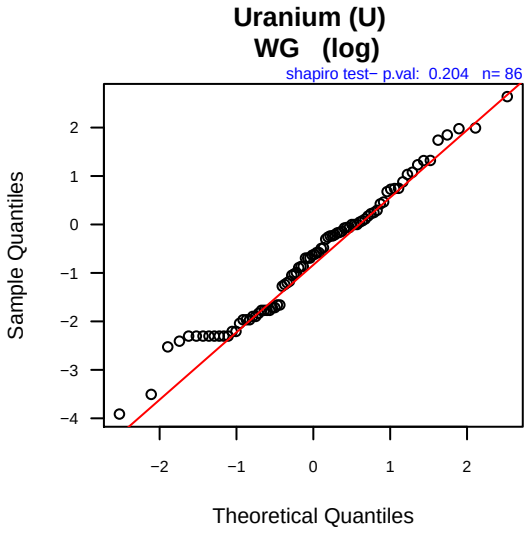

Trichlorofluoromethane
WG
shapiro test− p.val: 0.000 n= 105
Sample Quantiles
Theoretical Quantiles

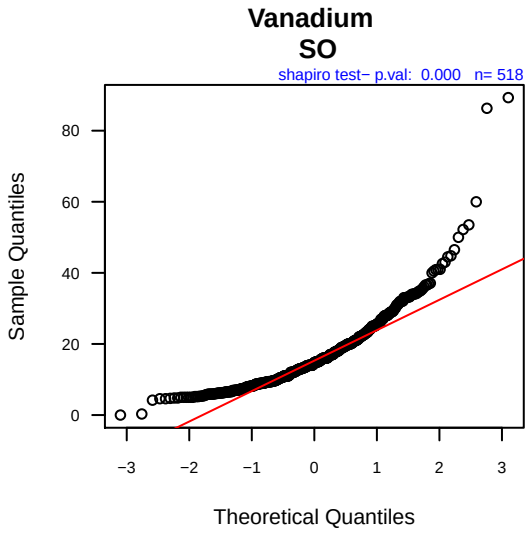

Trichlorofluoromethane
WG (log)
shapiro test− p.val: 0.000 n= 105
Sample Quantiles
Theoretical Quantiles

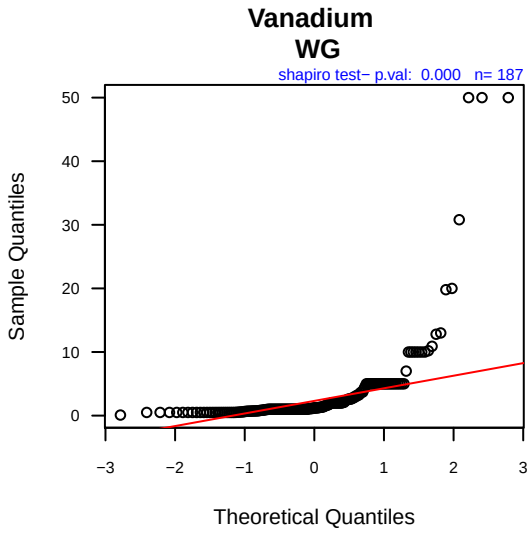

Uranium (U)
SO
shapiro test− p.val: 0.000 n= 302
Sample Quantiles
Theoretical Quantiles

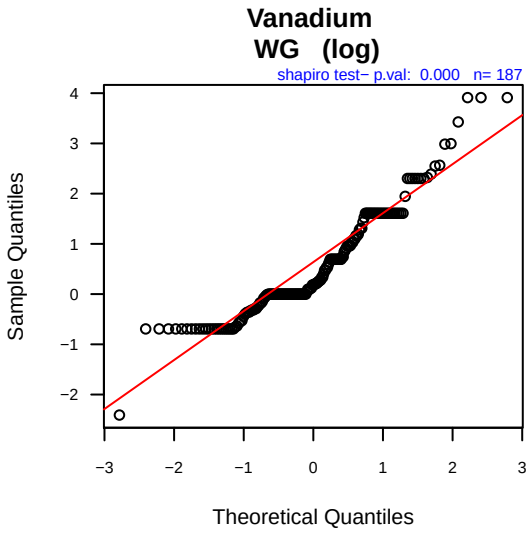

Uranium (U)
SO (log)
shapiro test− p.val: 0.000 n= 302
Sample Quantiles
Theoretical Quantiles

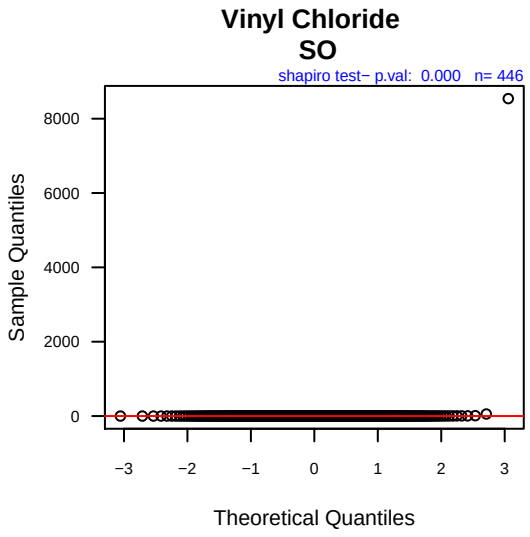

Uranium (U)
WG
shapiro test− p.val: 0.000 n= 86
Sample Quantiles
Theoretical Quantiles

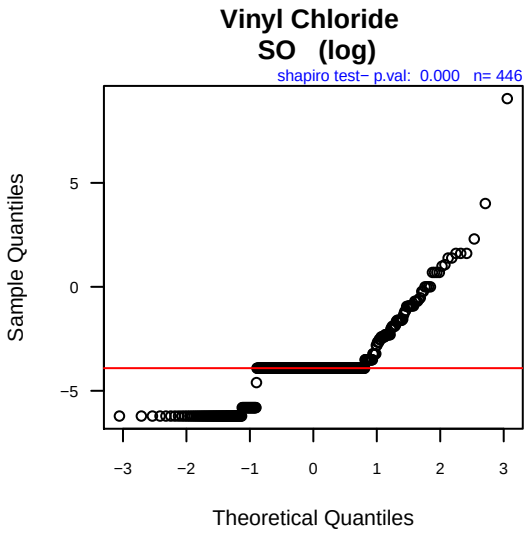

Uranium (U)
WG (log)
shapiro test− p.val: 0.204 n= 86
Sample Quantiles
Theoretical Quantiles

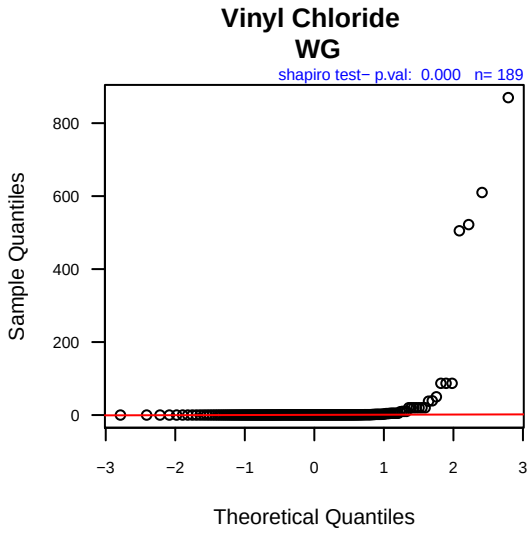

Vanadium
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

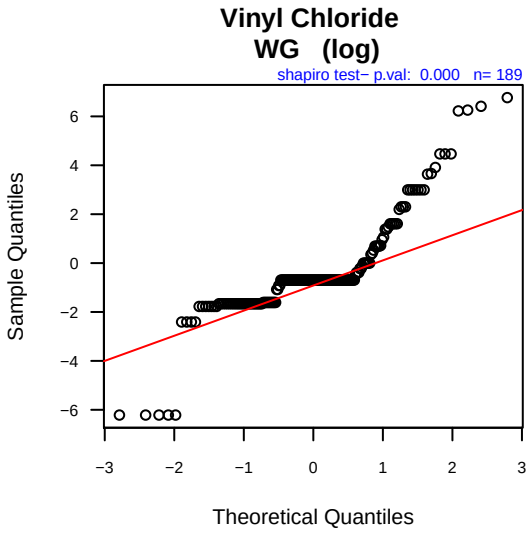

Vanadium
WG
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

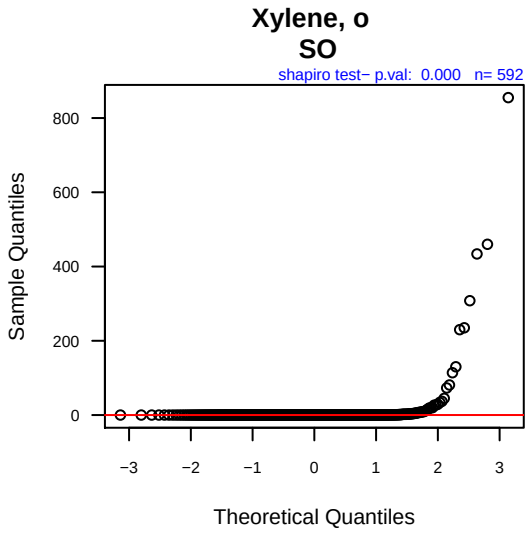

Vanadium
WG (log)
shapiro test− p.val: 0.000 n= 187
Sample Quantiles
Theoretical Quantiles

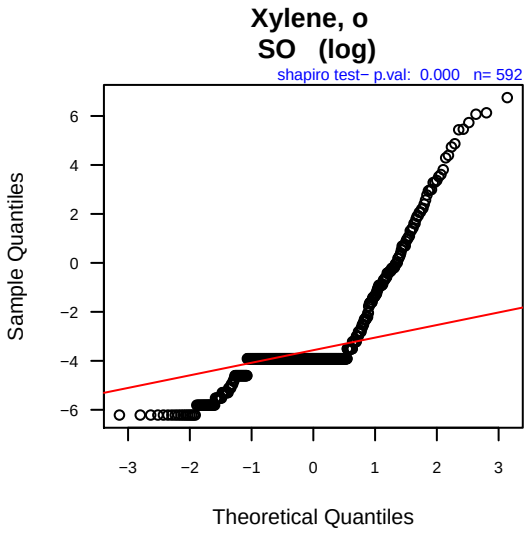

Vinyl Chloride
SO
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

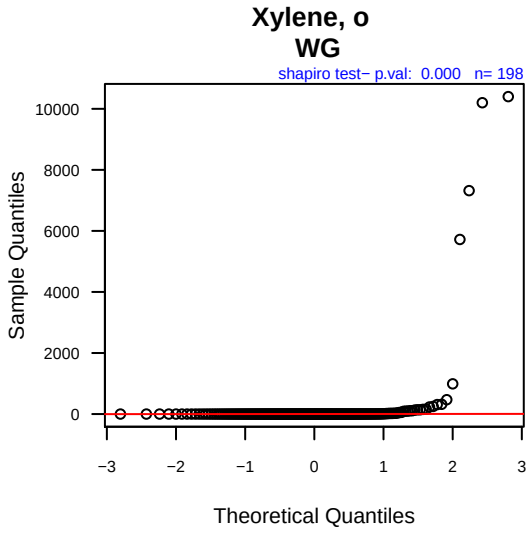

Vinyl Chloride
SO (log)
shapiro test− p.val: 0.000 n= 446
Sample Quantiles
Theoretical Quantiles

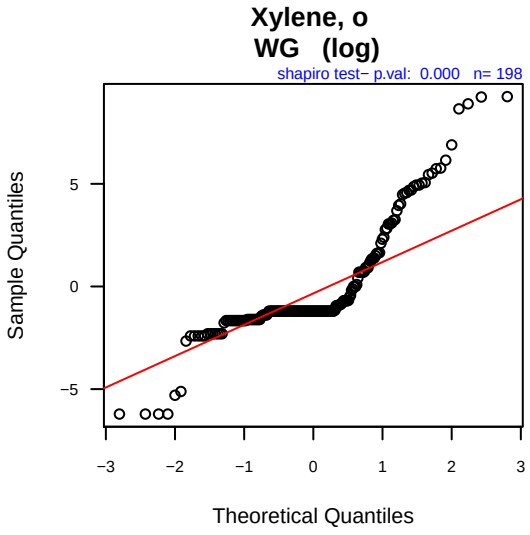

Vinyl Chloride
WG
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

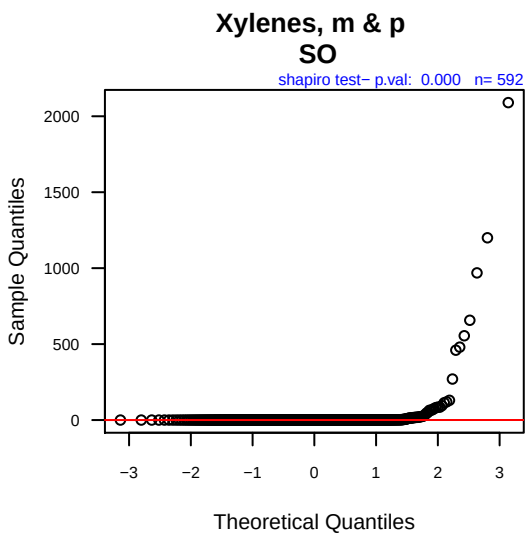

Vinyl Chloride
WG (log)
shapiro test− p.val: 0.000 n= 189
Sample Quantiles
Theoretical Quantiles

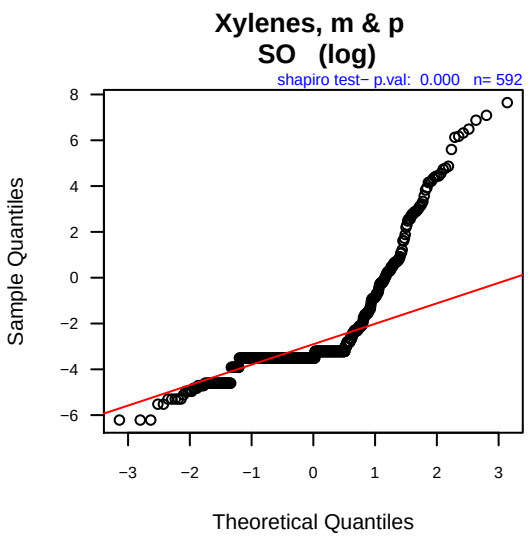

Xylene, o
SO
shapiro test− p.val: 0.000 n= 592
Sample Quantiles
Theoretical Quantiles

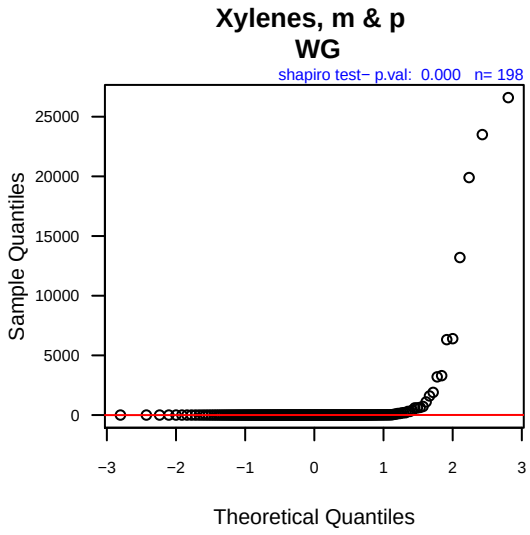

Xylene, o
SO (log)
shapiro test− p.val: 0.000 n= 592
Sample Quantiles
Theoretical Quantiles

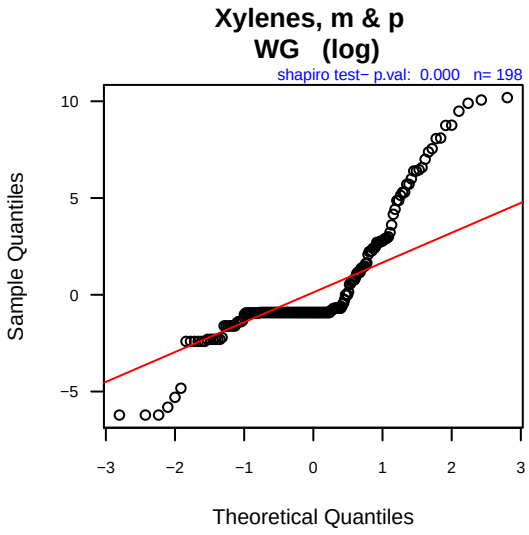

Xylene, o
WG
shapiro test− p.val: 0.000 n= 198
Sample Quantiles
Theoretical Quantiles

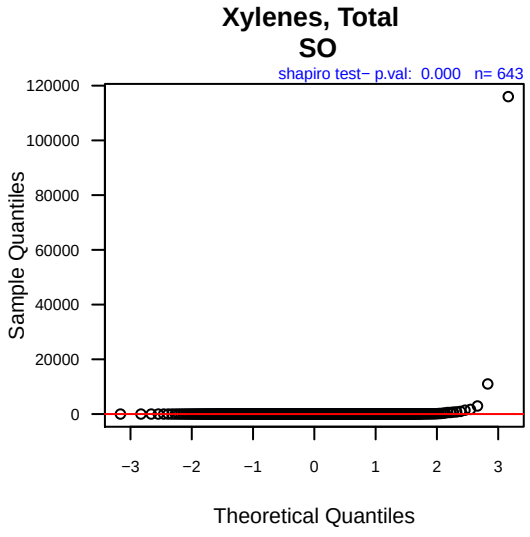

Xylene, o
WG (log)
shapiro test− p.val: 0.000 n= 198
Sample Quantiles
Theoretical Quantiles

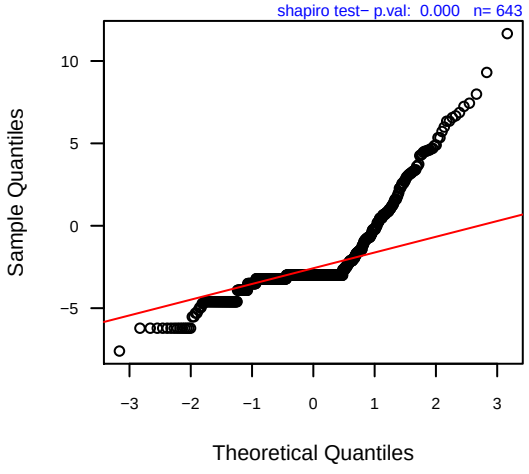

Xylenes, m & p
SO
shapiro test− p.val: 0.000 n= 592
Sample Quantiles
Theoretical Quantiles

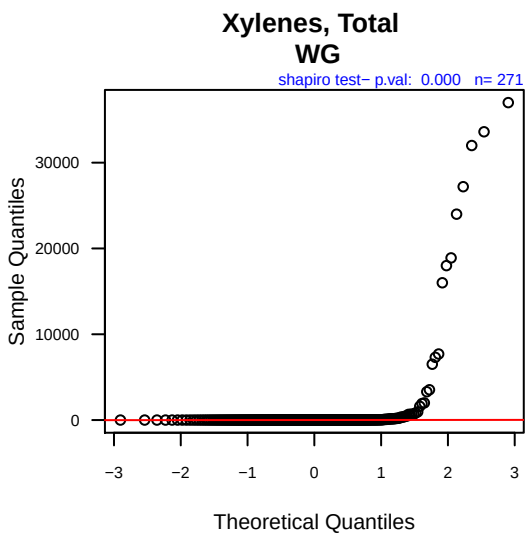

Xylenes, m & p
SO (log)
shapiro test− p.val: 0.000 n= 592
Sample Quantiles
Theoretical Quantiles

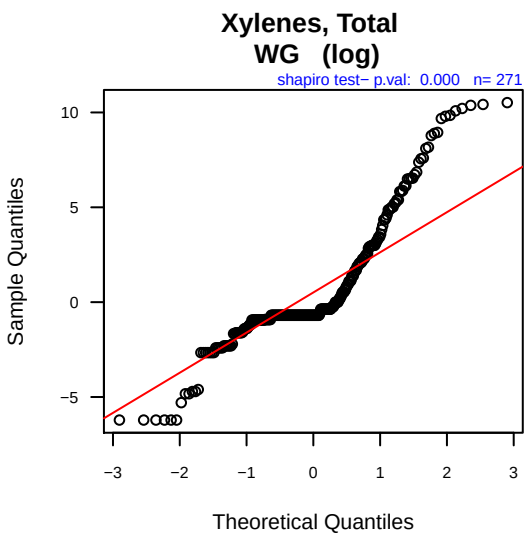

Xylenes, m & p
WG
shapiro test− p.val: 0.000 n= 198
Sample Quantiles
Theoretical Quantiles

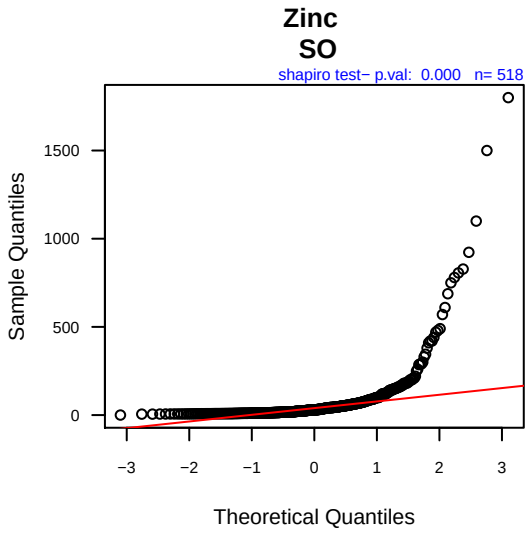

Xylenes, m & p
WG (log)
shapiro test− p.val: 0.000 n= 198
Sample Quantiles
Theoretical Quantiles

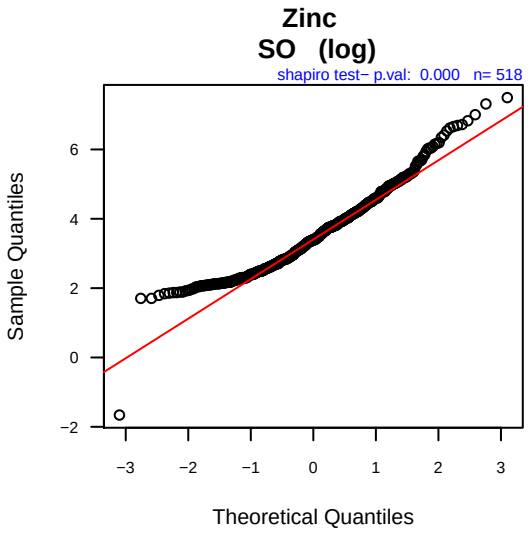

Xylenes, Total
SO
shapiro test− p.val: 0.000 n= 643
Sample Quantiles
Theoretical Quantiles

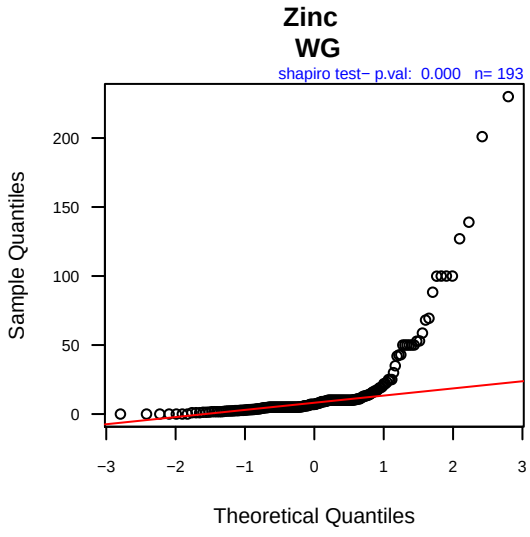

Xylenes, Total
SO (log)
shapiro test− p.val: 0.000 n= 643
Sample Quantiles
Theoretical Quantiles

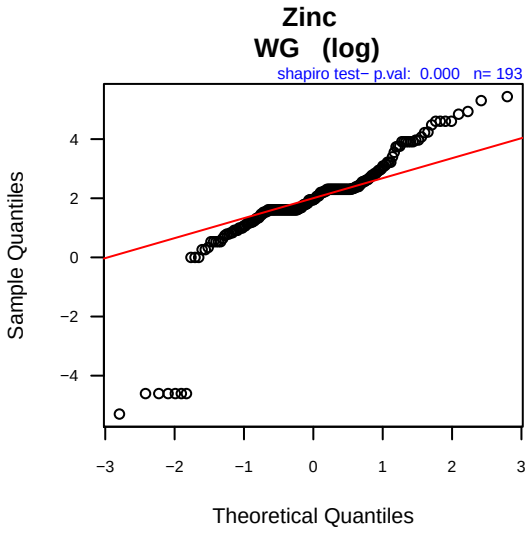

Xylenes, Total
WG
shapiro test− p.val: 0.000 n= 271
Sample Quantiles
Theoretical Quantiles

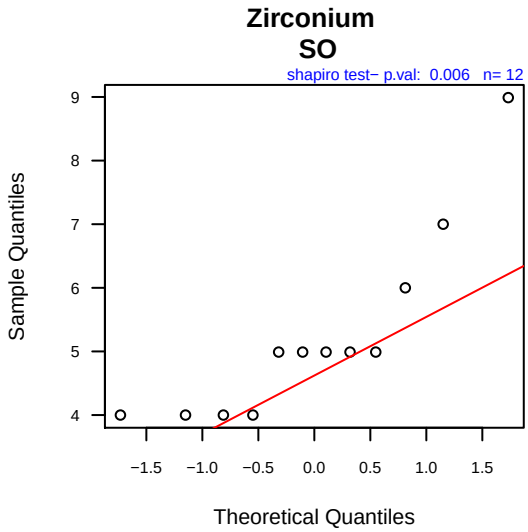

Xylenes, Total
WG (log)
shapiro test− p.val: 0.000 n= 271
Sample Quantiles
Theoretical Quantiles

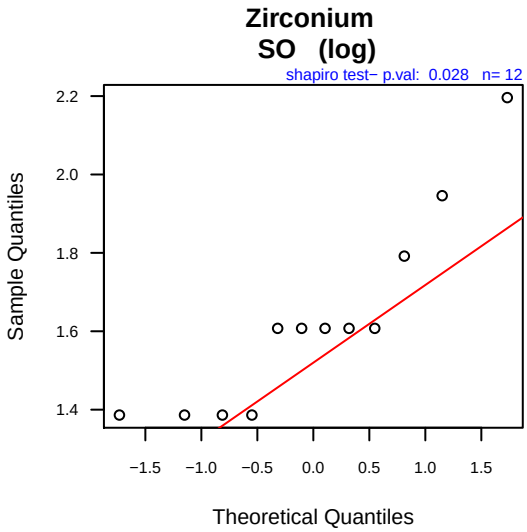

Zinc
SO
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

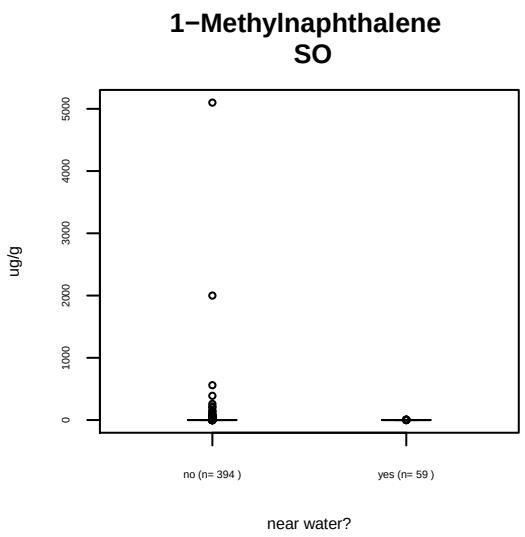

Zinc
SO (log)
shapiro test− p.val: 0.000 n= 518
Sample Quantiles
Theoretical Quantiles

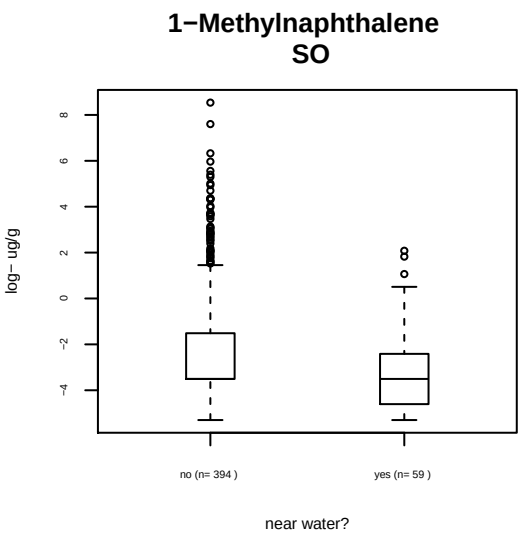

Zinc
WG
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

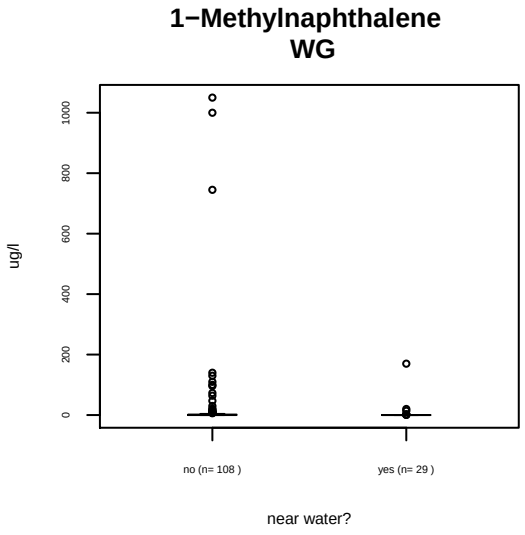

Zinc
WG (log)
shapiro test− p.val: 0.000 n= 193
Sample Quantiles
Theoretical Quantiles

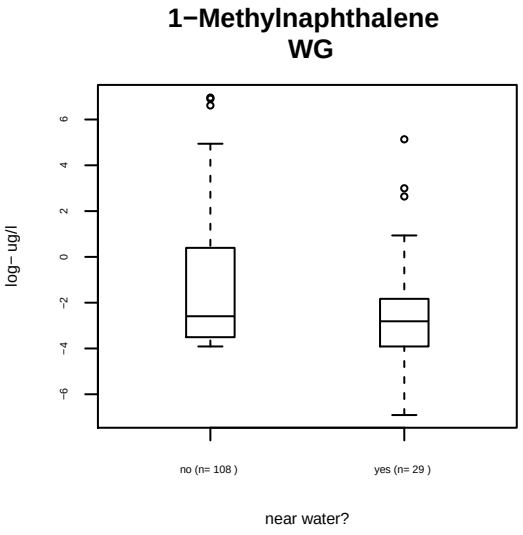

Zirconium
SO
shapiro test− p.val: 0.006 n= 12
Sample Quantiles
Theoretical Quantiles
9
8
7
6
5
4
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5

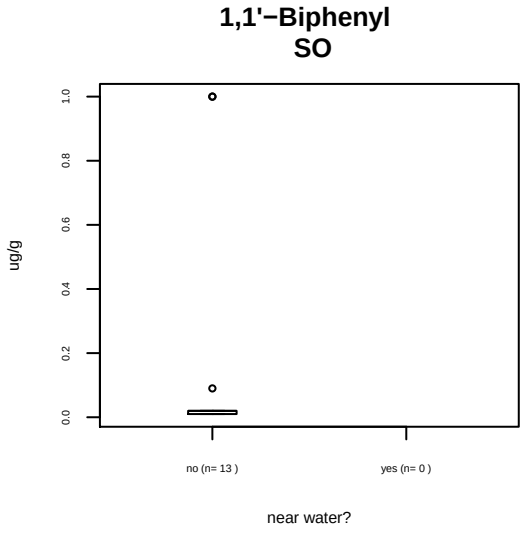

Zirconium
SO (log)
shapiro test− p.val: 0.028 n= 12
Sample Quantiles
Theoretical Quantiles
2.2
2.0
1.8
1.6
1.4
−1.5
−1.0
−0.5
0.0
0.5
1.0
1.5

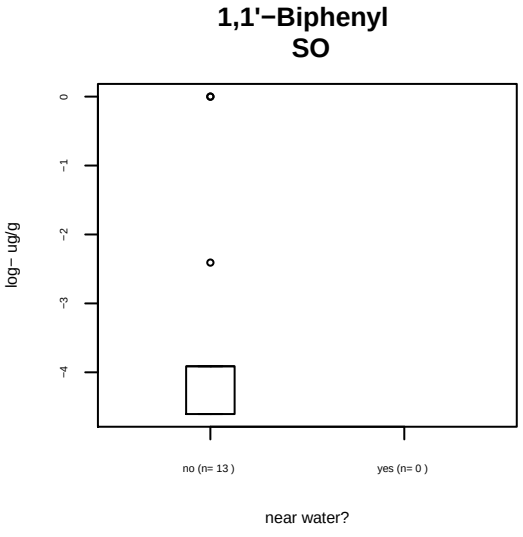

1−Methylnaphthalene
SO
ug/g
0
1000
2000
3000
4000
5000
no (n= 394)
yes (n= 59)
near water?

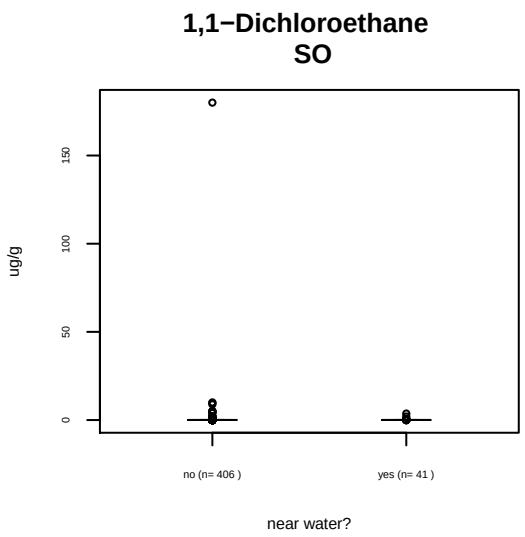

1−Methylnaphthalene
SO
log− ug/g
−4
−2
0
2
4
6
8
no (n= 394)
yes (n= 59)
near water?

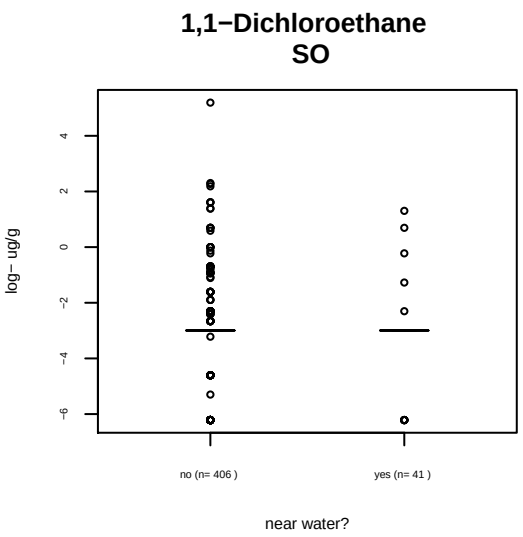

1−Methylnaphthalene
WG
ug/l
0
200
400
600
800
1000
no (n= 108)
yes (n= 29)
near water?

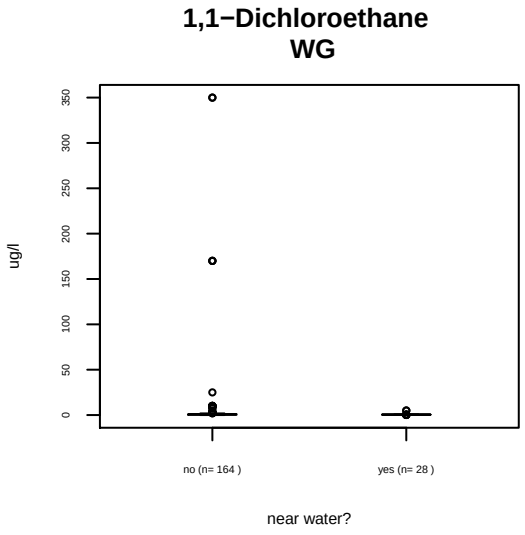

1−Methylnaphthalene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 108)
yes (n= 29)
near water?

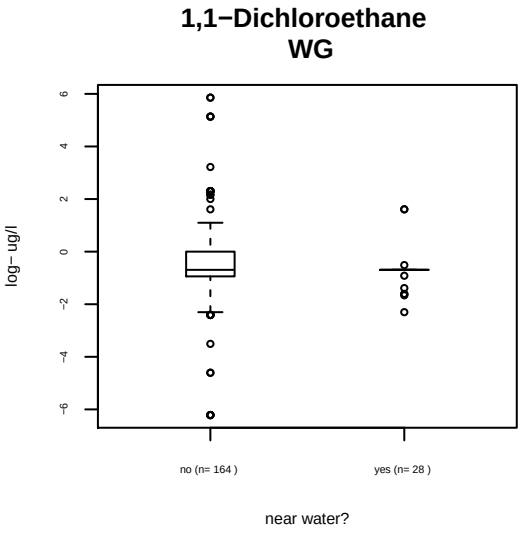

1,1'−Biphenyl
SO
ug/g
0.0
0.2
0.4
0.6
0.8
1.0
no (n= 13)
yes (n= 0)
near water?

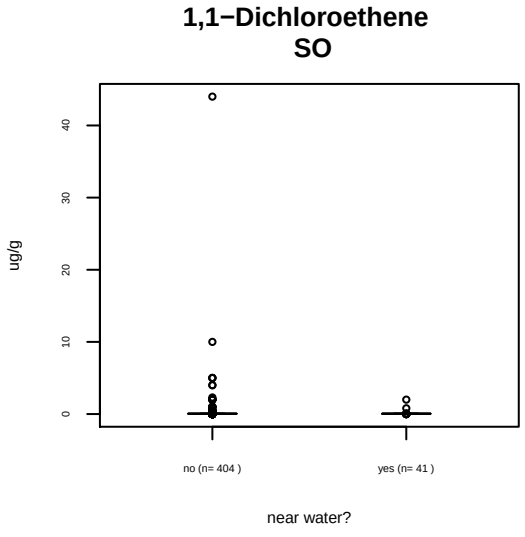

1,1'−Biphenyl
SO
log− ug/g
−4
−3
−2
−1
0
no (n= 13)
yes (n= 0)
near water?

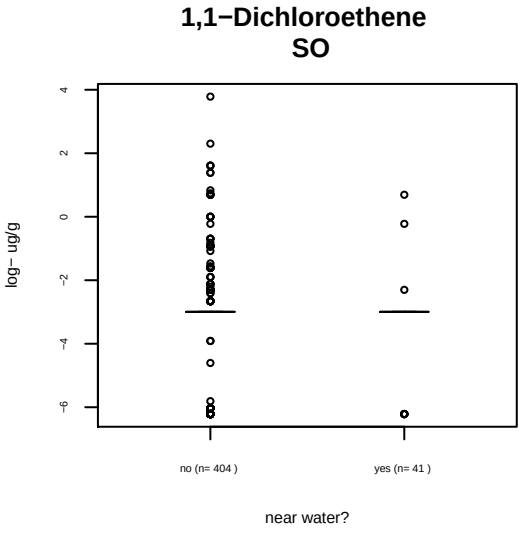

1,1−Dichloroethane
SO
ug/g
0
50
100
150
no (n= 406)
yes (n= 41)
near water?

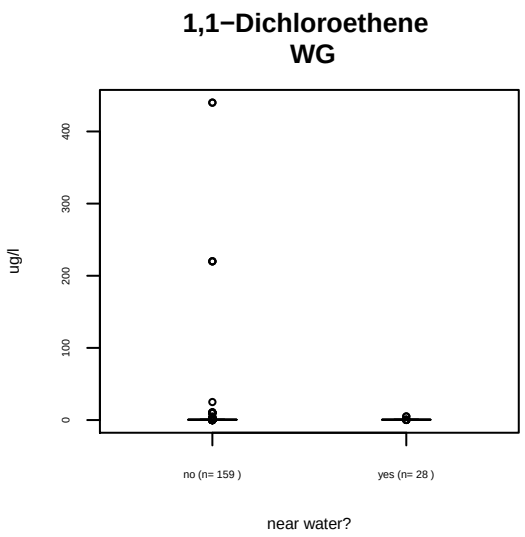

1,1−Dichloroethane
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 406)
yes (n= 41)
near water?

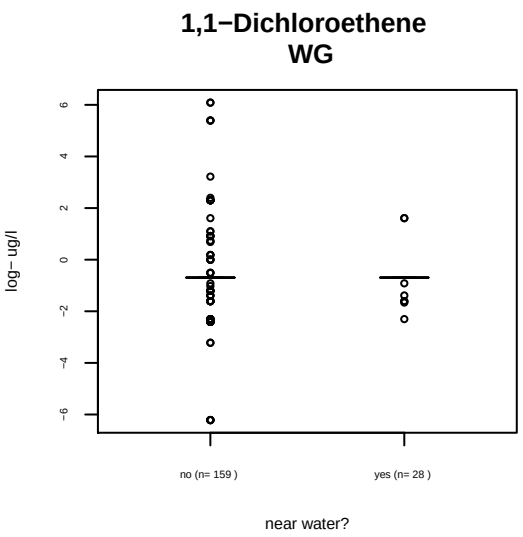

1,1−Dichloroethane
WG
ug/l
0
50
100
150
200
250
300
350
no (n= 164)
yes (n= 28)
near water?

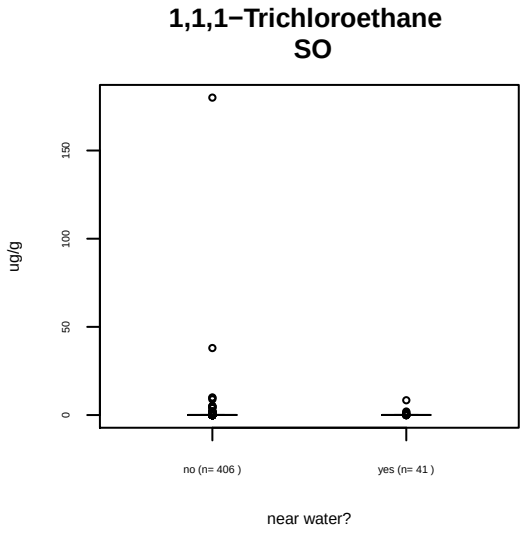

1,1−Dichloroethane
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 164)
yes (n= 28)
near water?

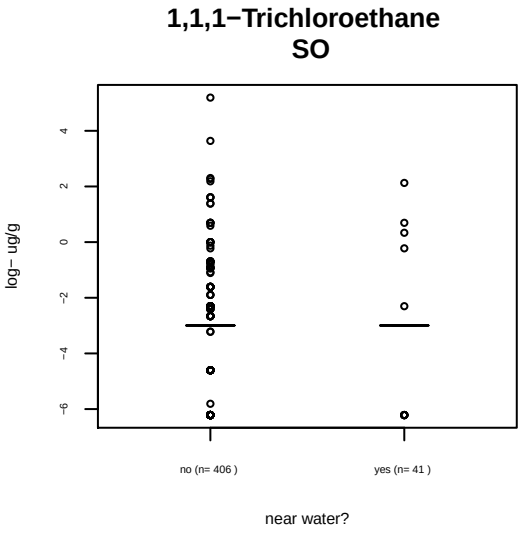

1,1−Dichloroethene
SO
ug/g
0
10
20
30
40
no (n= 404)
yes (n= 41)
near water?

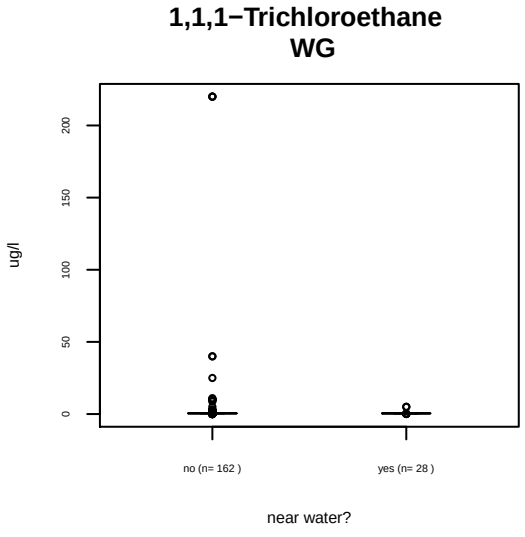

1,1−Dichloroethene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 404)
yes (n= 41)
near water?

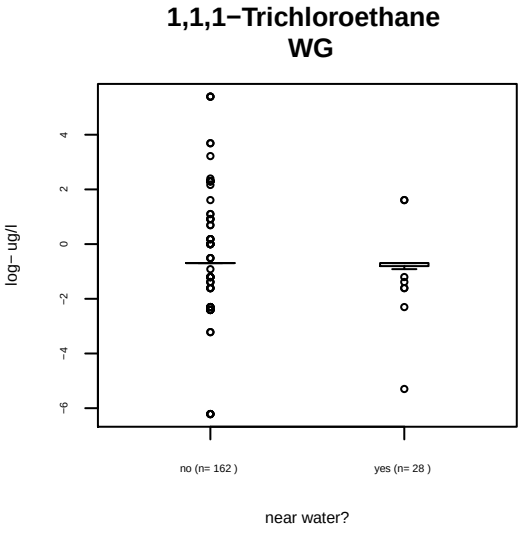

1,1−Dichloroethene
WG
ug/l
0
100
200
300
400
no (n= 159)
yes (n= 28)
near water?

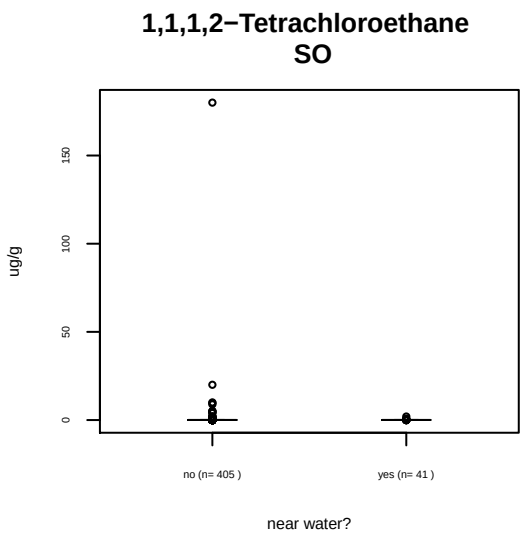

1,1−Dichloroethene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 159)
yes (n= 28)
near water?

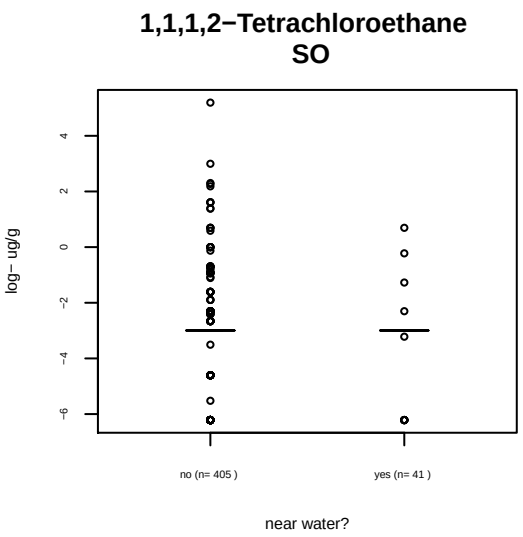

1,1,1−Trichloroethane
SO
ug/g
0
50
100
150
no (n= 406)
yes (n= 41)
near water?

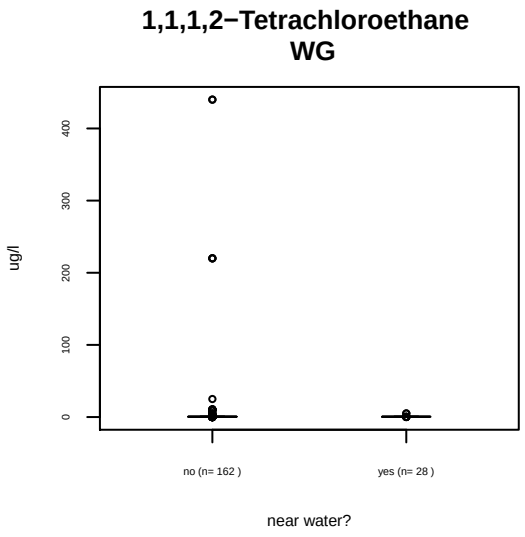

1,1,1−Trichloroethane
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 406)
yes (n= 41)
near water?

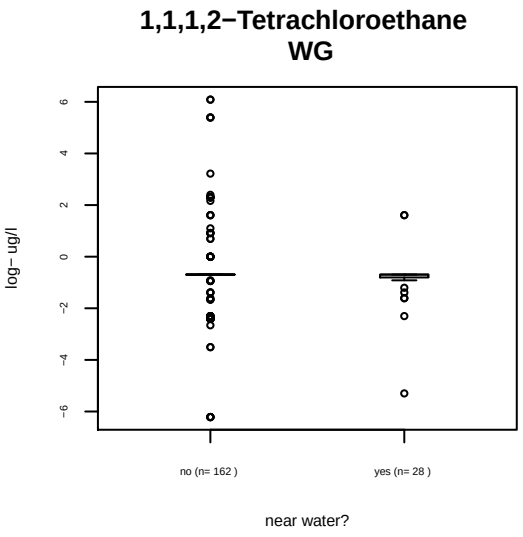

1,1,1−Trichloroethane
WG
ug/l
0
50
100
150
200
no (n= 162)
yes (n= 28)
near water?

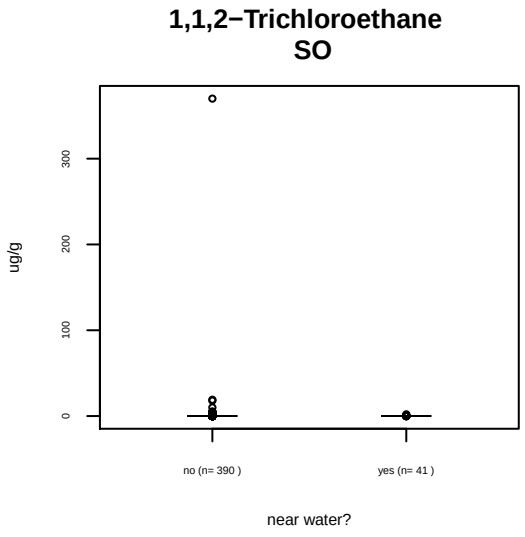

1,1,1−Trichloroethane
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 162)
yes (n= 28)
near water?

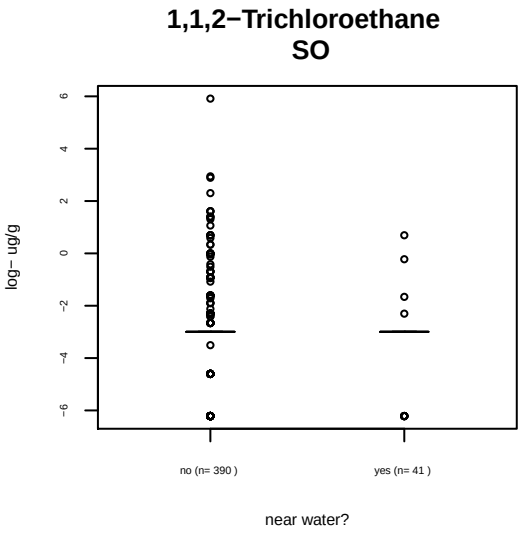

1,1,1,2−Tetrachloroethane
SO
ug/g
0
50
100
150
no (n= 405)
yes (n= 41)
near water?

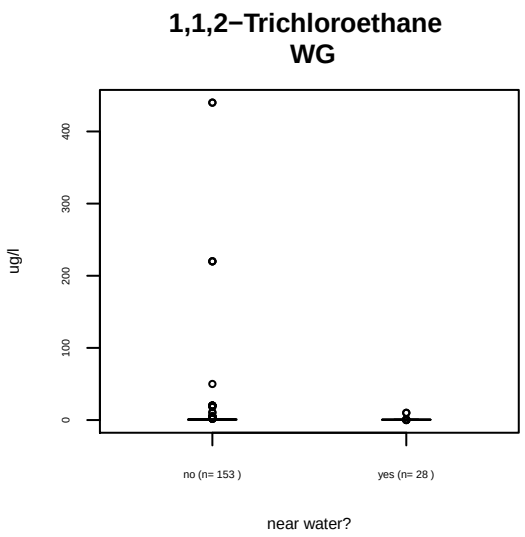

1,1,1,2−Tetrachloroethane
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 41)
near water?

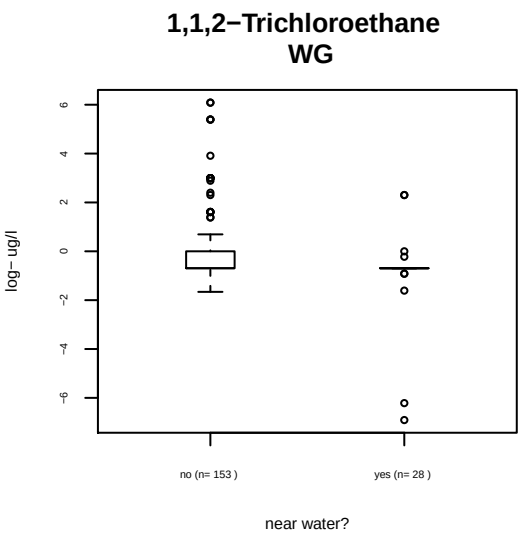

1,1,1,2−Tetrachloroethane
WG
ug/l
0
100
200
300
400
no (n= 162)
yes (n= 28)
near water?

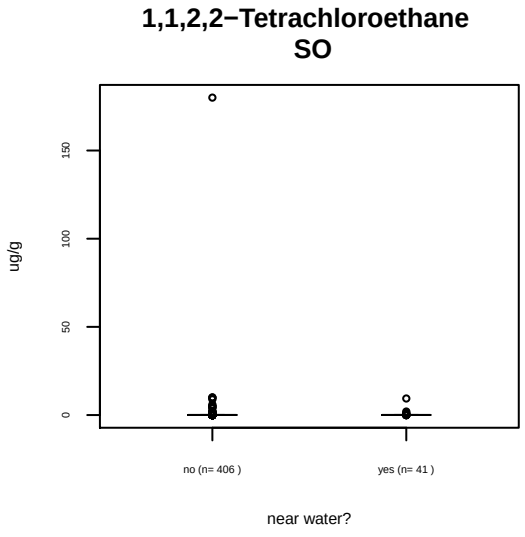

1,1,1,2−Tetrachloroethane
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 162)
yes (n= 28)
near water?

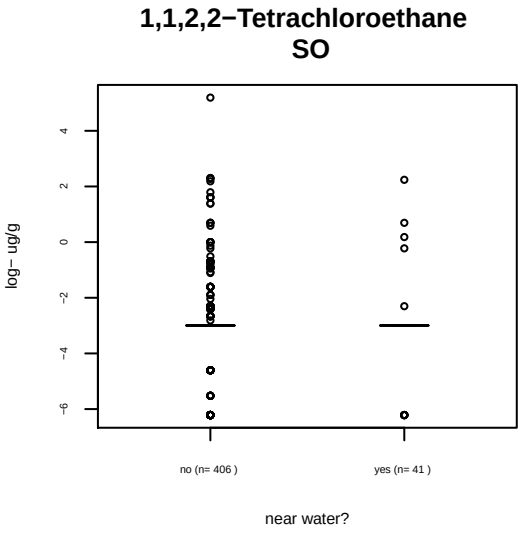

1,1,2−Trichloroethane
SO
ug/g
0
100
200
300
no (n= 390)
yes (n= 41)
near water?

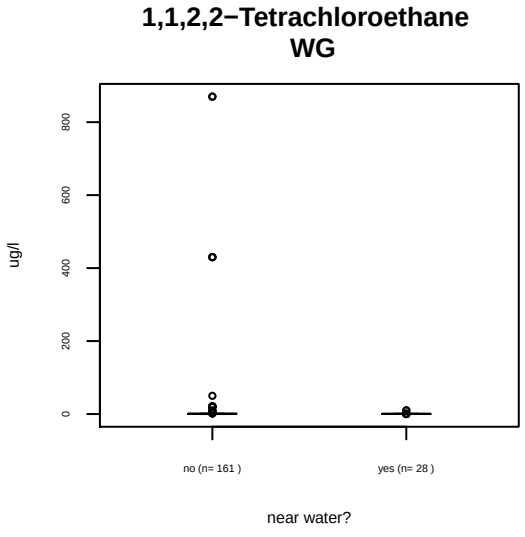

1,1,2−Trichloroethane
SO
log− ug/g
−6
−4
−2
0
2
4
6
no (n= 390)
yes (n= 41)
near water?

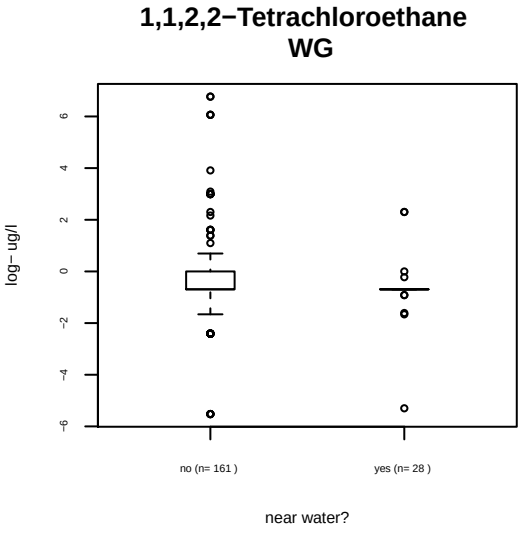

1,1,2−Trichloroethane
WG
ug/l
0
100
200
300
400
no (n= 153)
yes (n= 28)
near water?


1,1,2−Trichloroethane
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 153)
yes (n= 28)
near water?

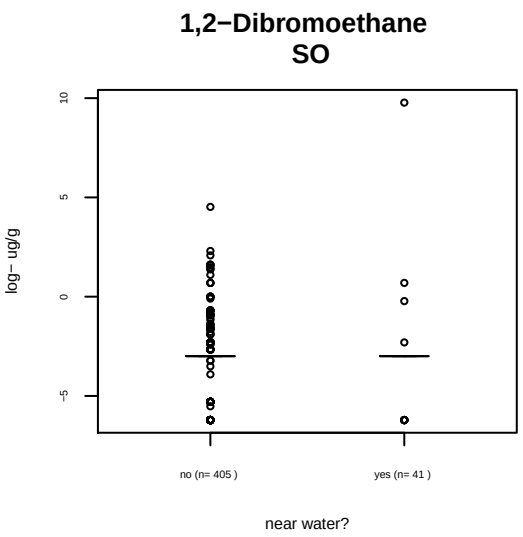

1,1,2,2−Tetrachloroethane
SO
ug/g
0
50
100
150
no (n= 406)
yes (n= 41)
near water?

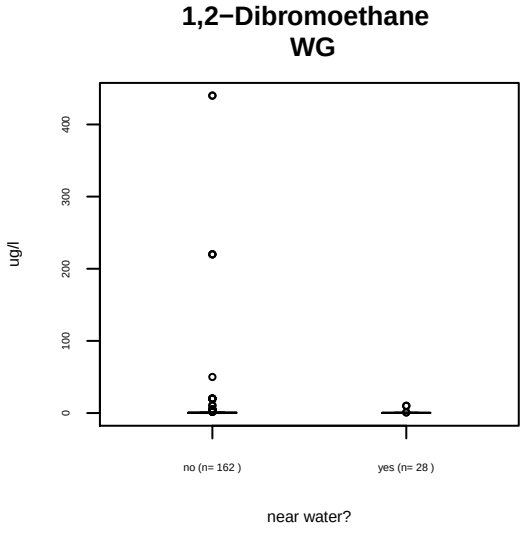

1,1,2,2−Tetrachloroethane
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 406)
yes (n= 41)
near water?

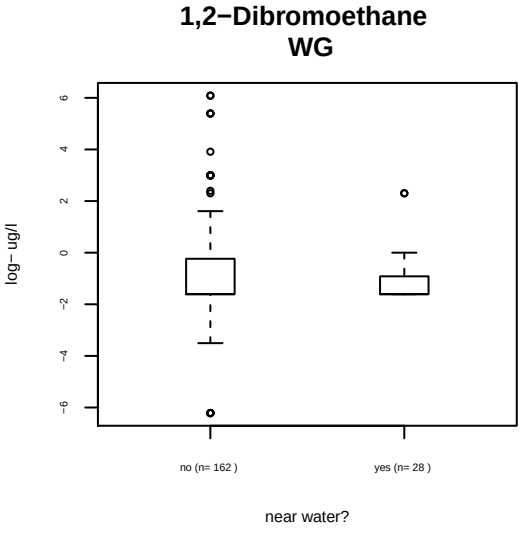

1,1,2,2−Tetrachloroethane
WG
ug/l
0
200
400
600
800
no (n= 161)
yes (n= 28)
near water?

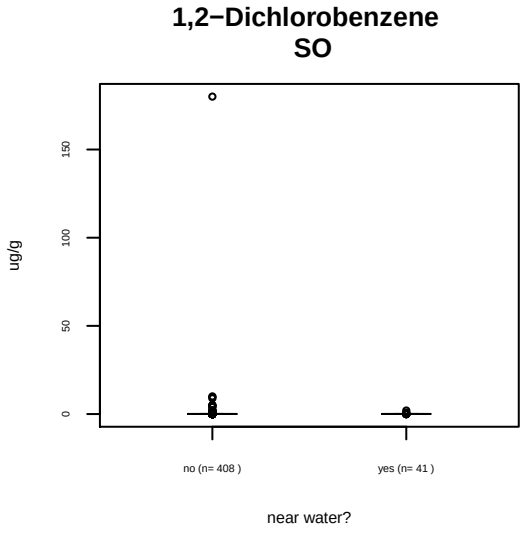

1,1,2,2−Tetrachloroethane
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 161)
yes (n= 28)
near water?

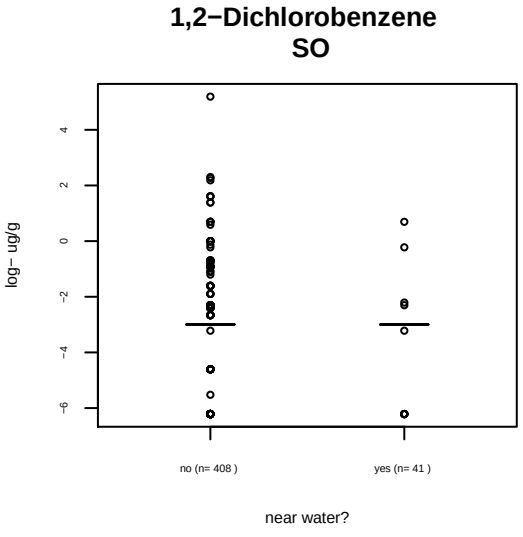

1,2−Dibromoethane
SO
ug/g
0
5000
10000
15000
no (n= 405)
yes (n= 41)
near water?

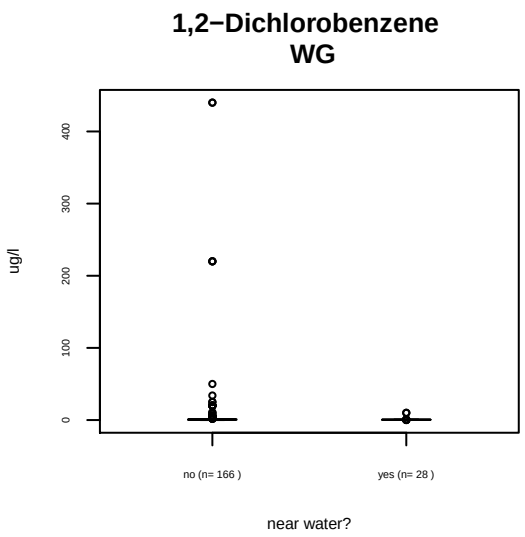

1,2−Dibromoethane
SO
log− ug/g
−5
0
5
10
no (n= 405)
yes (n= 41)
near water?

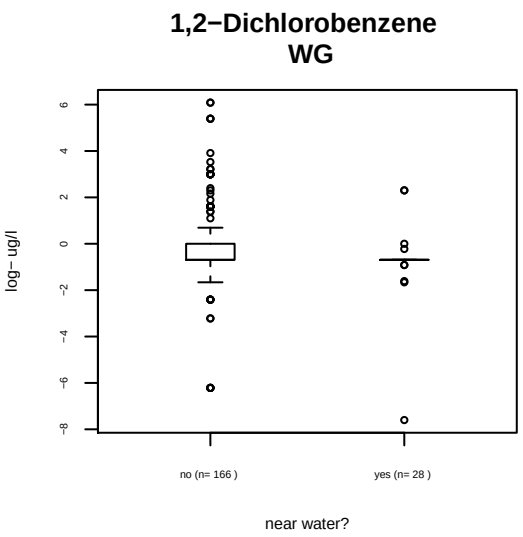

1,2−Dibromoethane
WG
ug/l
0
100
200
300
400
no (n= 162)
yes (n= 28)
near water?

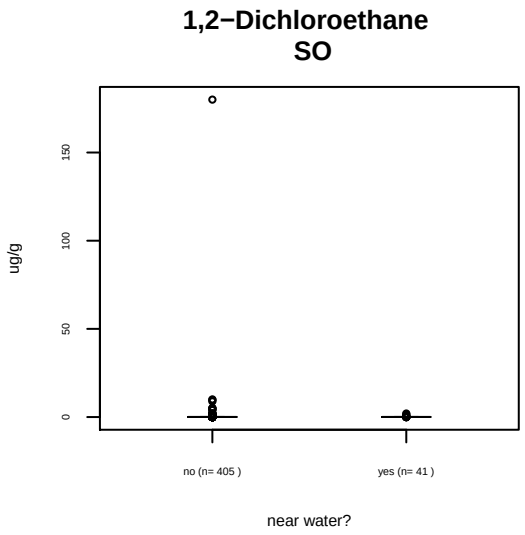

1,2−Dibromoethane
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 162)
yes (n= 28)
near water?

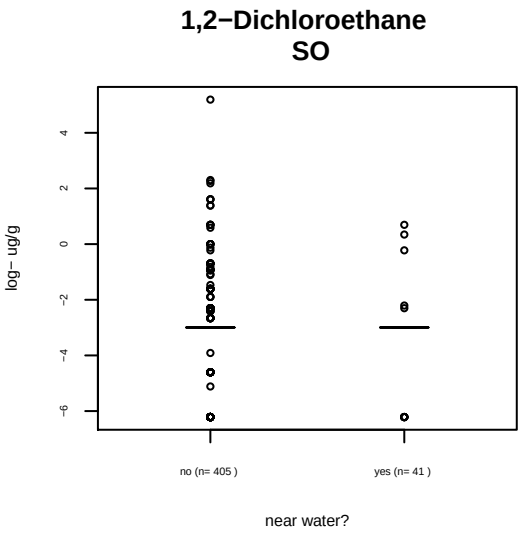

1,2−Dichlorobenzene
SO
ug/g
0
50
100
150
no (n= 408)
yes (n= 41)
near water?

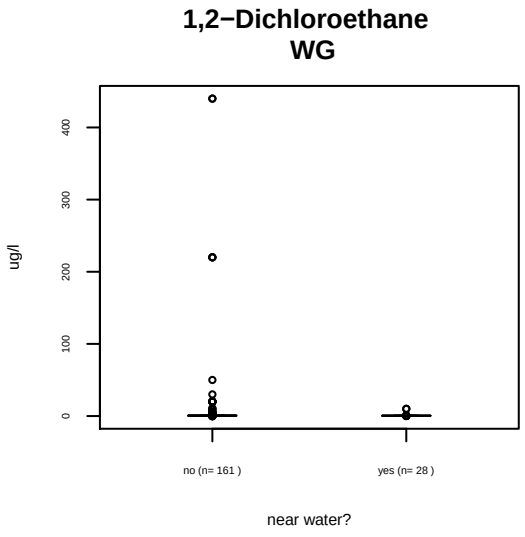

1,2−Dichlorobenzene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 408)
yes (n= 41)
near water?

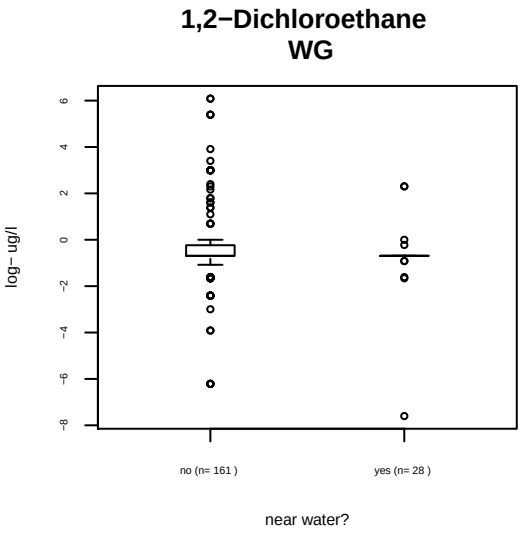

1,2−Dichlorobenzene
WG
ug/l
0
100
200
300
400
no (n= 166)
yes (n= 28)
near water?

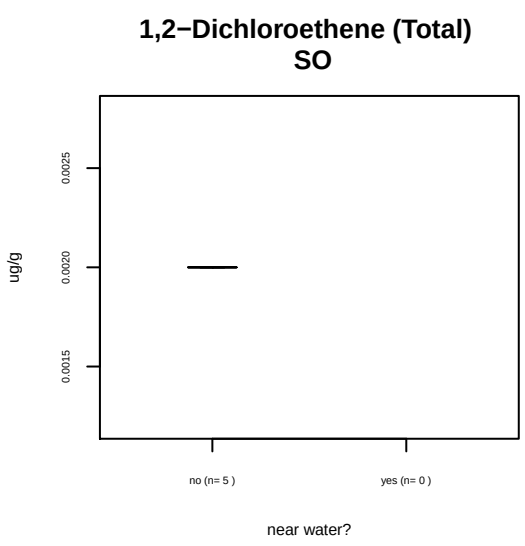

1,2−Dichlorobenzene
WG
log− ug/l
−8
−6
−4
−2
0
2
4
6
no (n= 166)
yes (n= 28)
near water?

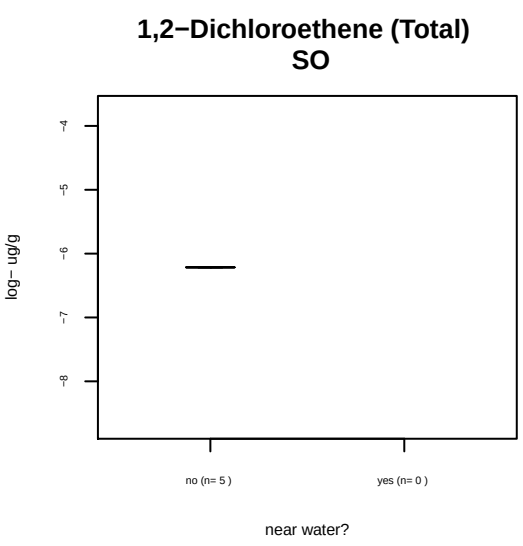

1,2−Dichloroethane
SO
ug/g
0
50
100
150
no (n= 405)
yes (n= 41)
near water?

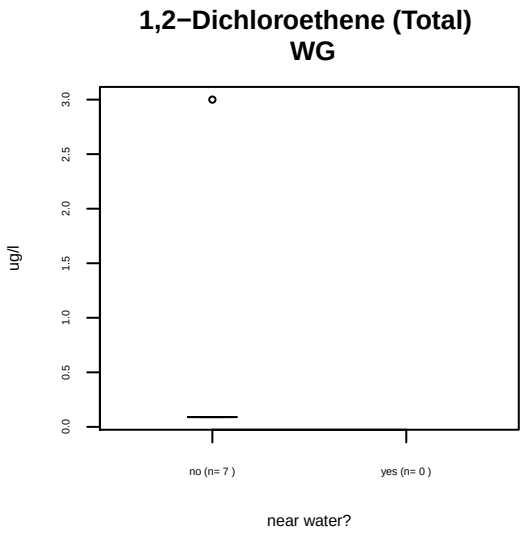

1,2−Dichloroethane
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 41)
near water?

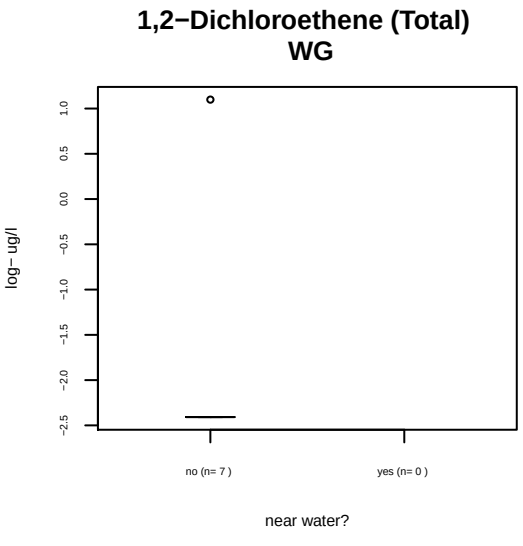

1,2−Dichloroethane
WG
ug/l
0
100
200
300
400
no (n= 161)
yes (n= 28)
near water?

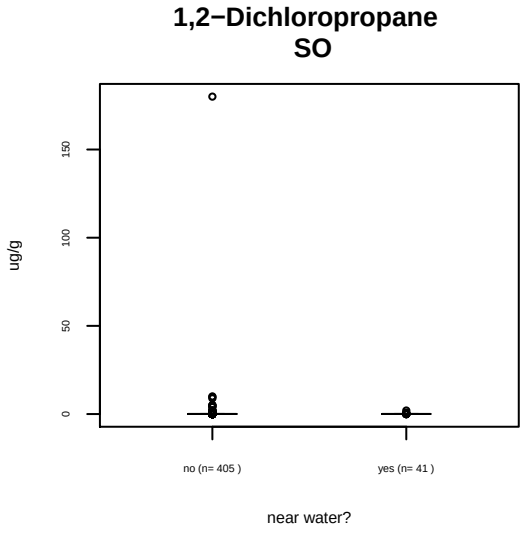

1,2−Dichloroethane
WG
log− ug/l
−8
−6
−4
−2
0
2
4
6
no (n= 161)
yes (n= 28)
near water?

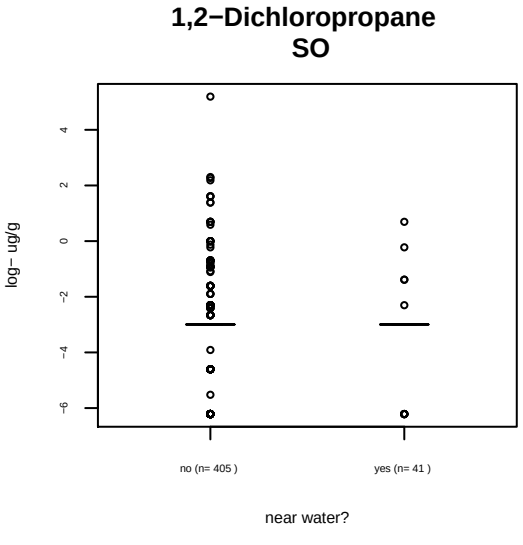

1,2−Dichloroethene (Total)
SO
ug/g
0.0015
0.0020
0.0025
no (n= 5)
yes (n= 0)
near water?

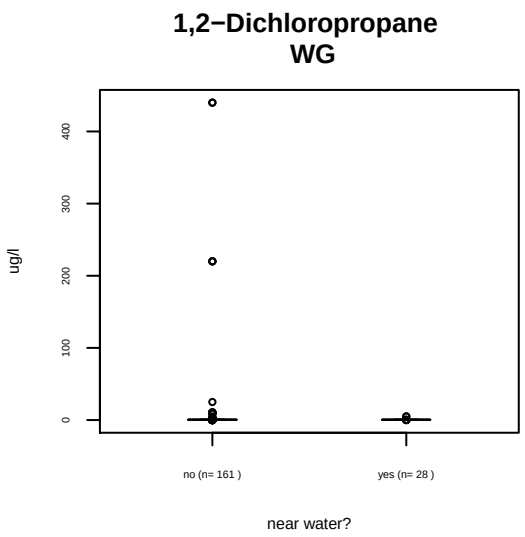

1,2−Dichloroethene (Total)
SO
log− ug/g
−8
−7
−6
−5
−4
no (n= 5)
yes (n= 0)
near water?

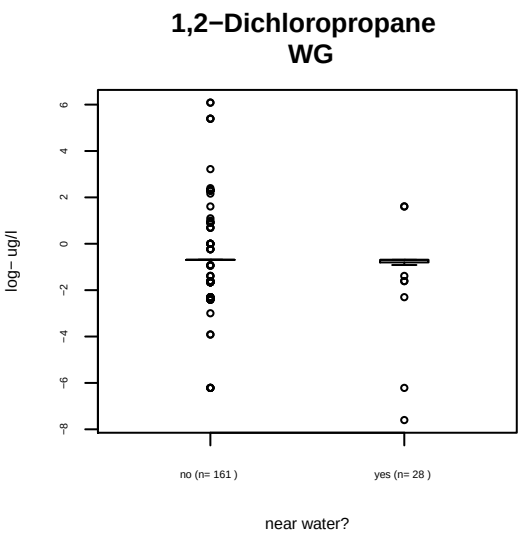

1,2−Dichloroethene (Total)
WG
ug/l
0.0
0.5
1.0
1.5
2.0
2.5
3.0
no (n= 7)
yes (n= 0)
near water?

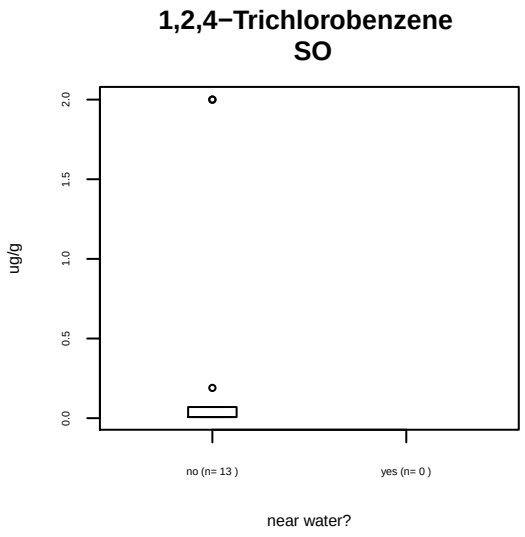

1,2−Dichloroethene (Total)
WG
log− ug/l
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
0.5
1.0
no (n= 7)
yes (n= 0)
near water?

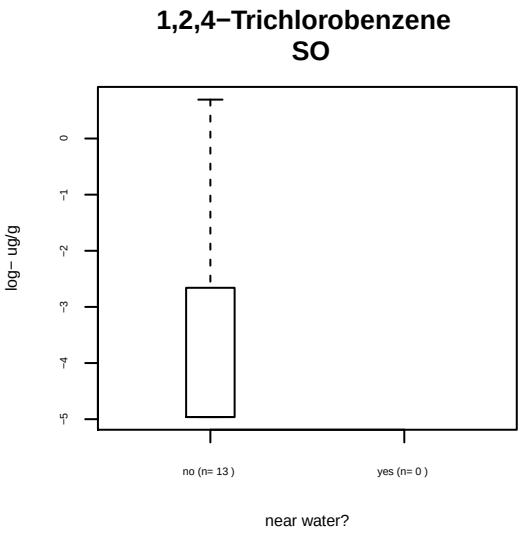

1,2−Dichloropropane
SO
ug/g
0
50
100
150
no (n= 405)
yes (n= 41)
near water?

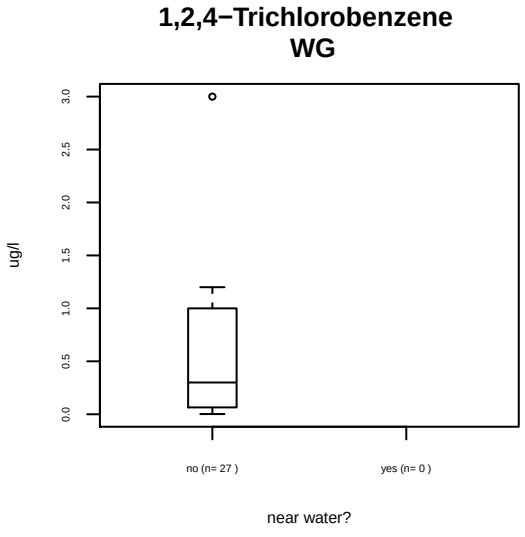

1,2−Dichloropropane
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 41)
near water?

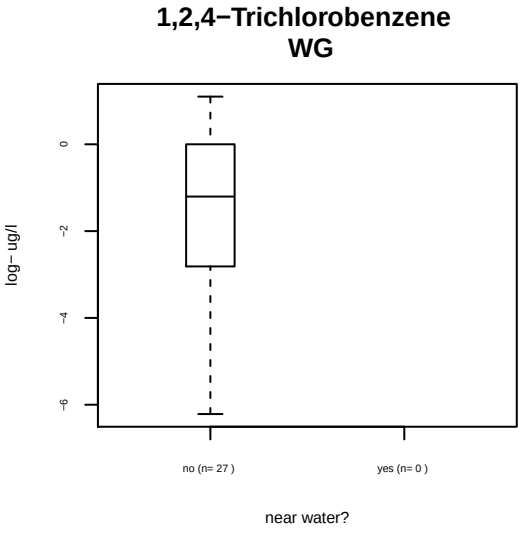

1,2−Dichloropropane
WG
ug/l
0
100
200
300
400
no (n= 161)
yes (n= 28)
near water?

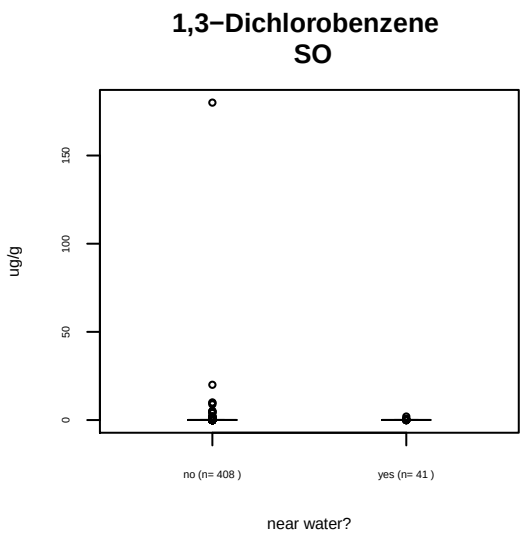

1,2−Dichloropropane
WG
log− ug/l
−8
−6
−4
−2
0
2
4
6
no (n= 161)
yes (n= 28)
near water?

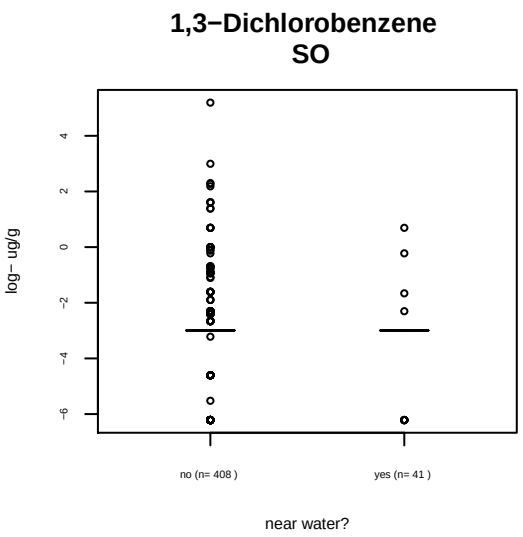

1,2,4−Trichlorobenzene
SO
ug/g
0.0
0.5
1.0
1.5
2.0
no (n= 13)
yes (n= 0)
near water?

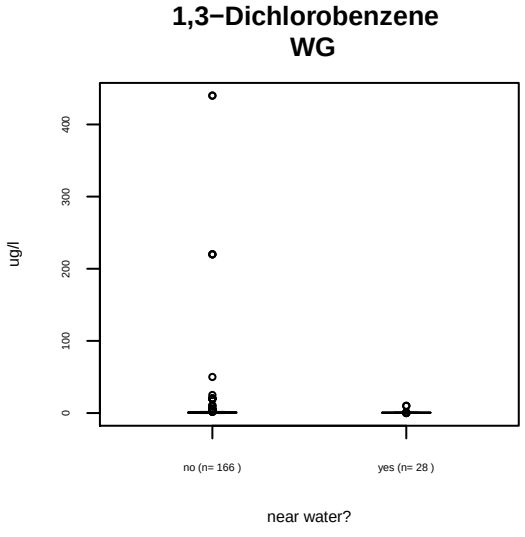

1,2,4−Trichlorobenzene
SO
log− ug/g
−5
−4
−3
−2
−1
0
no (n= 13)
yes (n= 0)
near water?

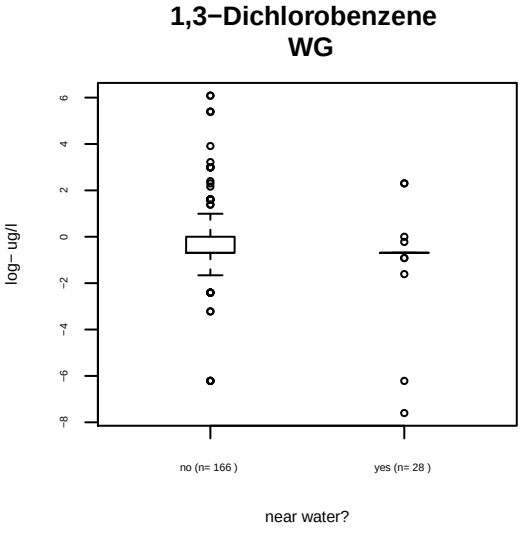

1,2,4−Trichlorobenzene
WG
ug/l
0.0
0.5
1.0
1.5
2.0
2.5
3.0
no (n= 27)
yes (n= 0)
near water?

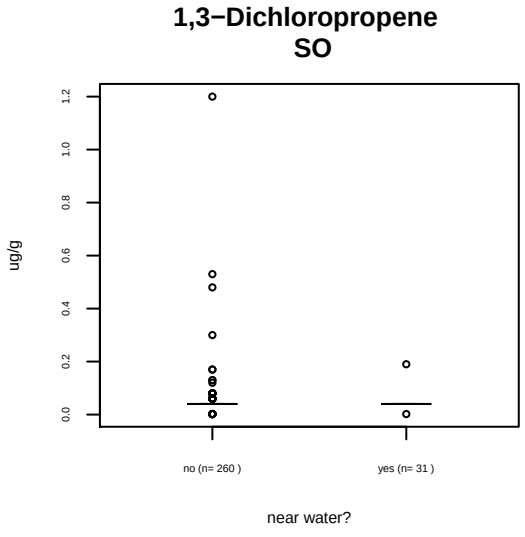

1,2,4−Trichlorobenzene
WG
log− ug/l
−6
−4
−2
0
no (n= 27)
yes (n= 0)
near water?

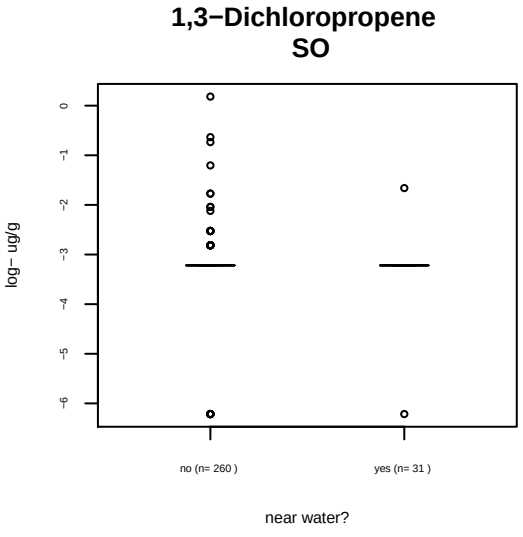

1,3−Dichlorobenzene
SO
ug/g
0
50
100
150
no (n= 408)
yes (n= 41)
near water?

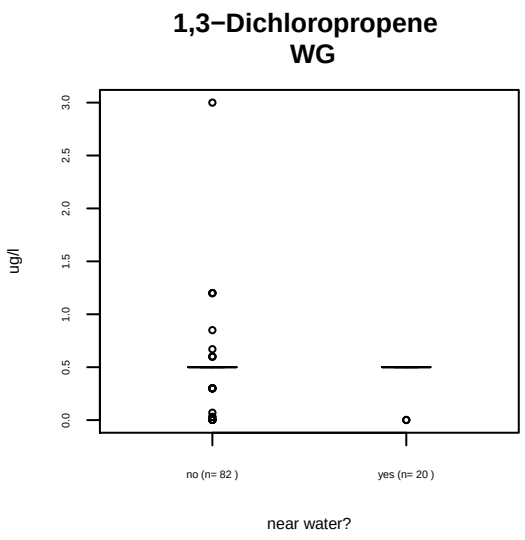

1,3−Dichlorobenzene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 408)
yes (n= 41)
near water?

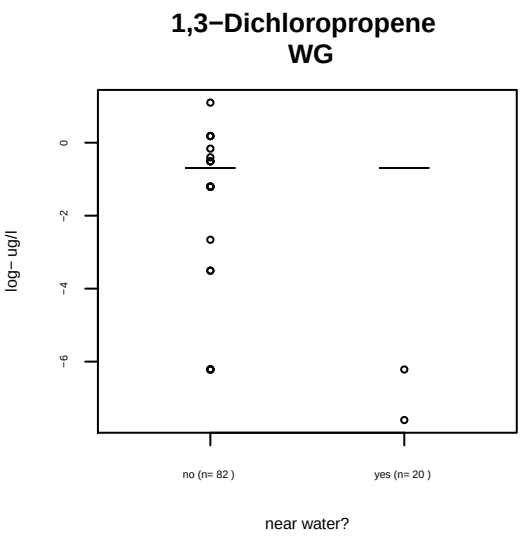

1,3−Dichlorobenzene
WG
ug/l
0
100
200
300
400
no (n= 166)
yes (n= 28)
near water?


1,3−Dichlorobenzene
WG
log− ug/l
−8
−6
−4
−2
0
2
4
6
no (n= 166)
yes (n= 28)
near water?

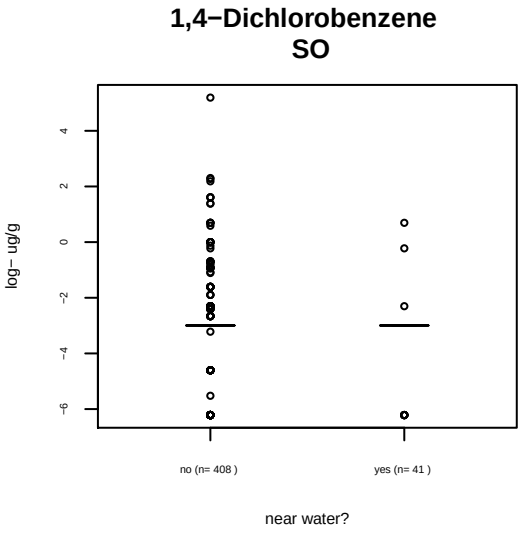

1,3−Dichloropropene
SO
ug/g
0.0
0.2
0.4
0.6
0.8
1.0
1.2
no (n= 260)
yes (n= 31)
near water?

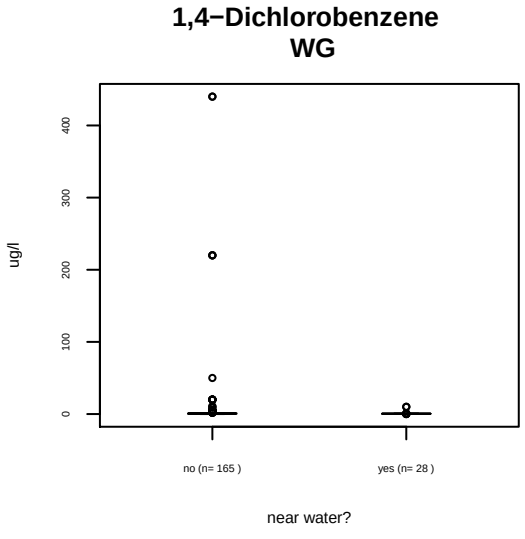

1,3−Dichloropropene
SO
log− ug/g
−6
−5
−4
−3
−2
−1
0
no (n= 260)
yes (n= 31)
near water?

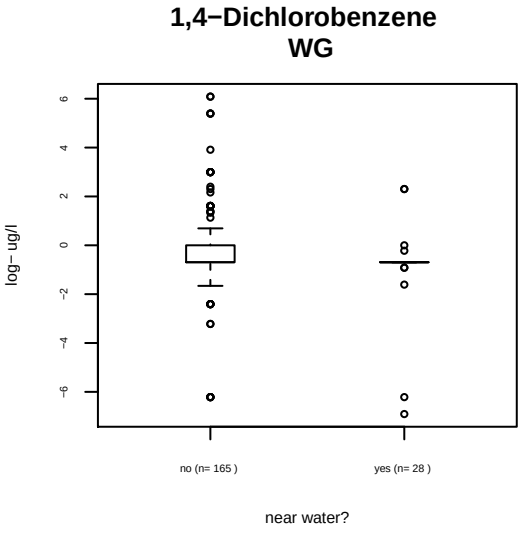

1,3−Dichloropropene
WG
ug/l
0.0
0.5
1.0
1.5
2.0
2.5
3.0
no (n= 82)
yes (n= 20)
near water?

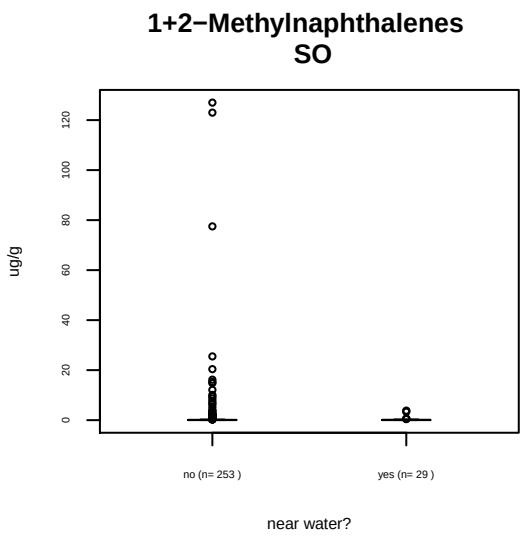

1,3−Dichloropropene
WG
log− ug/l
−6
−4
−2
0
no (n= 82)
yes (n= 20)
near water?

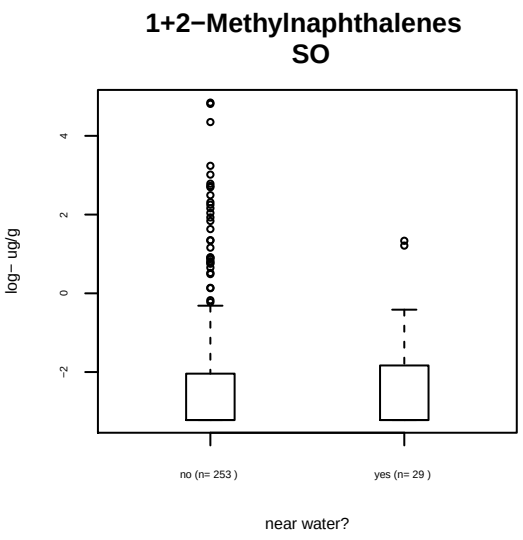

1,4−Dichlorobenzene
SO
ug/g
0
50
100
150
no (n= 408)
yes (n= 41)
near water?

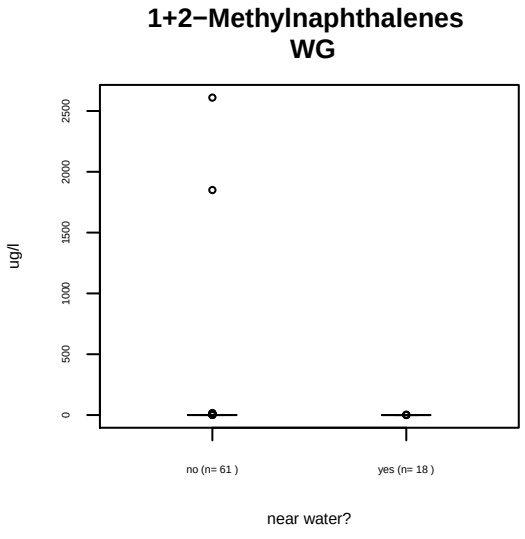

1,4−Dichlorobenzene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 408)
yes (n= 41)
near water?

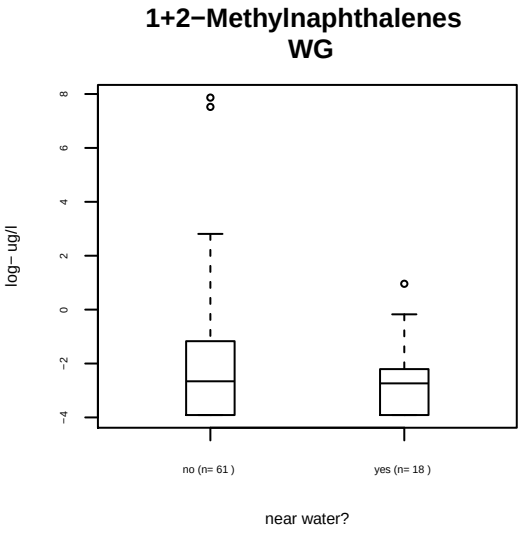

1,4−Dichlorobenzene
WG
ug/l
0
100
200
300
400
no (n= 165)
yes (n= 28)
near water?

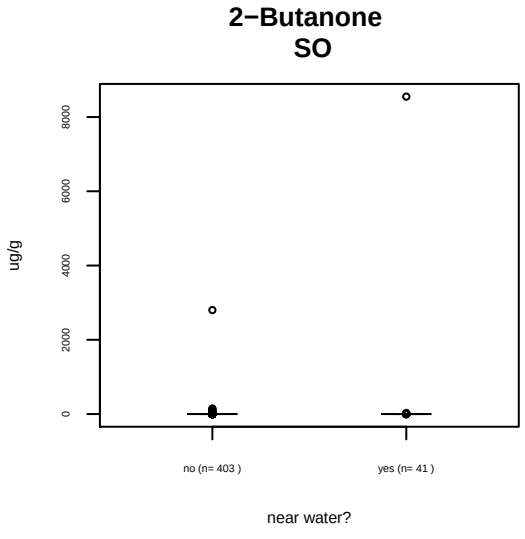

1,4−Dichlorobenzene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 165)
yes (n= 28)
near water?

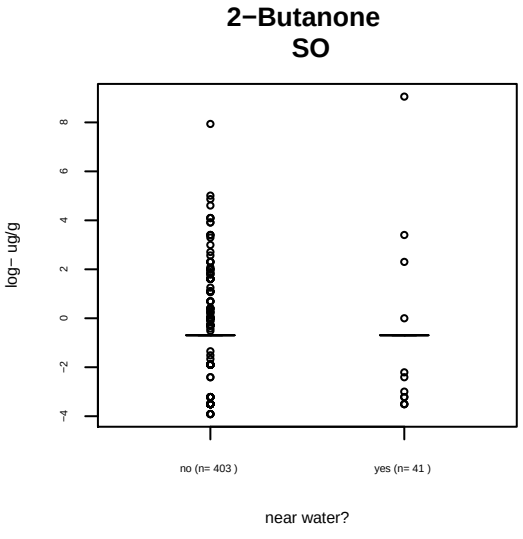

1+2−Methylnaphthalenes
SO
ug/g
0
20
40
60
80
100
120
no (n= 253)
yes (n= 29)
near water?

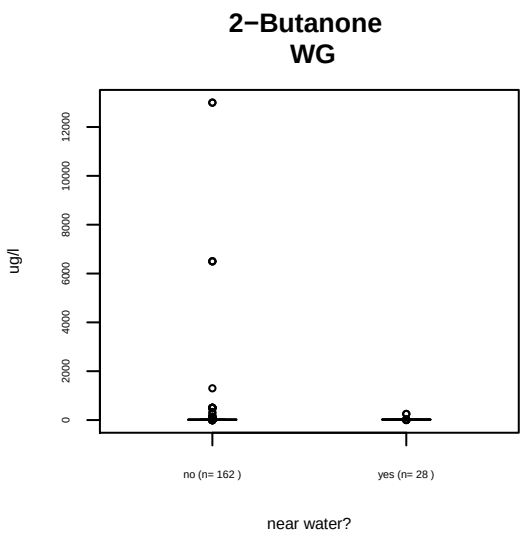

1+2−Methylnaphthalenes
SO
log− ug/g
−2
0
2
4
no (n= 253)
yes (n= 29)
near water?

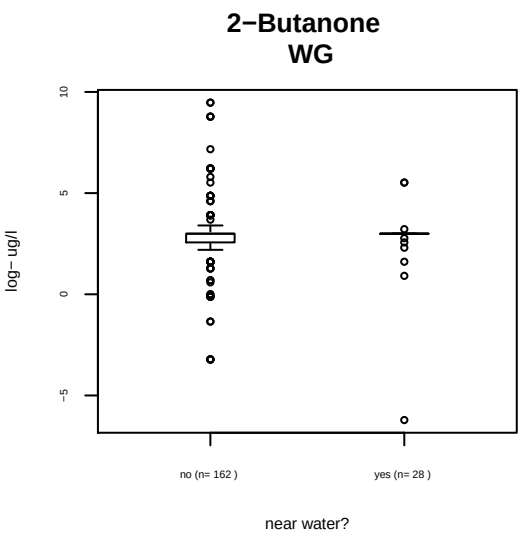

1+2−Methylnaphthalenes
WG
ug/l
0
500
1000
1500
2000
2500
no (n= 61)
yes (n= 18)
near water?

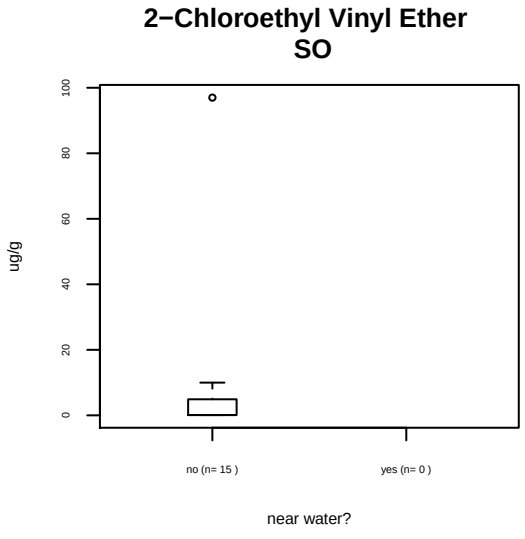

1+2−Methylnaphthalenes
WG
log− ug/l
−4
−2
0
2
4
6
8
no (n= 61)
yes (n= 18)
near water?

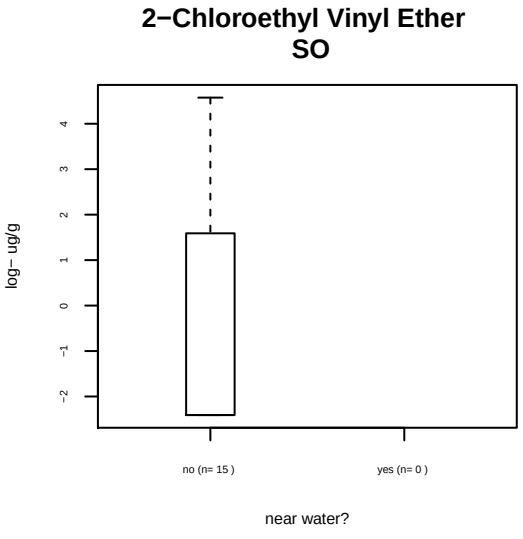

2−Butanone
SO
ug/g
0
2000
4000
6000
8000
no (n= 403)
yes (n= 41)
near water?

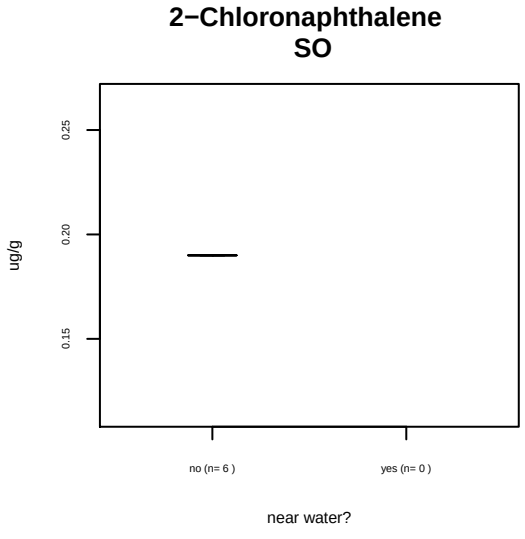

2−Butanone
SO
log− ug/g
−4
−2
0
2
4
6
8
no (n= 403)
yes (n= 41)
near water?

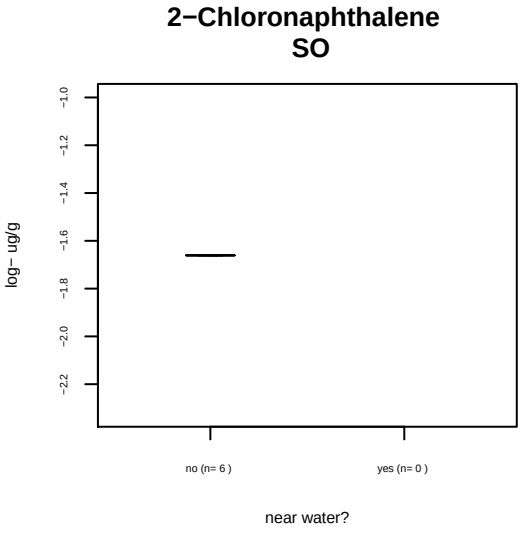

2−Butanone
WG
ug/l
0
2000
4000
6000
8000
10000
12000
no (n= 162)
yes (n= 28)
near water?

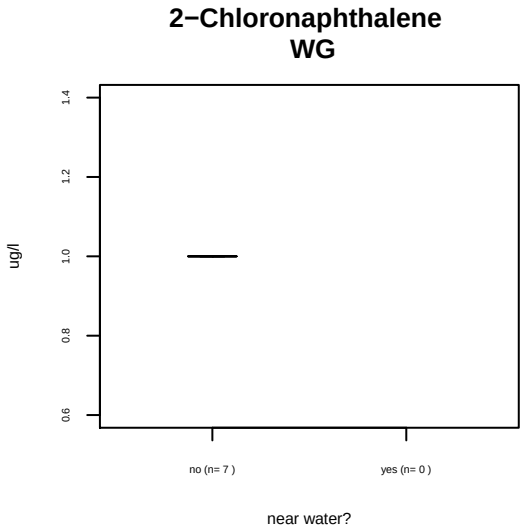

2−Butanone
WG
log− ug/l
−5
0
5
10
no (n= 162)
yes (n= 28)
near water?

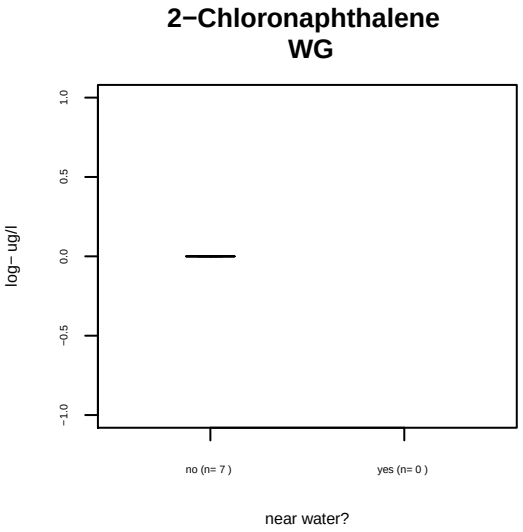

2−Chloroethyl Vinyl Ether
SO
ug/g
0
20
40
60
80
100
no (n= 15)
yes (n= 0)
near water?

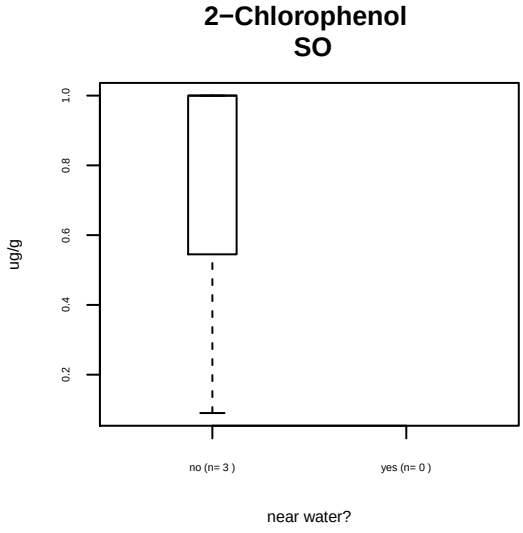

2−Chloroethyl Vinyl Ether
SO
log− ug/g
−2
−1
0
1
2
3
4
no (n= 15)
yes (n= 0)
near water?

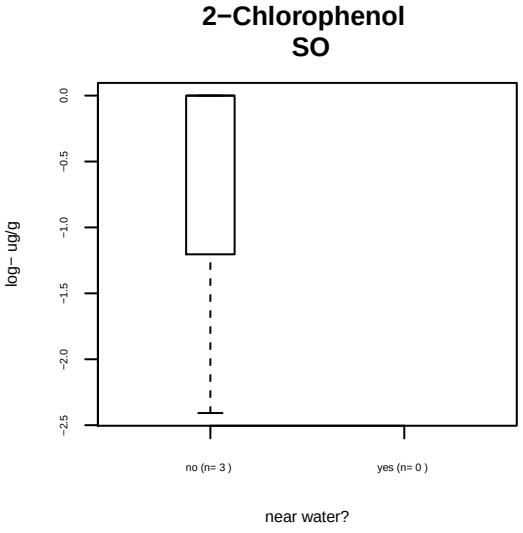

2−Chloronaphthalene
SO
ug/g
0.15
0.20
0.25
no (n= 6)
yes (n= 0)
near water?

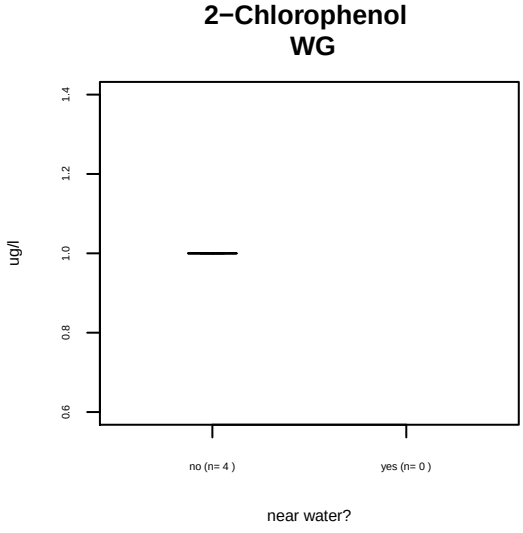

2−Chloronaphthalene
SO
log− ug/g
−2.2
−2.0
−1.8
−1.6
−1.4
−1.2
−1.0
no (n= 6)
yes (n= 0)
near water?

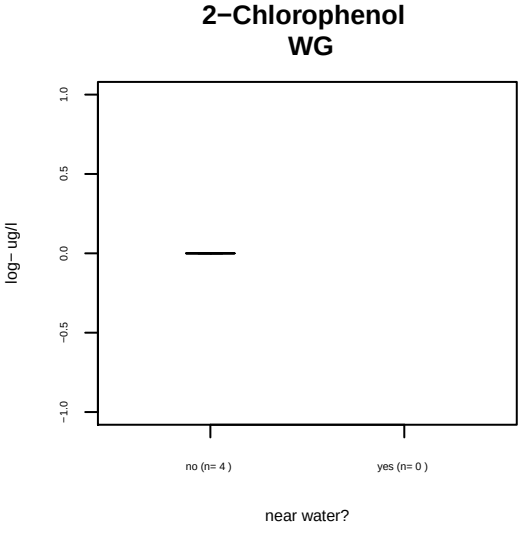

2−Chloronaphthalene
WG
ug/l
1.4
1.2
1.0
0.8
0.6
no (n= 7)
yes (n= 0)
near water?

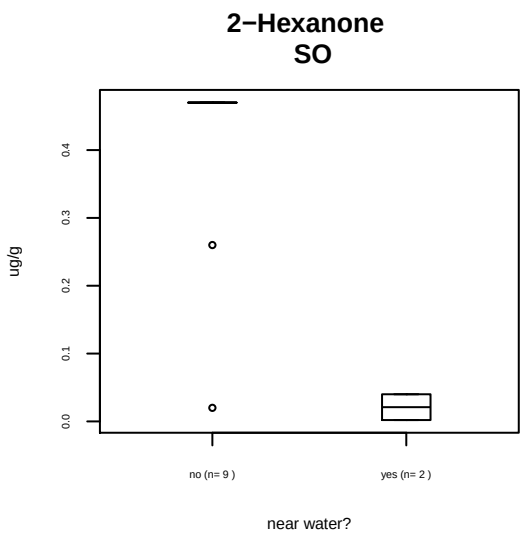

2−Chloronaphthalene
WG
log− ug/l
1.0
0.5
0.0
−0.5
−1.0
no (n= 7)
yes (n= 0)
near water?

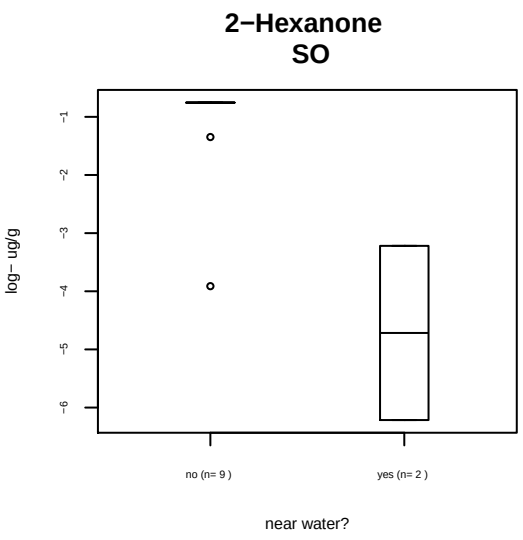

2−Chlorophenol
SO
ug/g
1.0
0.8
0.6
0.4
0.2
no (n= 3)
yes (n= 0)
near water?

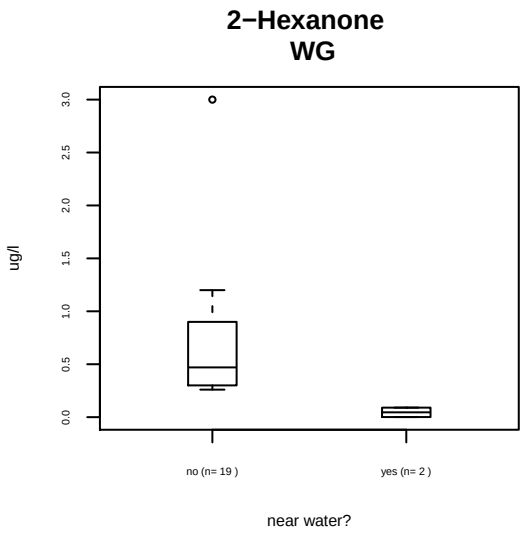

2−Chlorophenol
SO
log− ug/g
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
no (n= 3)
yes (n= 0)
near water?

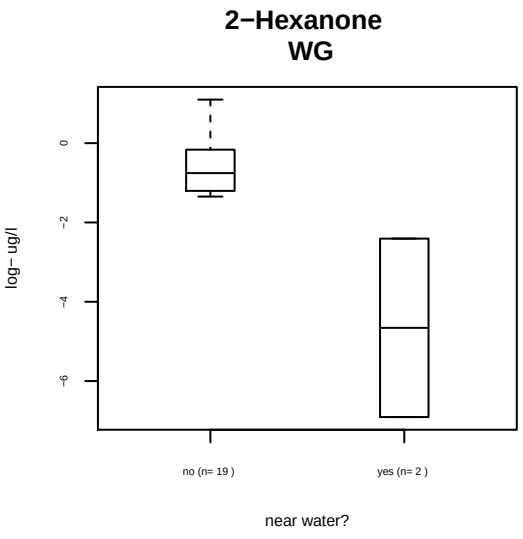

2−Chlorophenol
WG
ug/l
1.4
1.2
1.0
0.8
0.6
no (n= 4)
yes (n= 0)
near water?

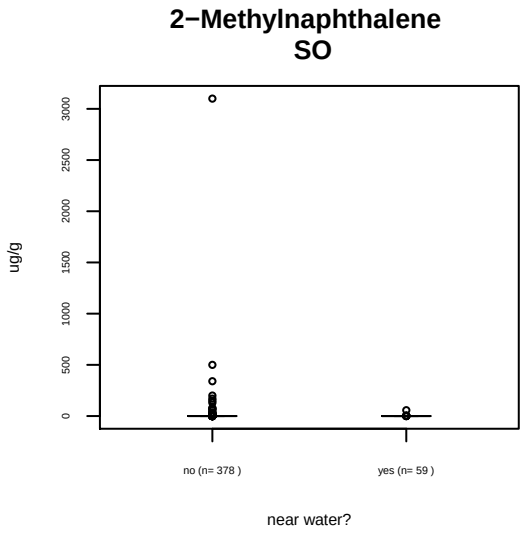

2−Chlorophenol
WG
log− ug/l
1.0
0.5
0.0
−0.5
−1.0
no (n= 4)
yes (n= 0)
near water?

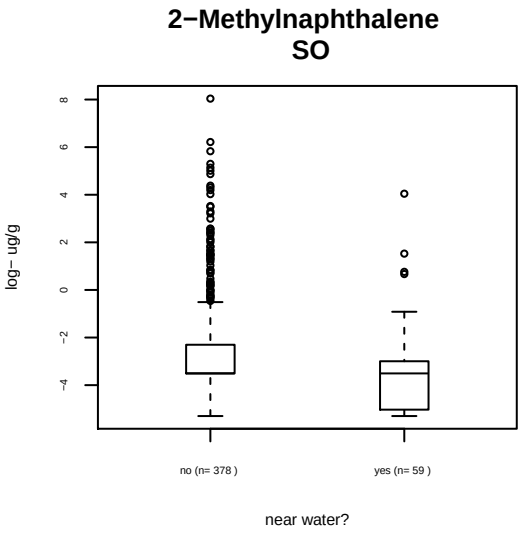

2−Hexanone
SO
ug/g
0.0
0.1
0.2
0.3
0.4
no (n= 9)
yes (n= 2)
near water?

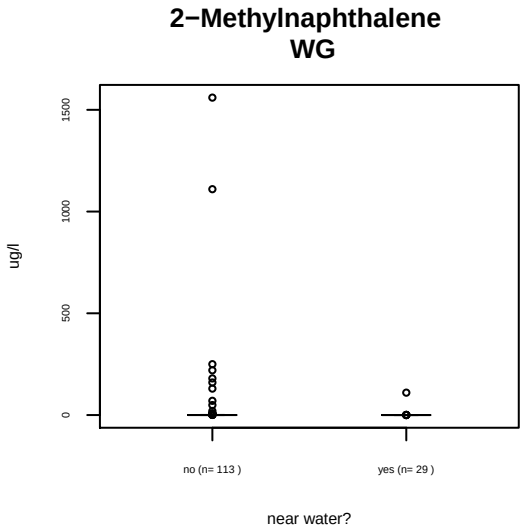

2−Hexanone
SO
log− ug/g
−1
−2
−3
−4
−5
−6
no (n= 9)
yes (n= 2)
near water?

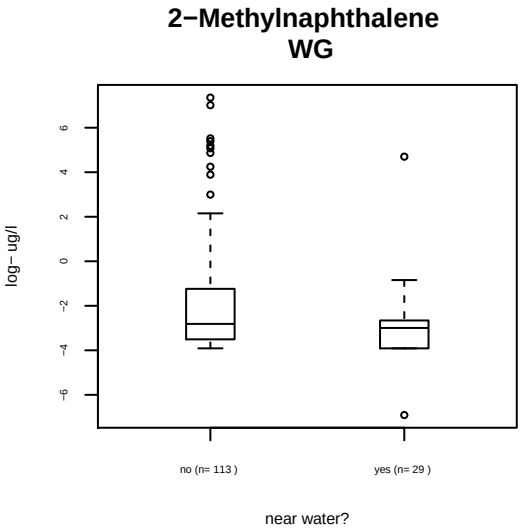

2−Hexanone
WG
ug/l
0.0
0.5
1.0
1.5
2.0
2.5
3.0
no (n= 19)
yes (n= 2)
near water?

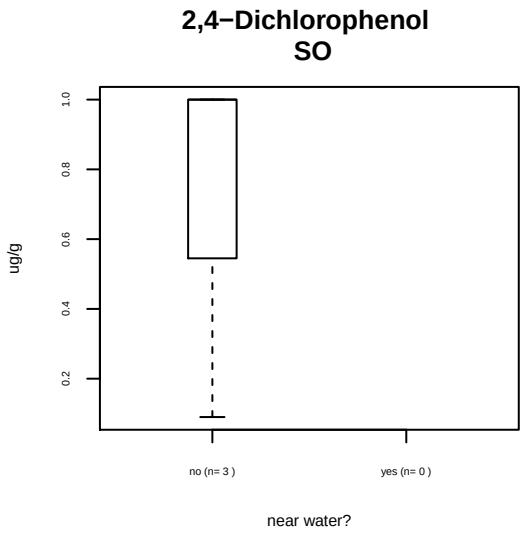

2−Hexanone
WG
log− ug/l
0
−2
−4
−6
no (n= 19)
yes (n= 2)
near water?

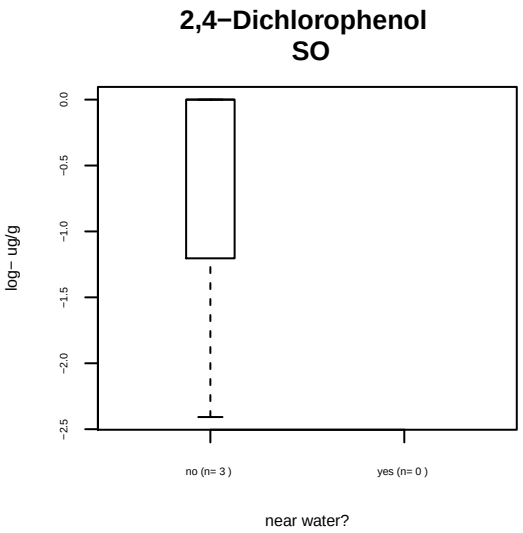

2−Methylnaphthalene
SO
ug/gn
0
500
1000
1500
2000
2500
3000
no (n= 378)
yes (n= 59)
near water?

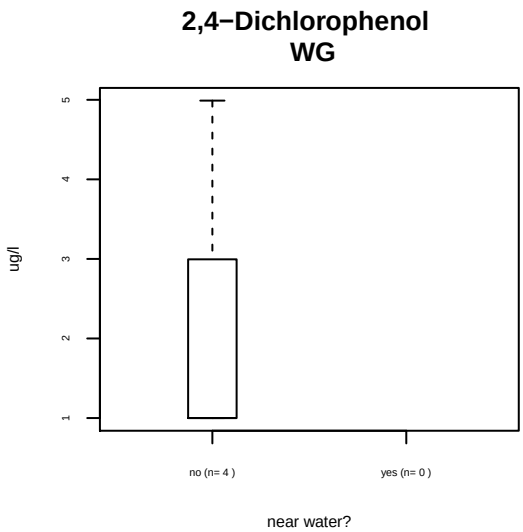

2−Methylnaphthalene
SO
log− ug/g/g
−4
−2
0
2
4
6
8
no (n= 378)
yes (n= 59)
near water?

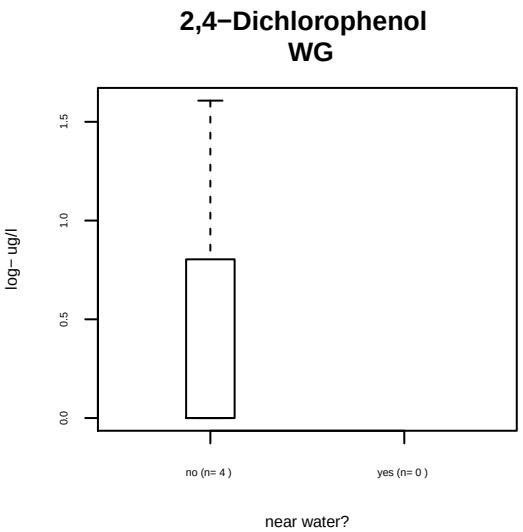

2−Methylnaphthalene
WG
ug/l
0
500
1000
1500
no (n= 113)
yes (n= 29)
near water?

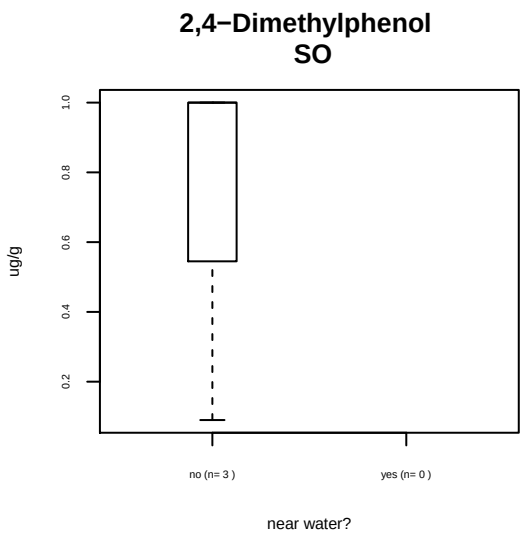

2−Methylnaphthalene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 113)
yes (n= 29)
near water?

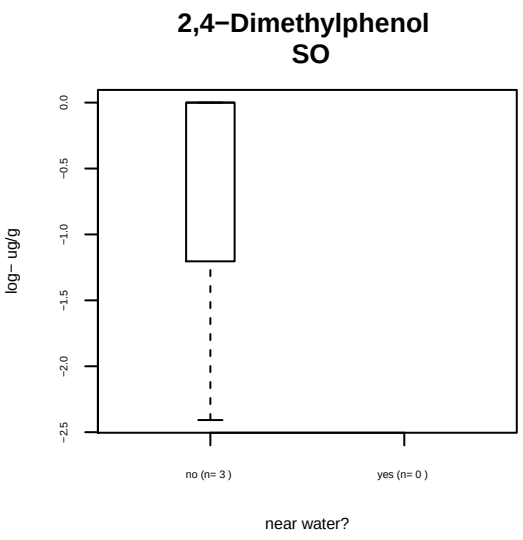

2,4−Dichlorophenol
SO
ug/g
0.2
0.4
0.6
0.8
1.0
no (n= 3)
yes (n= 0)
near water?

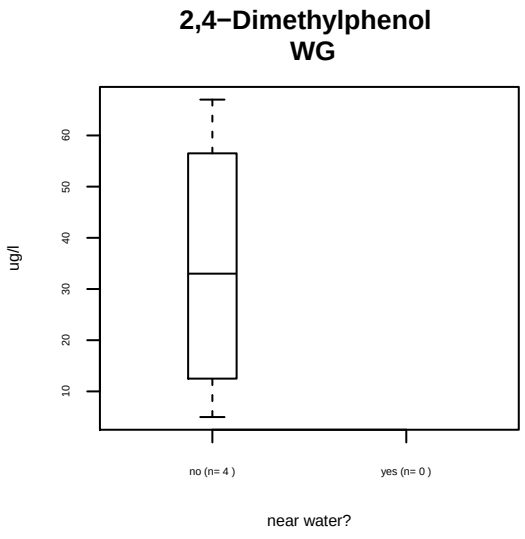

2,4−Dichlorophenol
SO
log− ug/g
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
no (n= 3)
yes (n= 0)
near water?

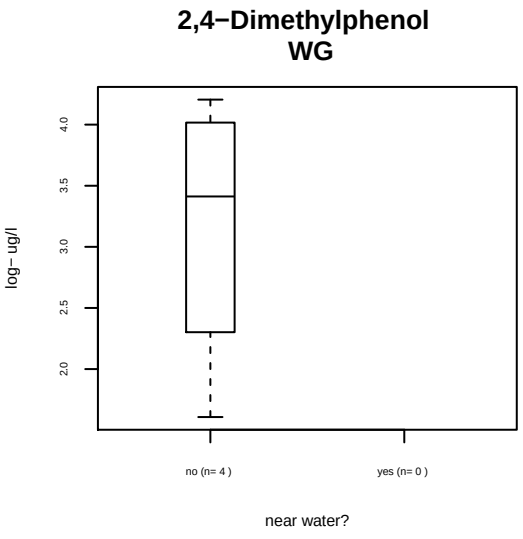

2,4−Dichlorophenol
WG
ug/l
1
2
3
4
5
no (n= 4)
yes (n= 0)
near water?

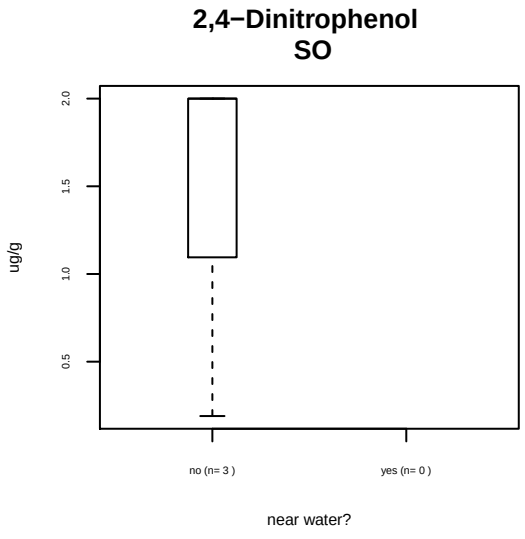

2,4−Dichlorophenol
WG
log− ug/l
0.0
0.5
1.0
1.5
no (n= 4)
yes (n= 0)
near water?

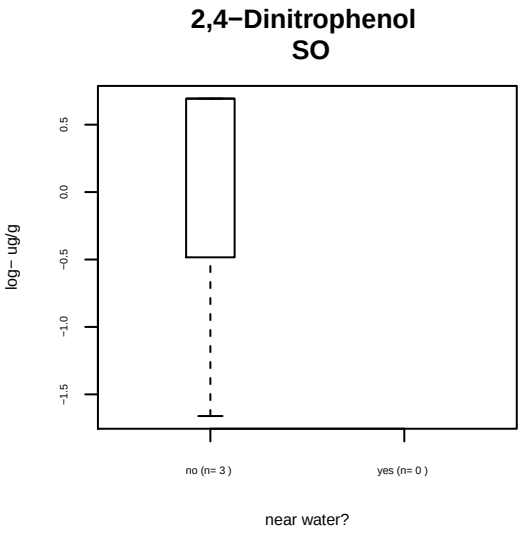

2,4−Dimethylphenol
SO
ug/g
0.2
0.4
0.6
0.8
1.0
no (n= 3)
yes (n= 0)
near water?

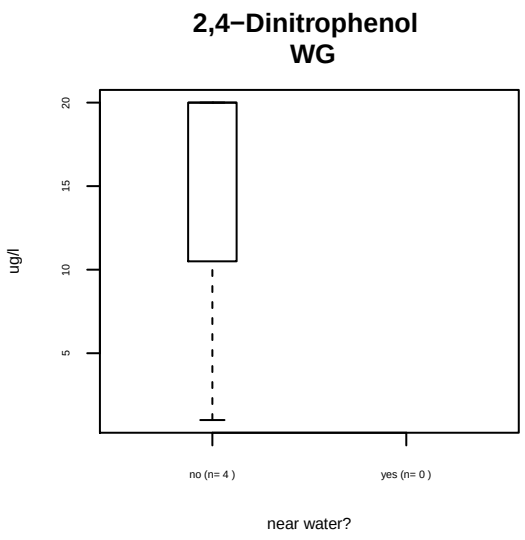

2,4−Dimethylphenol
SO
log− ug/g
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
no (n= 3)
yes (n= 0)
near water?

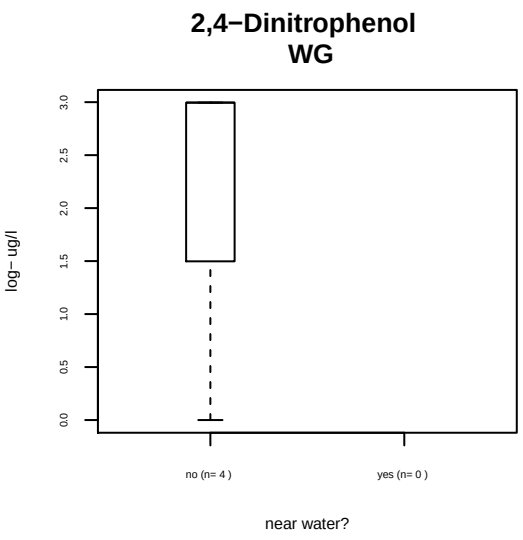

2,4−Dimethylphenol
WG
ug/l
10
20
30
40
50
60
no (n= 4)
yes (n= 0)
near water?

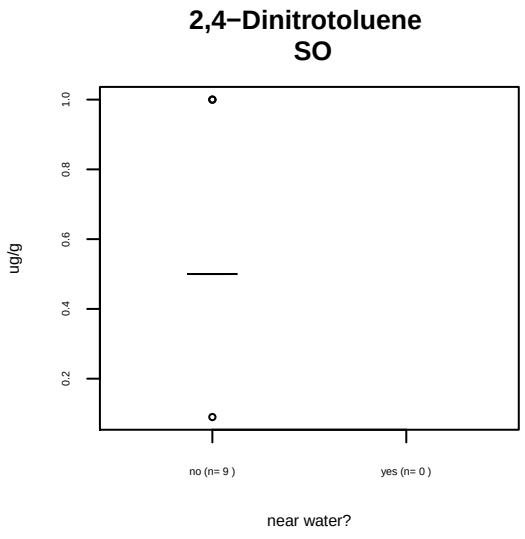

2,4−Dimethylphenol
WG
log− ug/l
2.0
2.5
3.0
3.5
4.0
no (n= 4)
yes (n= 0)
near water?

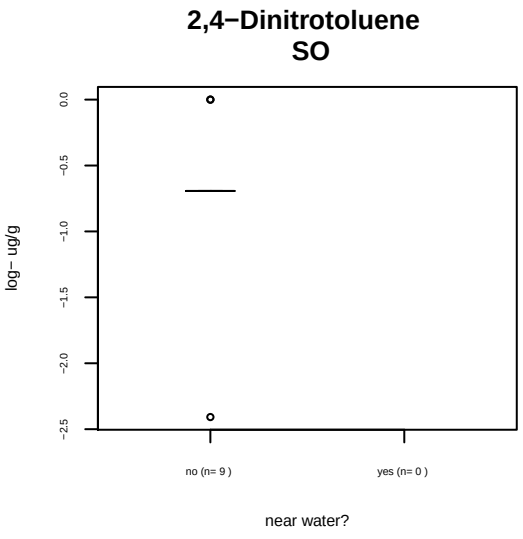

2,4−Dinitrophenol
SO
ug/g
0.5
1.0
1.5
2.0
no (n= 3)
yes (n= 0)
near water?

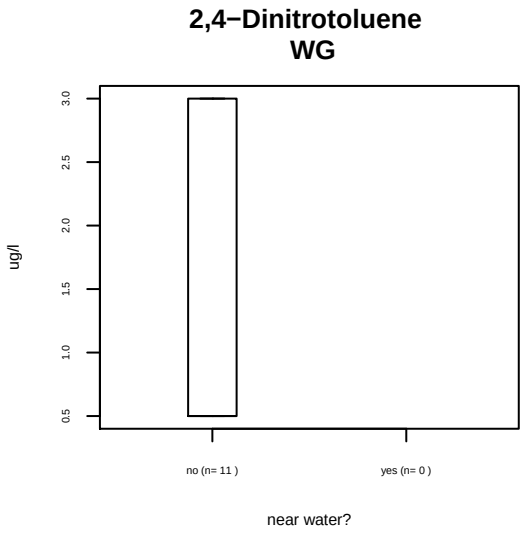

2,4−Dinitrophenol
SO
log− ug/g/g
−1.5
−1.0
−0.5
0.0
0.5
no (n= 3)
yes (n= 0)
near water?

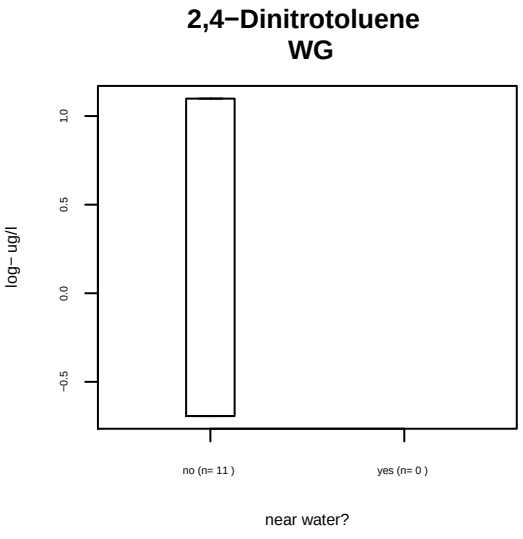

2,4−Dinitrophenol
WG
ug/l
20
15
10
5
no (n= 4)
yes (n= 0)
near water?

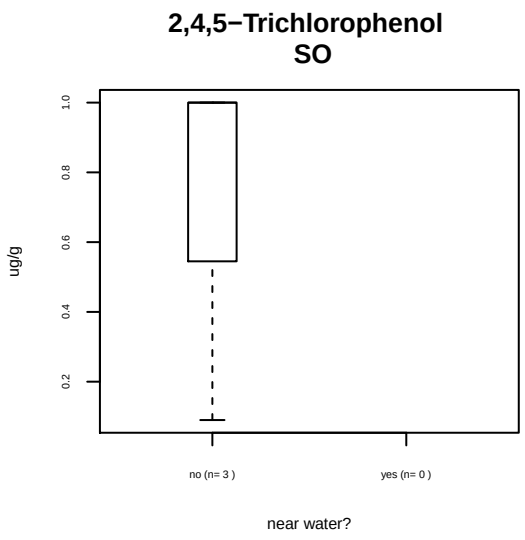

2,4−Dinitrophenol
WG
log− ug/l
3.0
2.5
2.0
1.5
1.0
0.5
0.0
no (n= 4)
yes (n= 0)
near water?

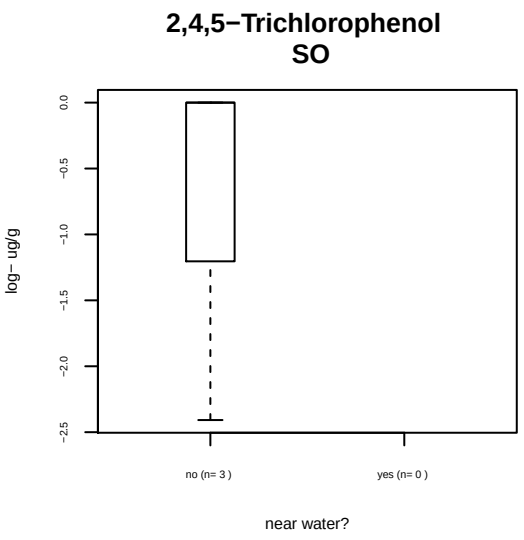

2,4−Dinitrotoluene
SO
ug/g
1.0
0.8
0.6
0.4
0.2
no (n= 9)
yes (n= 0)
near water?

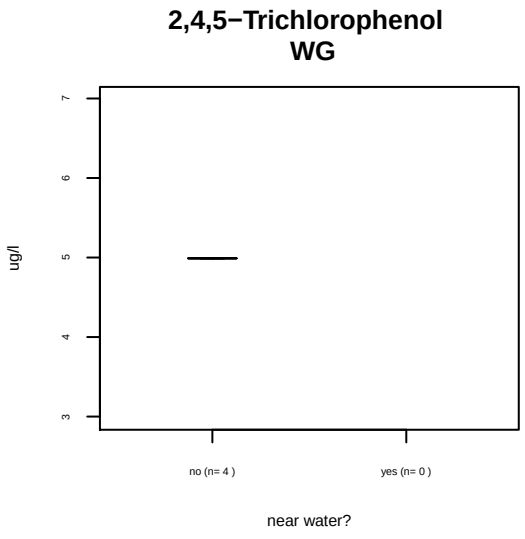

2,4−Dinitrotoluene
SO
log− ug/g
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
no (n= 9)
yes (n= 0)
near water?

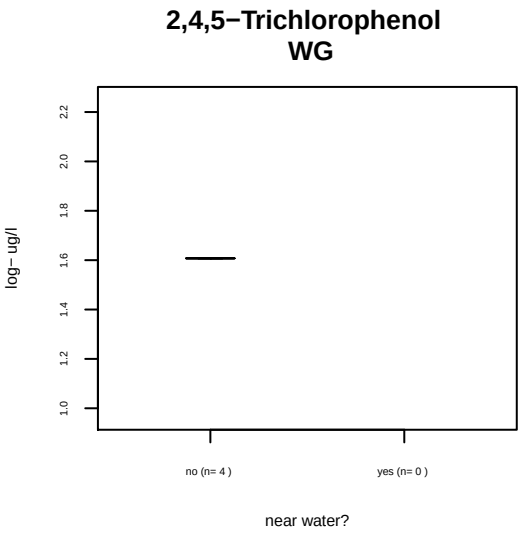

2,4−Dinitrotoluene
WG
ug/l
3.0
2.5
2.0
1.5
1.0
0.5
no (n= 11)
yes (n= 0)
near water?

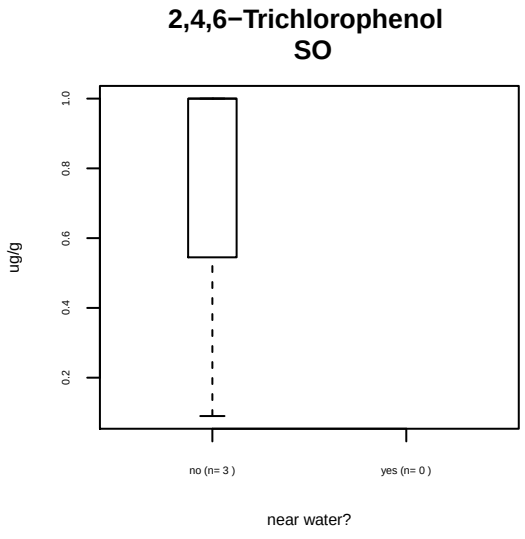

2,4−Dinitrotoluene
WG
log− ug/l
1.0
0.5
0.0
−0.5
no (n= 11)
yes (n= 0)
near water?

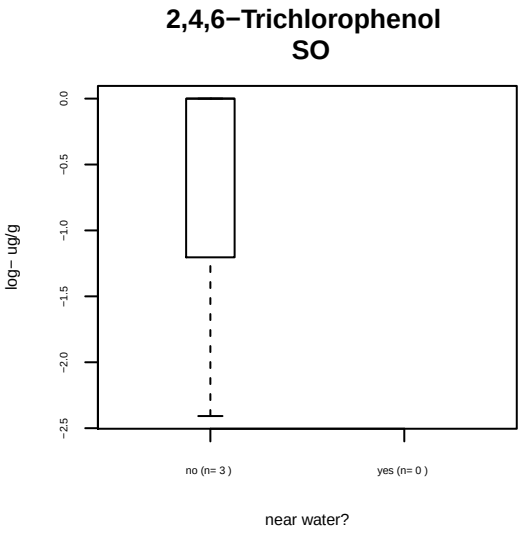

2,4,5−Trichlorophenol
SO
ug/g
1.0
0.8
0.6
0.4
0.2
no (n= 3)
yes (n= 0)
near water?

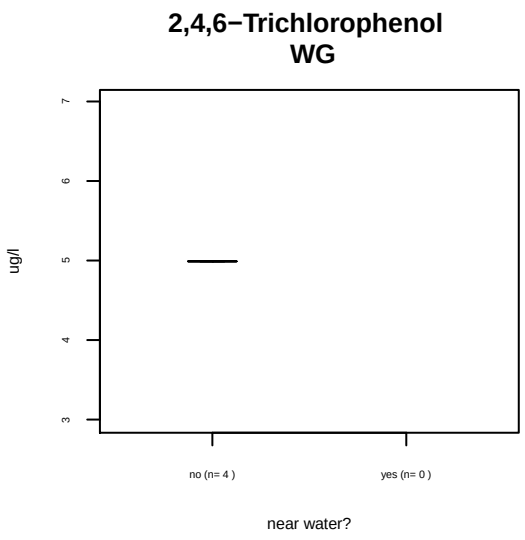

2,4,5−Trichlorophenol
SO
log− ug/g
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
no (n= 3)
yes (n= 0)
near water?

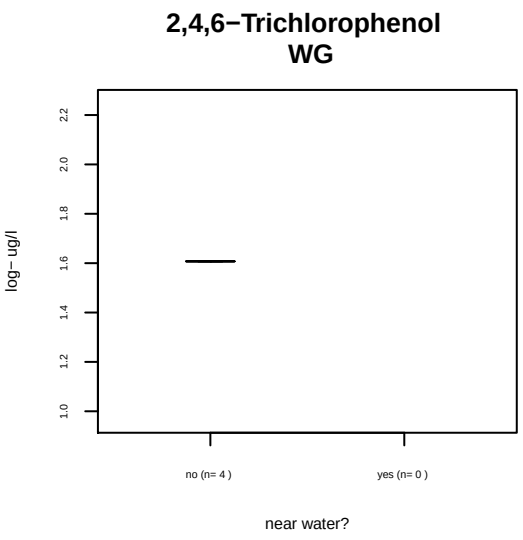

2,4,5−Trichlorophenol
WG
ug/l
7
6
5
4
3
no (n= 4)
yes (n= 0)
near water?

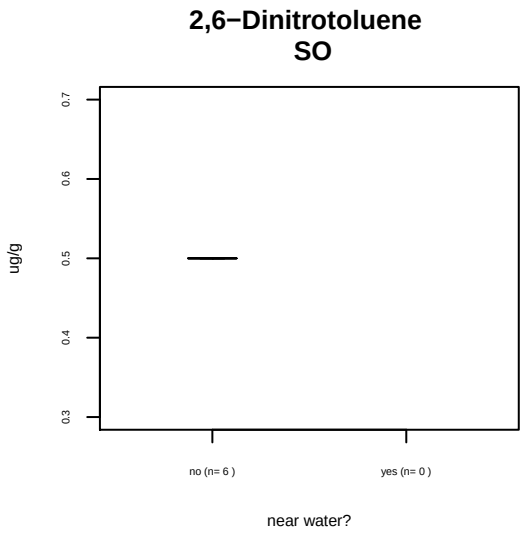

2,4,5−Trichlorophenol
WG
log− ug/l
2.2
2.0
1.8
1.6
1.4
1.2
1.0
no (n= 4)
yes (n= 0)
near water?

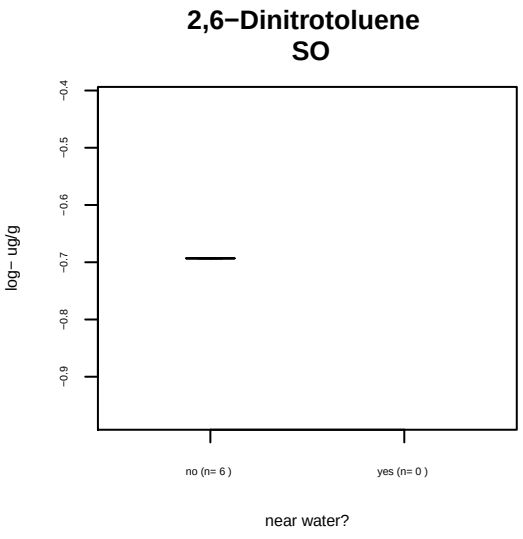

2,4,6−Trichlorophenol
SO
ug/g
1.0
0.8
0.6
0.4
0.2
no (n= 3)
yes (n= 0)
near water?

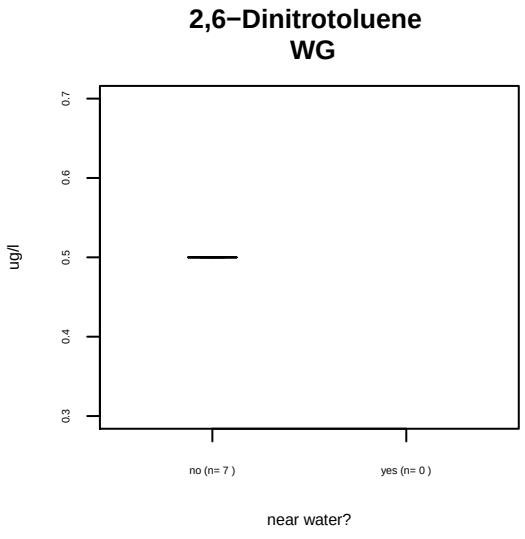

2,4,6−Trichlorophenol
SO
log− ug/g
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
no (n= 3)
yes (n= 0)
near water?

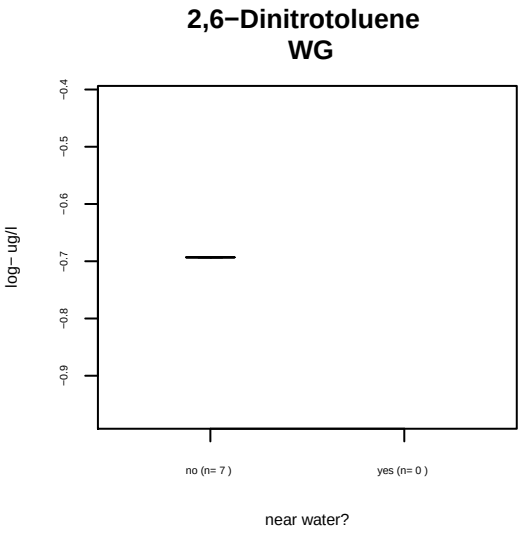

2,4,6−Trichlorophenol
WG
ug/l
3
4
5
6
7
no (n= 4)
yes (n= 0)
near water?

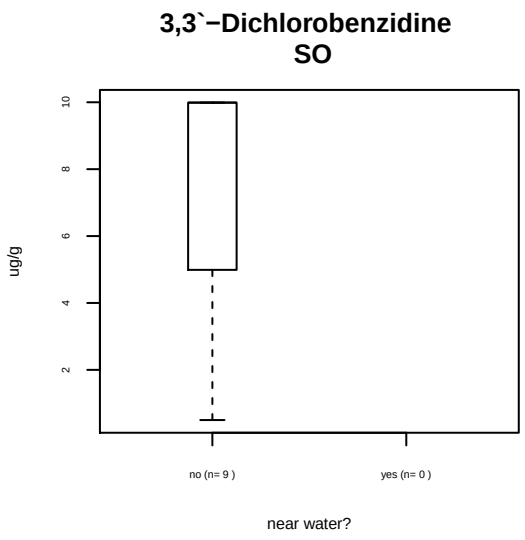

2,4,6−Trichlorophenol
WG
log− ug/l
1.0
1.2
1.4
1.6
1.8
2.0
2.2
no (n= 4)
yes (n= 0)
near water?

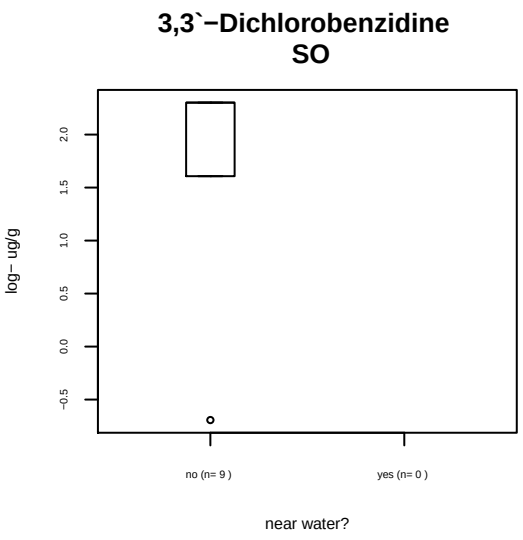

2,6−Dinitrotoluene
SO
ug/g
0.3
0.4
0.5
0.6
0.7
no (n= 6)
yes (n= 0)
near water?

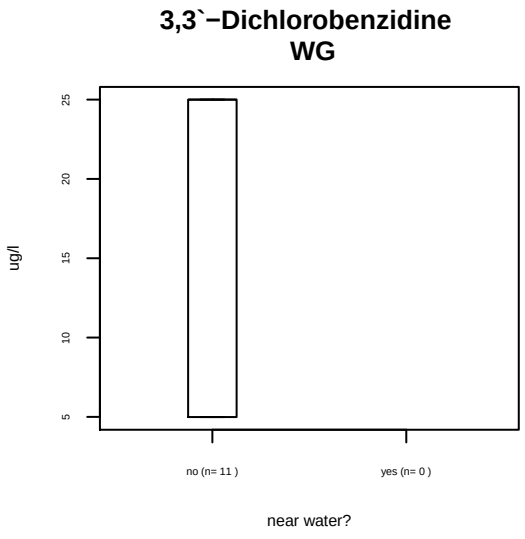

2,6−Dinitrotoluene
SO
log− ug/g
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
no (n= 6)
yes (n= 0)
near water?

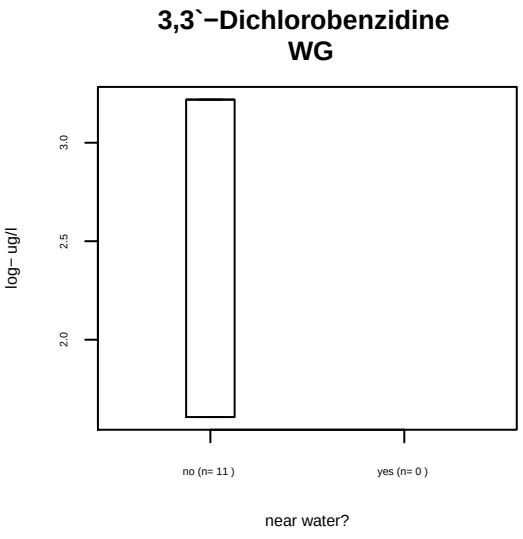

2,6−Dinitrotoluene
WG
ug/l
0.3
0.4
0.5
0.6
0.7
no (n= 7)
yes (n= 0)
near water?

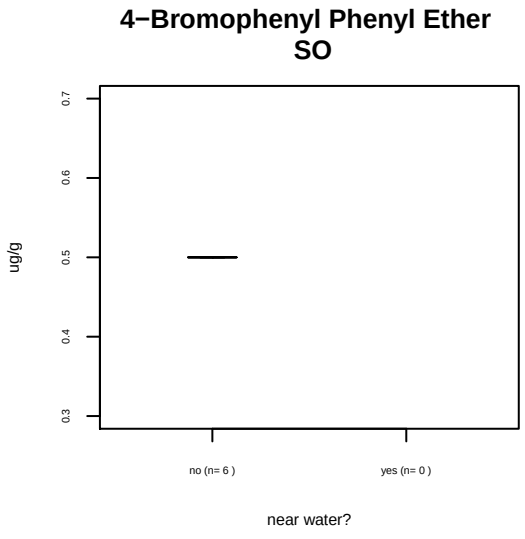

2,6−Dinitrotoluene
WG
log− ug/l
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
no (n= 7)
yes (n= 0)
near water?

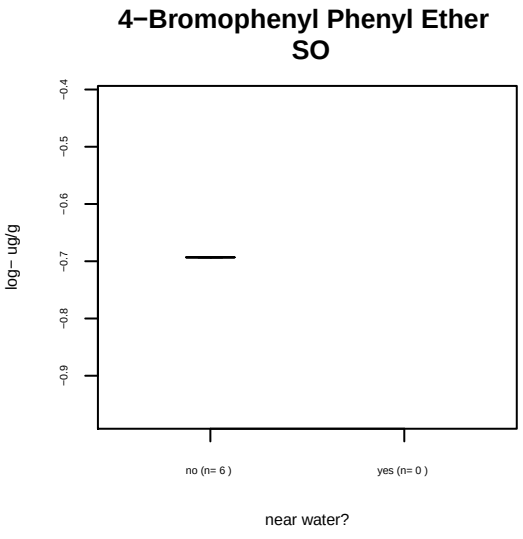

3,3`−Dichlorobenzidine
SO
ug/g
2
4
6
8
10
no (n= 9)
yes (n= 0)
near water?

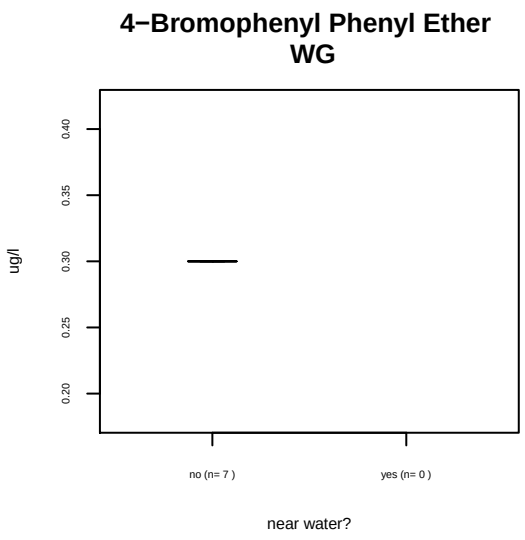

3,3`−Dichlorobenzidine
SO
log− ug/g
−0.5
0.0
0.5
1.0
1.5
2.0
no (n= 9)
yes (n= 0)
near water?

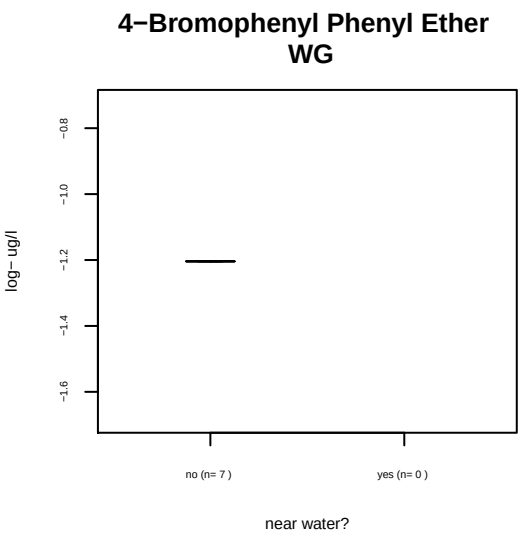

3,3`−Dichlorobenzidine
WG
ug/l
5
10
15
20
25
no (n= 11)
yes (n= 0)
near water?

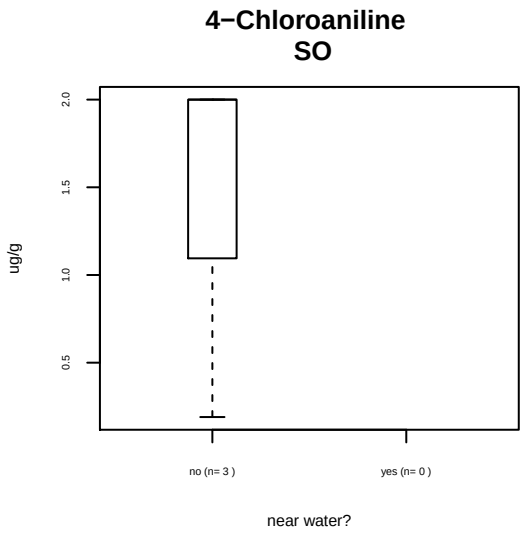

3,3`−Dichlorobenzidine
WG
log− ug/l
2.0
2.5
3.0
no (n= 11)
yes (n= 0)
near water?

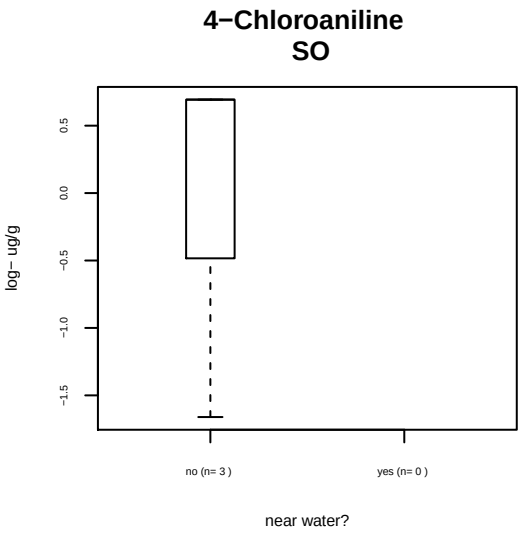

4−Bromophenyl Phenyl Ether
SO
ug/g
0.3
0.4
0.5
0.6
0.7
no (n= 6)
yes (n= 0)
near water?

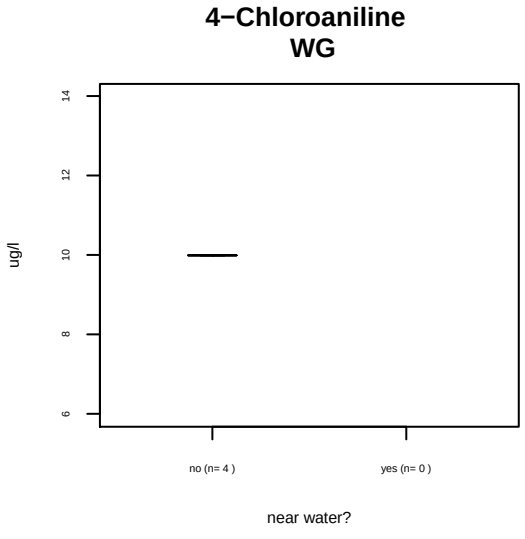

4−Bromophenyl Phenyl Ether
SO
log− ug/g/g
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
no (n= 6)
yes (n= 0)
near water?

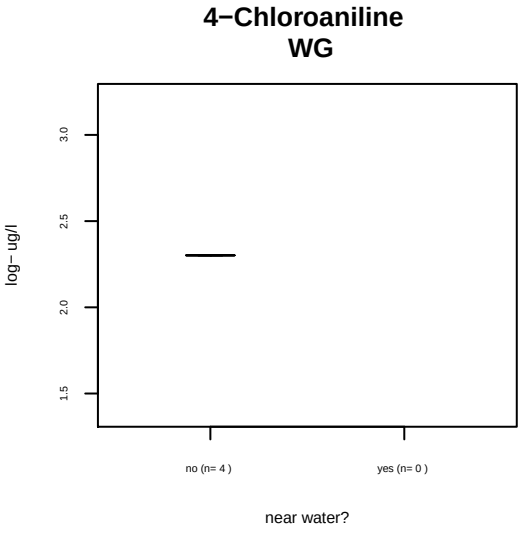

4−Bromophenyl Phenyl Ether
WG
ug/l
0.20
0.25
0.30
0.35
0.40
no (n= 7)
yes (n= 0)
near water?

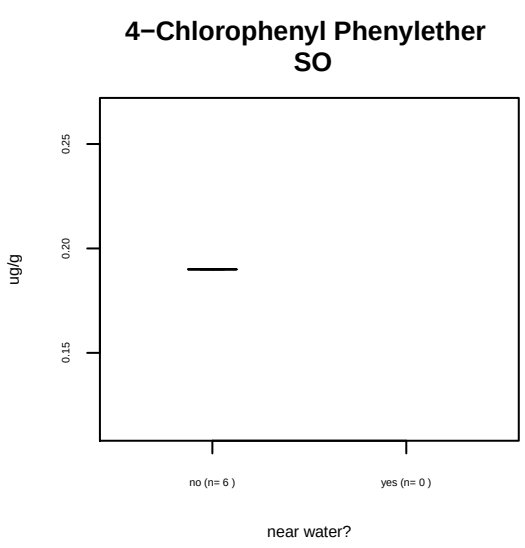

4−Bromophenyl Phenyl Ether
WG
log− ug/l
−1.6
−1.4
−1.2
−1.0
−0.8
no (n= 7)
yes (n= 0)
near water?

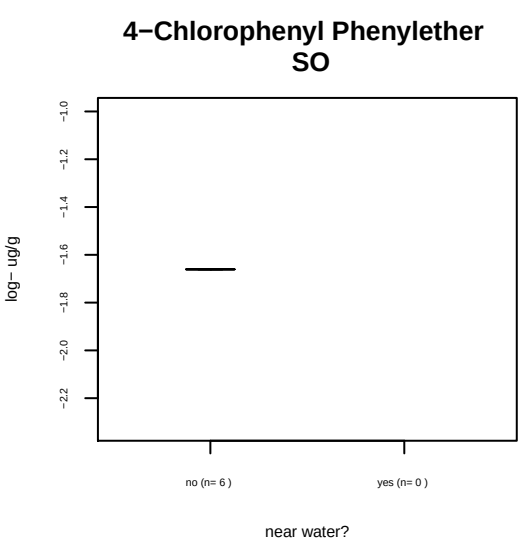

4−Chloroaniline
SO
ug/g
0.5
1.0
1.5
2.0
no (n= 3)
yes (n= 0)
near water?

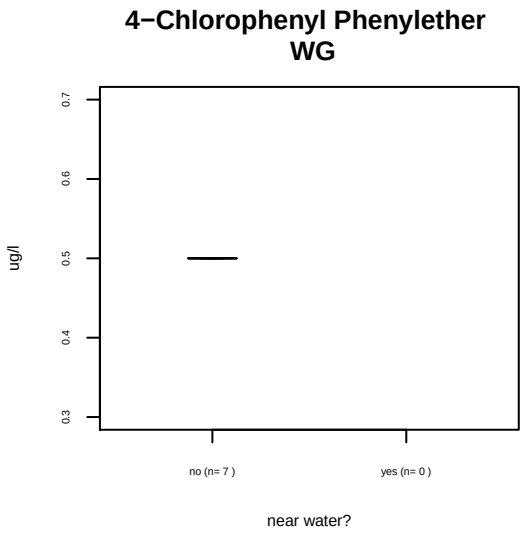

4−Chloroaniline
SO
log− ug/g
−1.5
−1.0
−0.5
0.0
0.5
no (n= 3)
yes (n= 0)
near water?

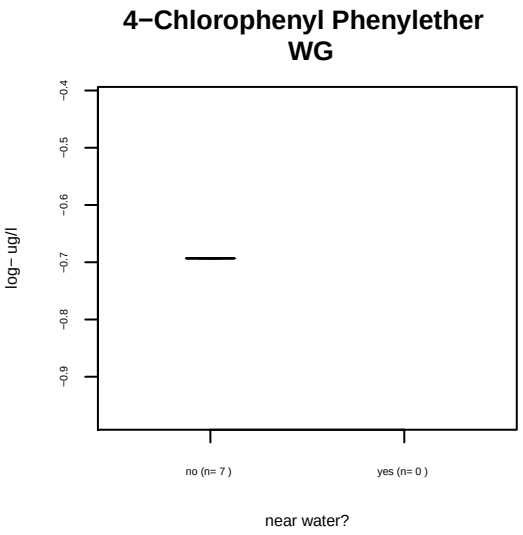

4−Chloroaniline
WG
ug/l
6
8
10
12
14
no (n= 4)
yes (n= 0)
near water?

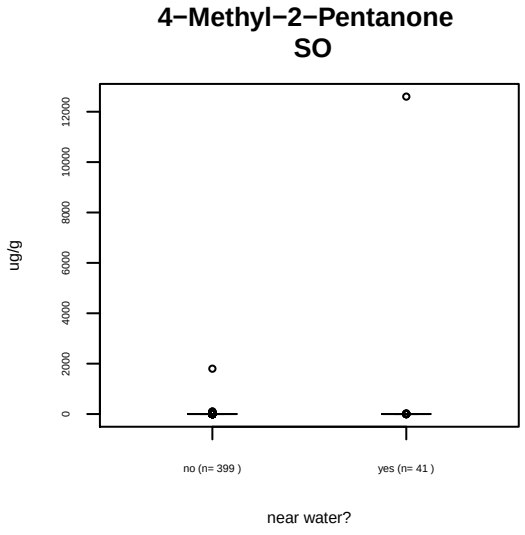

4−Chloroaniline
WG
log− ug/l
1.5
2.0
2.5
3.0
no (n= 4)
yes (n= 0)
near water?

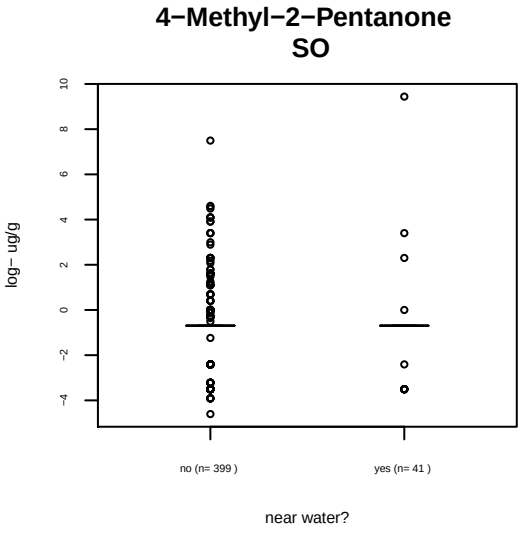

4−Chlorophenyl Phenylether
SO
ug/g
0.25
0.20
0.15
no (n= 6)
yes (n= 0)
near water?

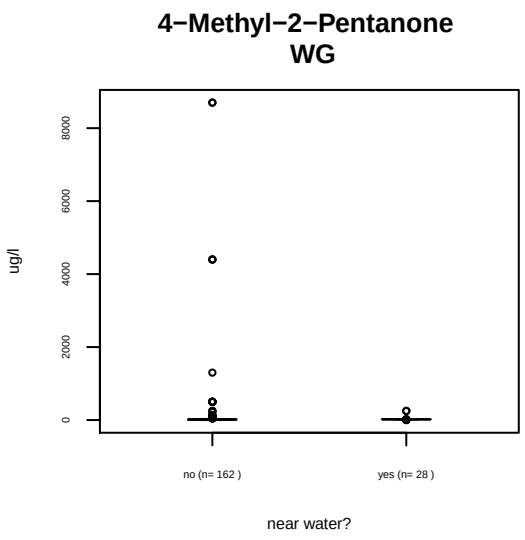

4−Chlorophenyl Phenylether
SO
log− ug/g
−1.0
−1.2
−1.4
−1.6
−1.8
−2.0
−2.2
no (n= 6)
yes (n= 0)
near water?

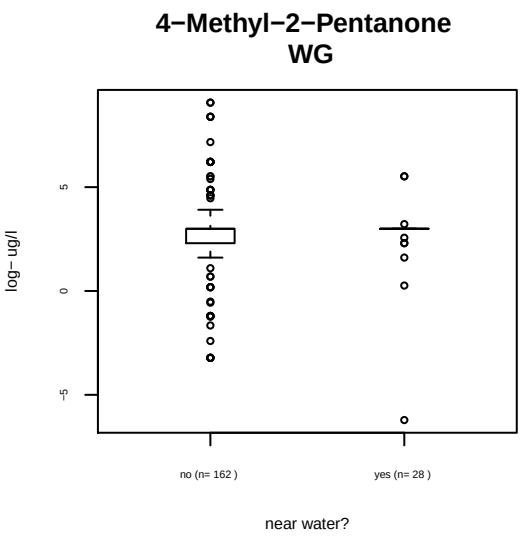

4−Chlorophenyl Phenylether
WG
ug/l
0.7
0.6
0.5
0.4
0.3
no (n= 7)
yes (n= 0)
near water?

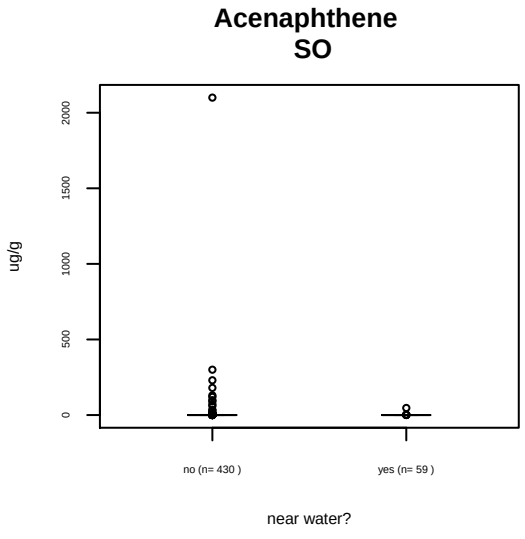

4−Chlorophenyl Phenylether
WG
log− ug/l
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
no (n= 7)
yes (n= 0)
near water?

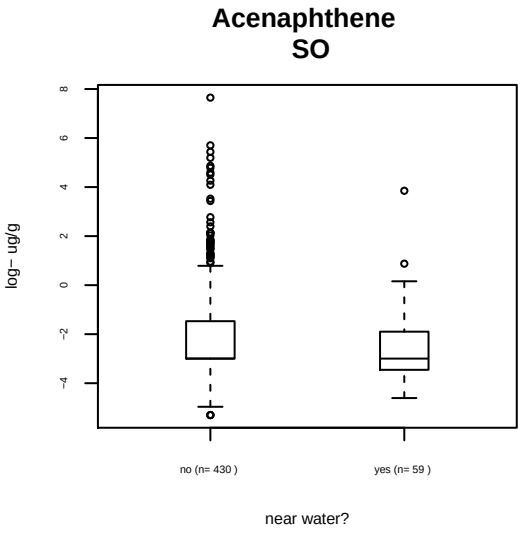

4−Methyl−2−Pentanone
SO
ug/g
12000
10000
8000
6000
4000
2000
0
no (n= 399)
yes (n= 41)
near water?

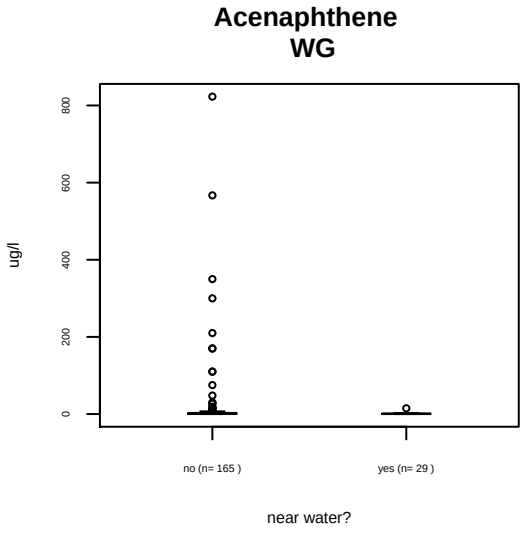

4−Methyl−2−Pentanone
SO
log− ug/g
10
8
6
4
2
0
−2
−4
no (n= 399)
yes (n= 41)
near water?

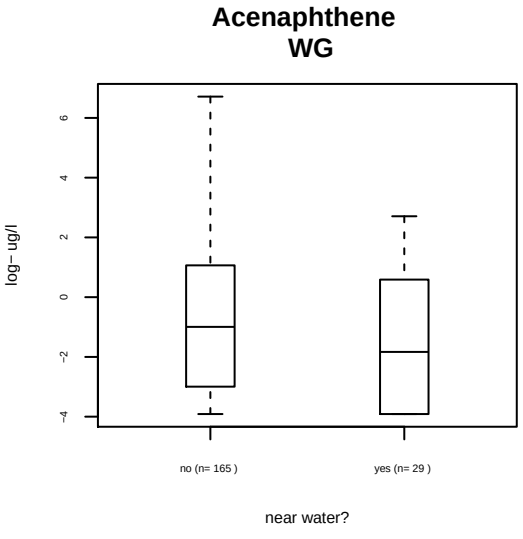

4−Methyl−2−Pentanone
WG
ug/l
0
2000
4000
6000
8000
no (n= 162)
yes (n= 28)
near water?

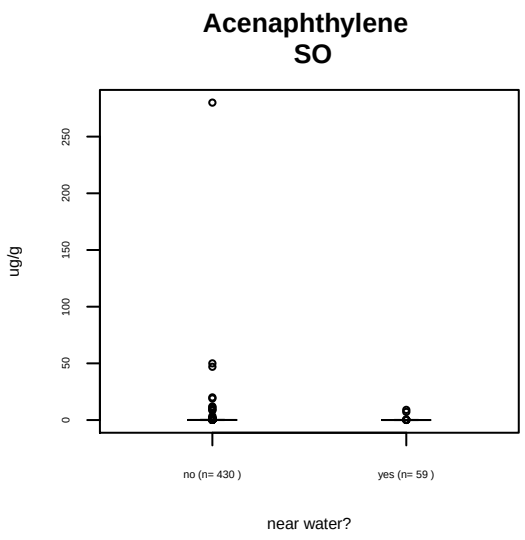

4−Methyl−2−Pentanone
WG
log− ug/l
−5
0
5
no (n= 162)
yes (n= 28)
near water?

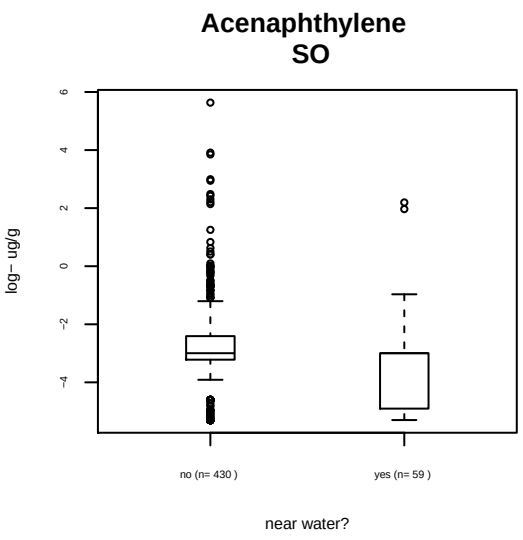

Acenaphthene
SO
ug/g
0
500
1000
1500
2000
no (n= 430)
yes (n= 59)
near water?

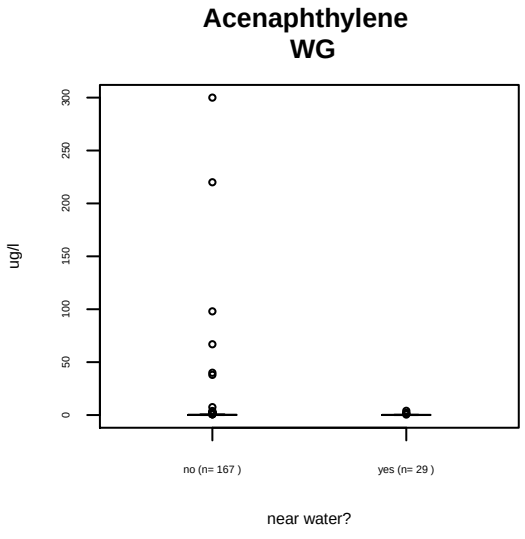

Acenaphthene
SO
log− ug/g
−4
−2
0
2
4
6
8
no (n= 430)
yes (n= 59)
near water?

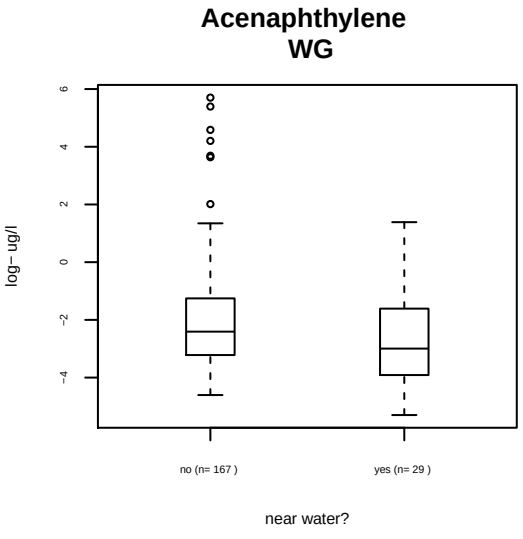

Acenaphthene
WG
ug/l
0
200
400
600
800
no (n= 165)
yes (n= 29)
near water?

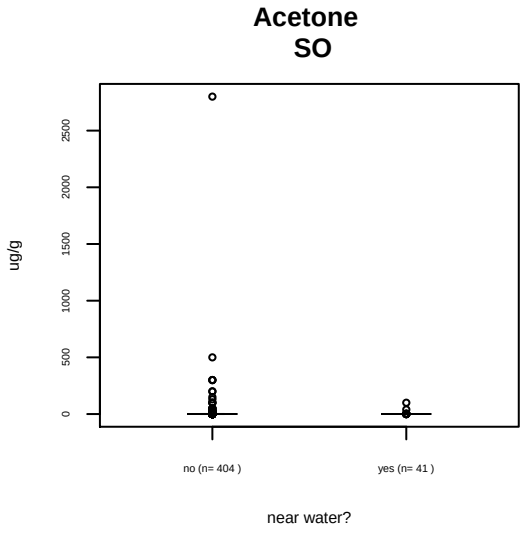

Acenaphthene
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 165)
yes (n= 29)
near water?

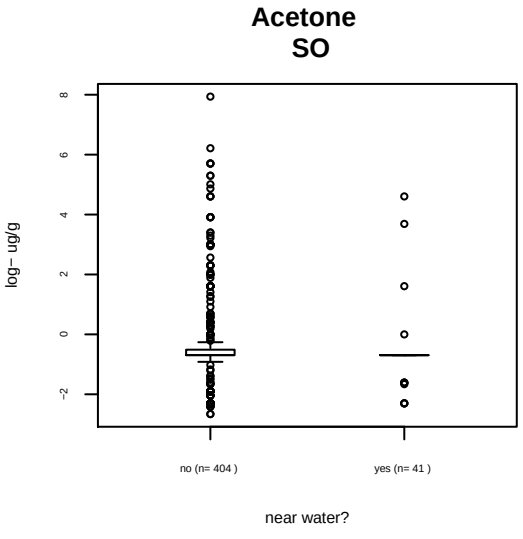

Acenaphthylene
SO
ug/g
0
50
100
150
200
250
no (n= 430)
yes (n= 59)
near water?

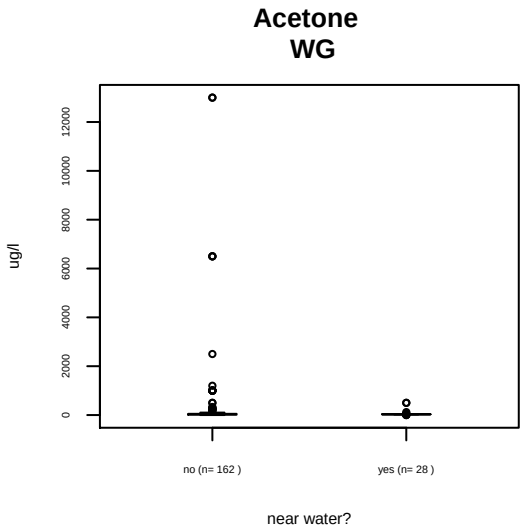

Acenaphthylene
SO
log− ug/g
−4
−2
0
2
4
6
no (n= 430)
yes (n= 59)
near water?

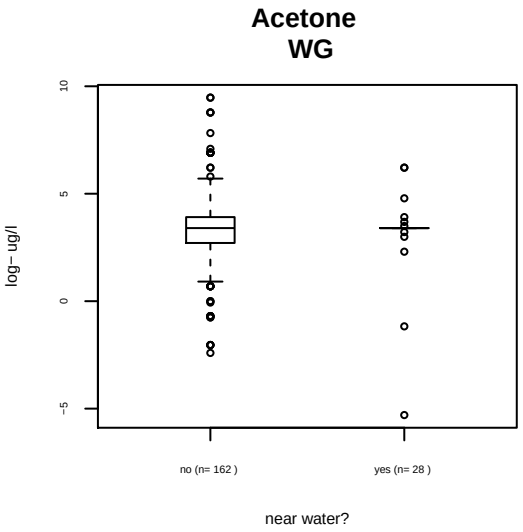

Acenaphthylene
WG
ug/l
0
50
100
150
200
250
300
no (n= 167)
yes (n= 29)
near water?

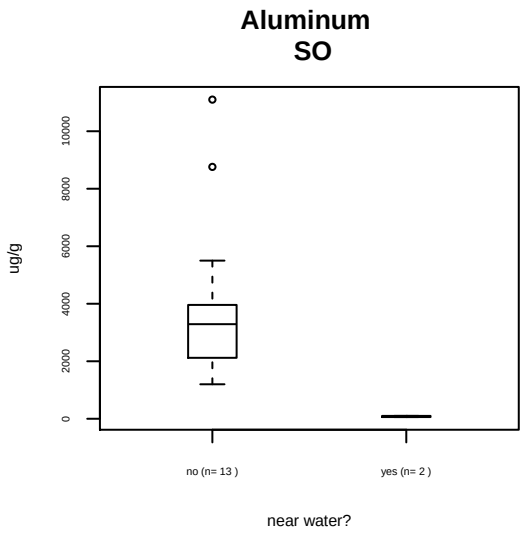

Acenaphthylene
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 167)
yes (n= 29)
near water?

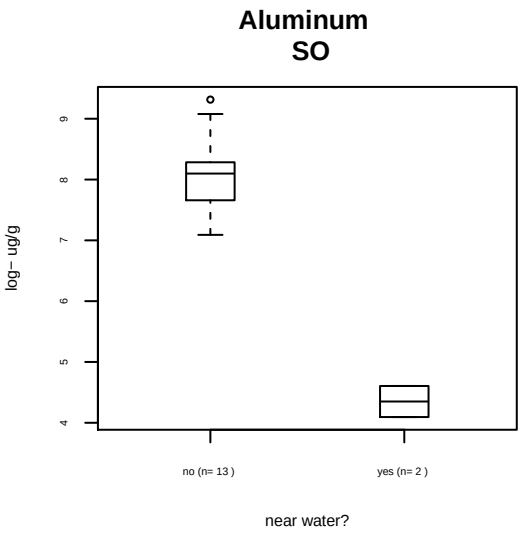

Acetone
SO
ug/g
0
500
1000
1500
2000
2500
no (n= 404)
yes (n= 41)
near water?

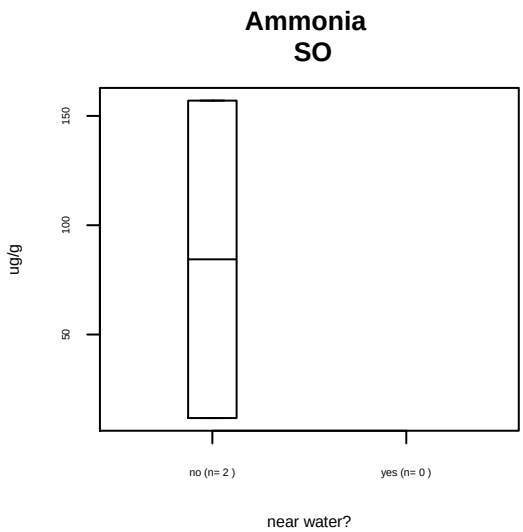

Acetone
SO
log− ug/g
−2
0
2
4
6
8
no (n= 404)
yes (n= 41)
near water?

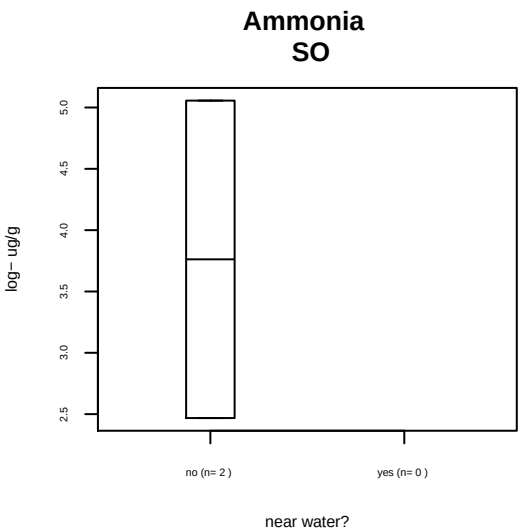

Acetone
WG
ug/l
0
2000
4000
6000
8000
10000
12000
no (n= 162)
yes (n= 28)
near water?

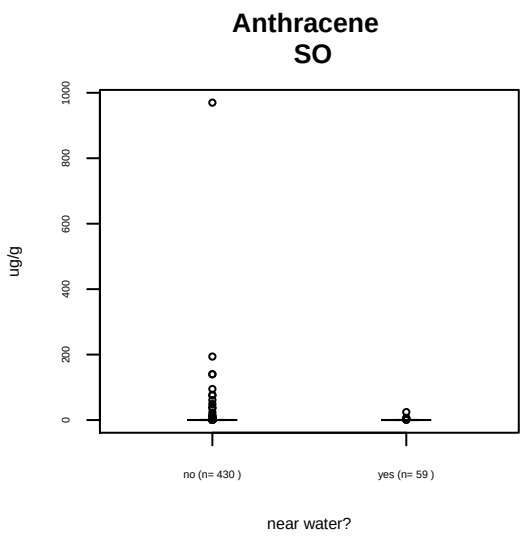

Acetone
WG
log− ug/l
−5
0
5
10
no (n= 162)
yes (n= 28)
near water?

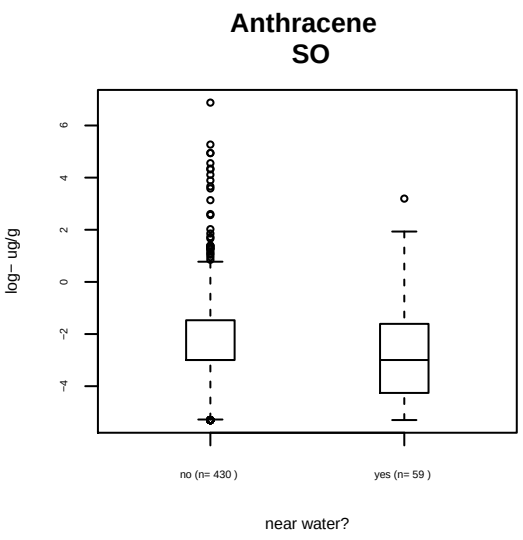

Aluminum
SO
ug/g
0
2000
4000
6000
8000
10000
no (n= 13)
yes (n= 2)
near water?

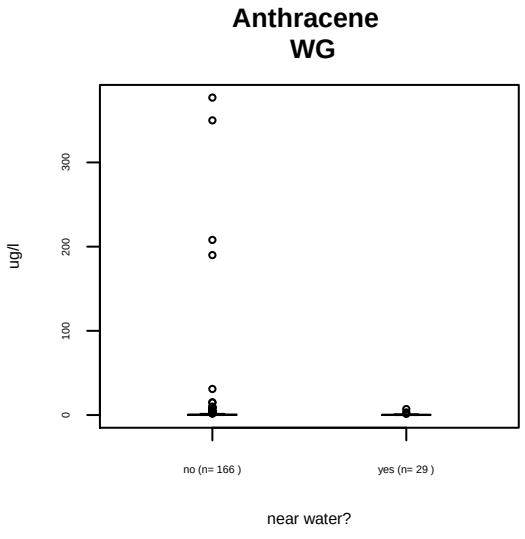

Aluminum
SO
log− ug/g
4
5
6
7
8
9
no (n= 13)
yes (n= 2)
near water?

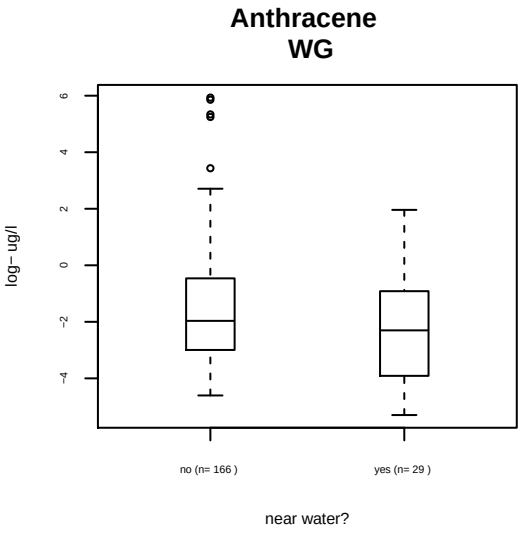

Ammonia
SO
ug/g
50
100
150
no (n= 2)
yes (n= 0)
near water?

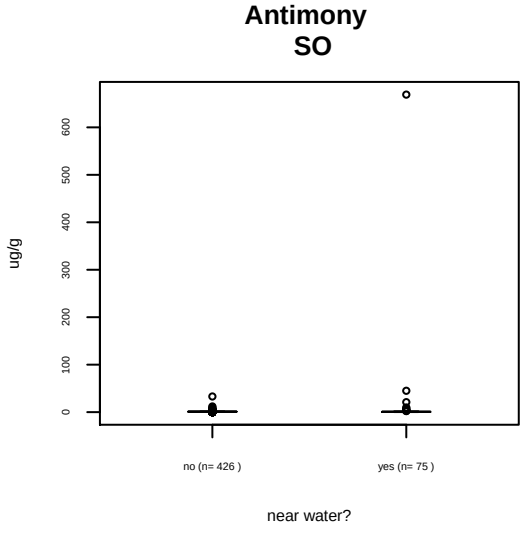

Ammonia
SO
log− ug/g
2.5
3.0
3.5
4.0
4.5
5.0
no (n= 2)
yes (n= 0)
near water?

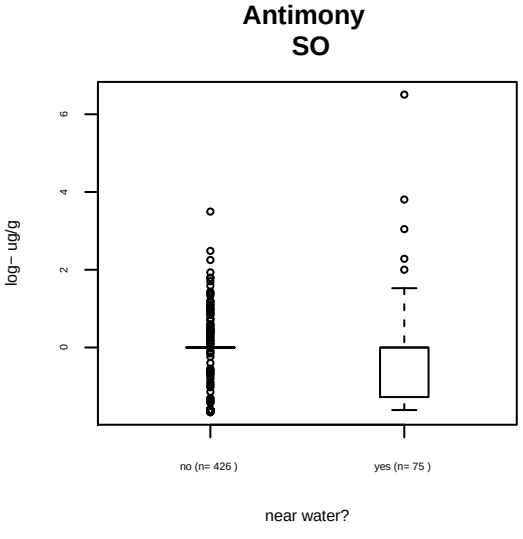

Anthracene
SO
ug/g
0
200
400
600
800
1000
no (n= 430)
yes (n= 59)
near water?

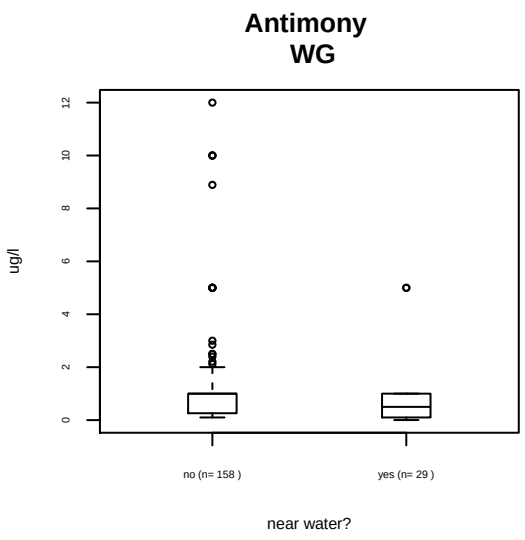

Anthracene
SO
log− ug/g
−4
−2
0
2
4
6
no (n= 430)
yes (n= 59)
near water?

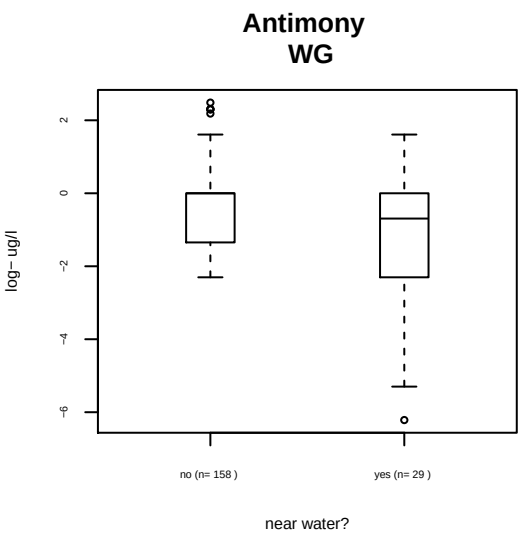

Anthracene
WG
ug/l
0
100
200
300
no (n= 166)
yes (n= 29)
near water?

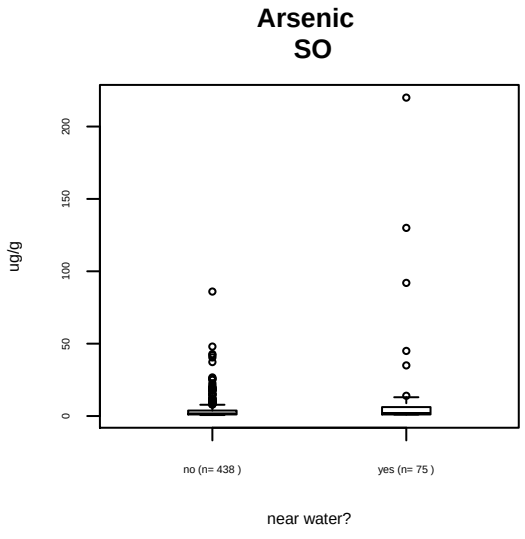

Anthracene
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 166)
yes (n= 29)
near water?

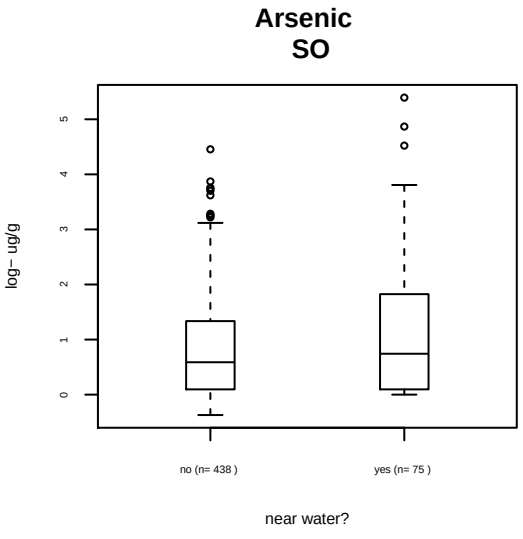

Antimony
SO
ug/g
0
100
200
300
400
500
600
no (n= 426)
yes (n= 75)
near water?

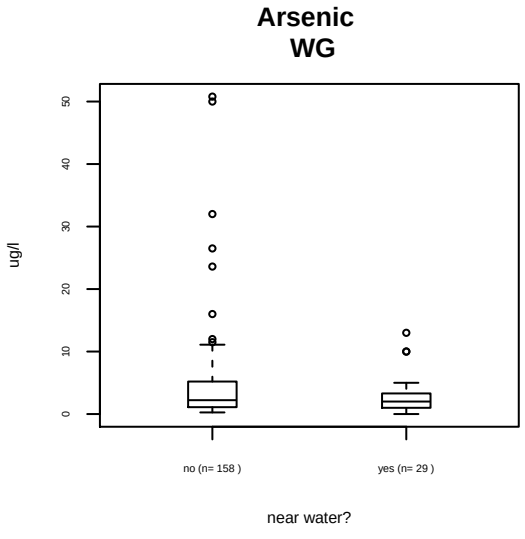

Antimony
SO
log− ug/g
0
2
4
6
no (n= 426)
yes (n= 75)
near water?

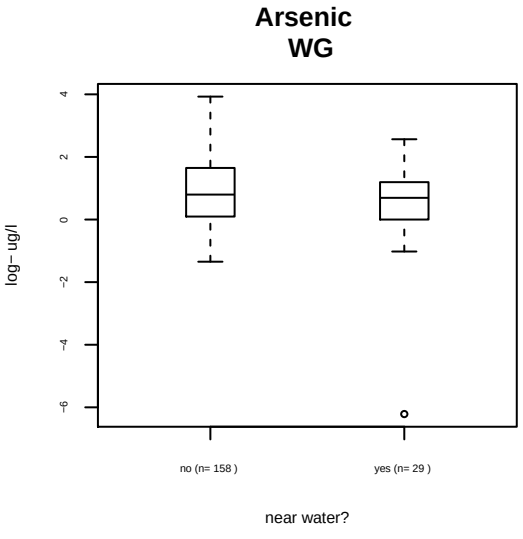

Antimony
WG
ug/l
0
2
4
6
8
10
12
no (n= 158)
yes (n= 29)
near water?

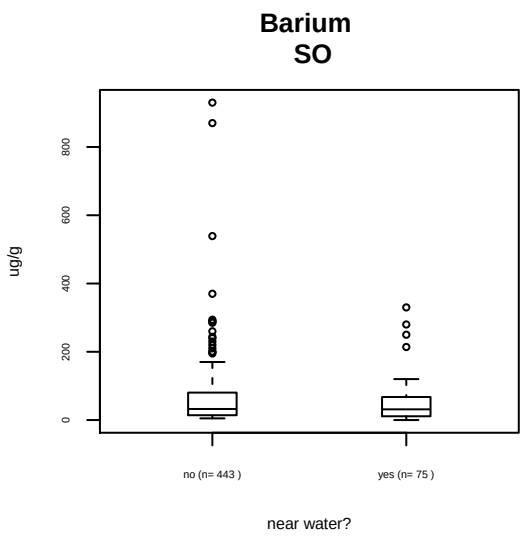

Antimony
WG
log− ug/l
−6
−4
−2
0
2
no (n= 158)
yes (n= 29)
near water?

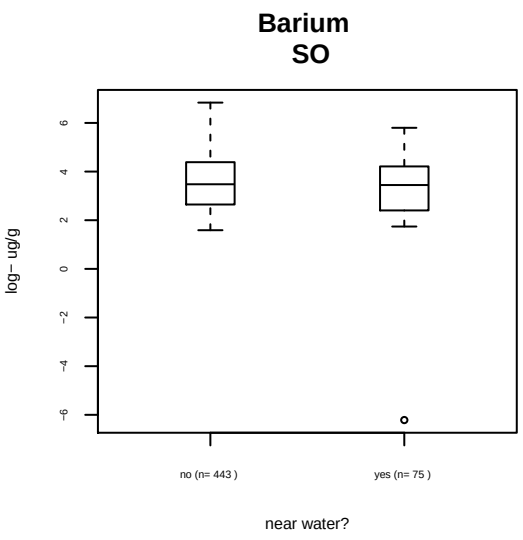

Arsenic
SO
ug/g
0
50
100
150
200
no (n= 438)
yes (n= 75)
near water?

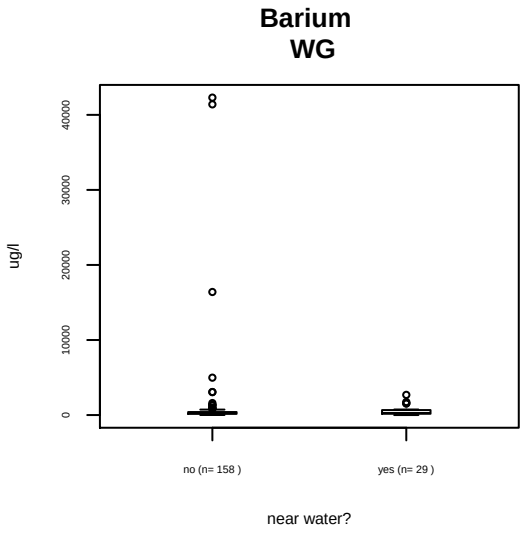

Arsenic
SO
log− ug/g
0
1
2
3
4
5
no (n= 438)
yes (n= 75)
near water?

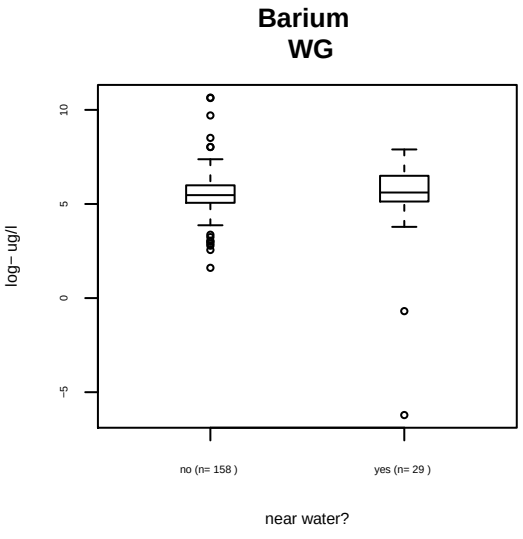

Arsenic
WG
ug/l
0
10
20
30
40
50
no (n= 158)
yes (n= 29)
near water?

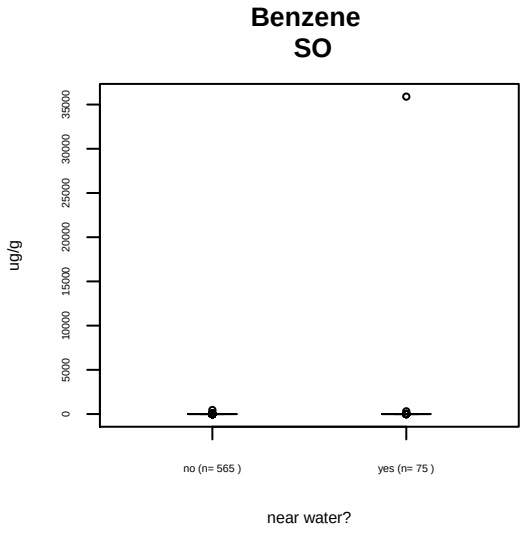

Arsenic
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 158)
yes (n= 29)
near water?

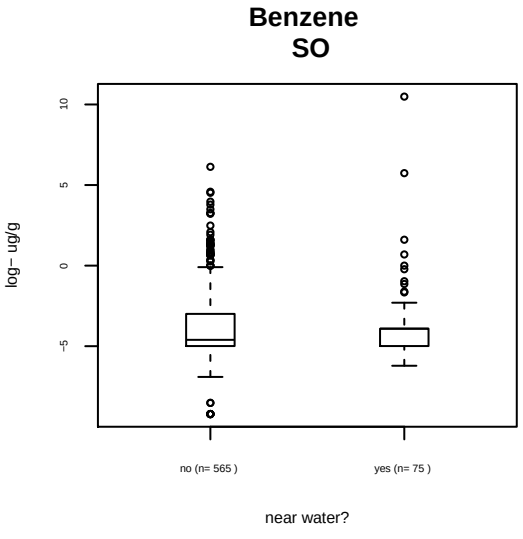

Barium
SO
ug/g
0
200
400
600
800
no (n= 443)
yes (n= 75)
near water?

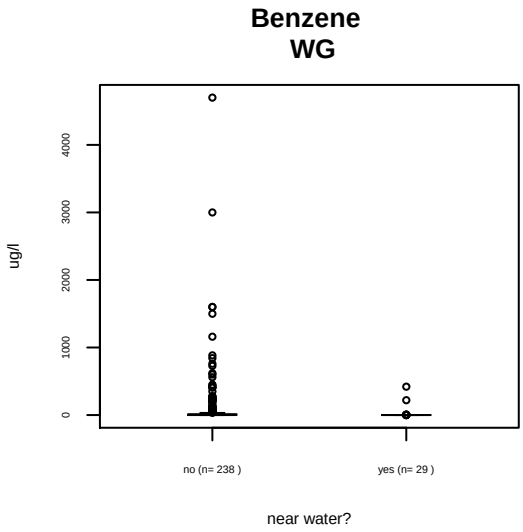

Barium
SO
log− ug/g
−6
−4
−2
0
2
4
6
no (n= 443)
yes (n= 75)
near water?

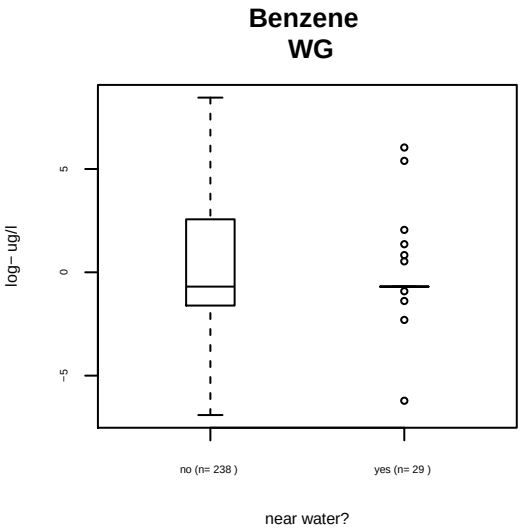

Barium
WG
ug/l
0
10000
20000
30000
40000
no (n= 158)
yes (n= 29)
near water?

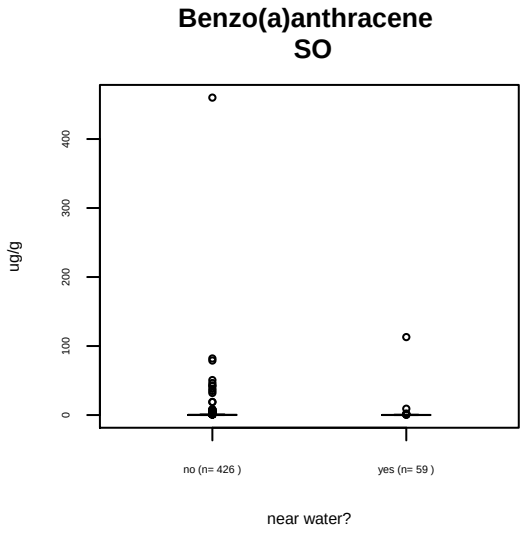

Barium
WG
log− ug/l
−5
0
5
10
no (n= 158)
yes (n= 29)
near water?

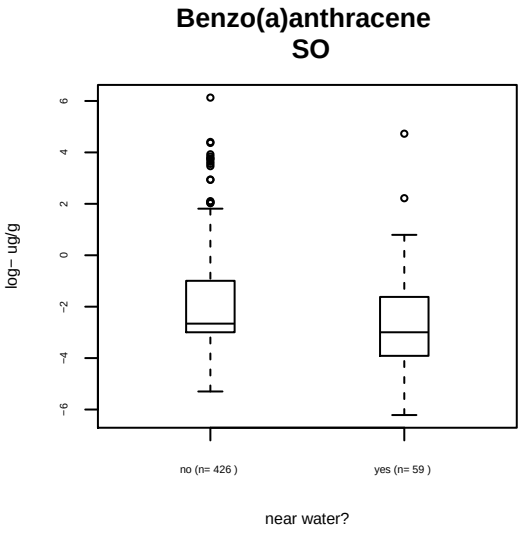

Benzene
SO
ug/gn
0
5000
10000
15000
20000
25000
30000
35000
no (n= 565)
yes (n= 75)
near water?

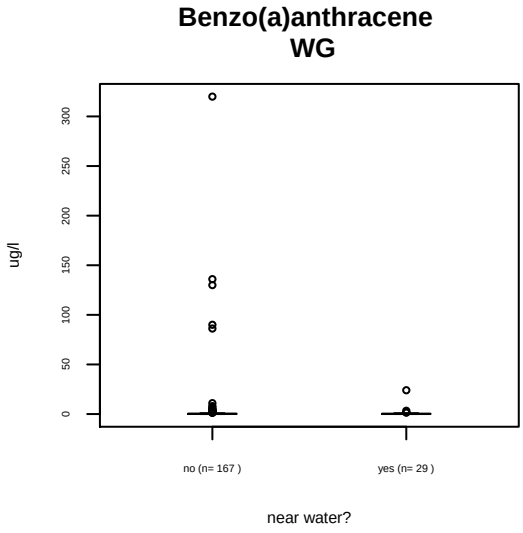

Benzene
SO
log− un g/g/g
−5
0
5
10
no (n= 565)
yes (n= 75)
near water?

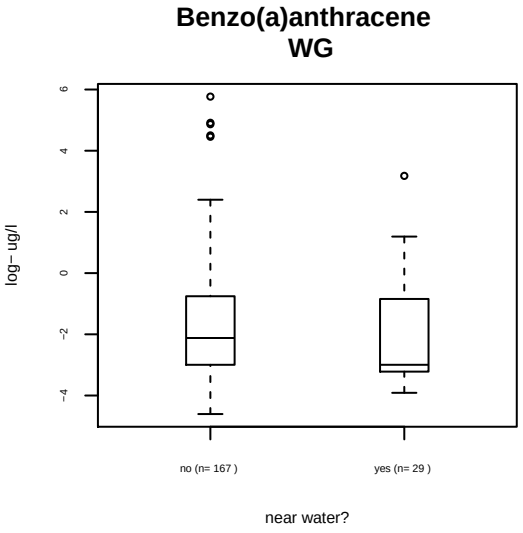

Benzene
WG
ug/l
0
1000
2000
3000
4000
no (n= 238)
yes (n= 29)
near water?

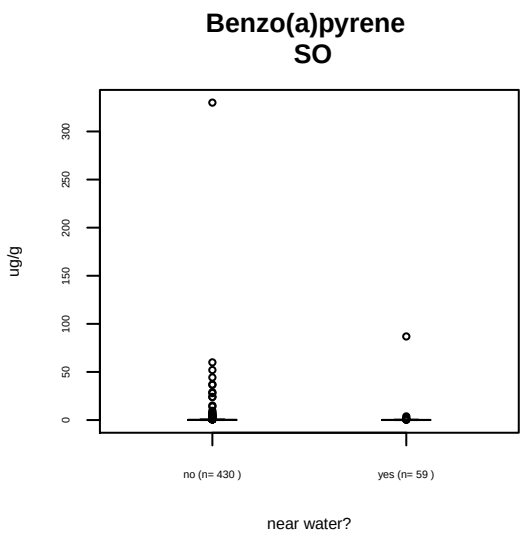

Benzene
WG
log− ug/l
−5
0
5
no (n= 238)
yes (n= 29)
near water?

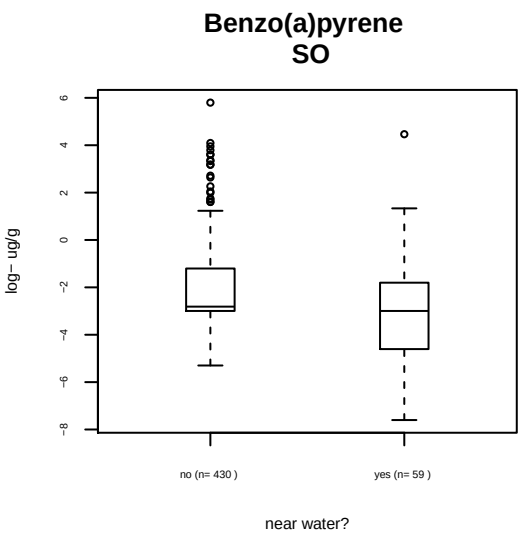

Benzo(a)anthracene
SO
ug/g
0
100
200
300
400
no (n= 426)
yes (n= 59)
near water?

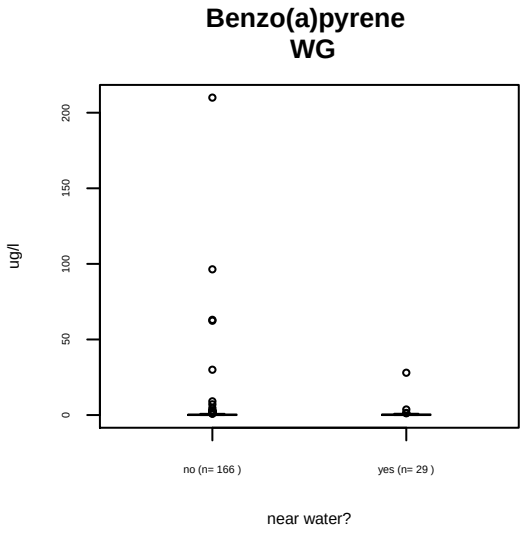

Benzo(a)anthracene
SO
log− ug/g
−6
−4
−2
0
2
4
6
no (n= 426)
yes (n= 59)
near water?


Benzo(a)anthracene
WG
ug/l
0
50
100
150
200
250
300
no (n= 167)
yes (n= 29)
near water?

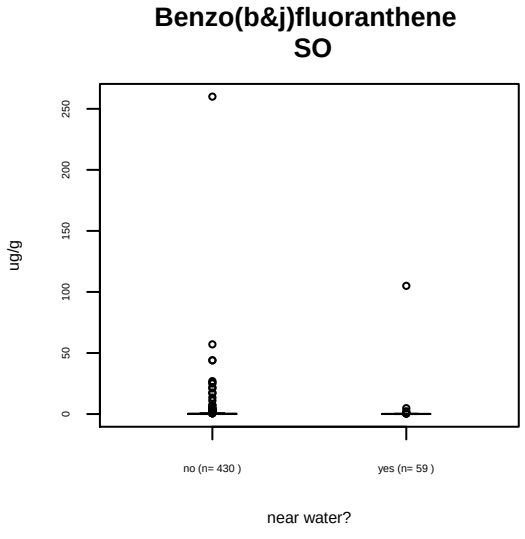

Benzo(a)anthracene
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 167)
yes (n= 29)
near water?

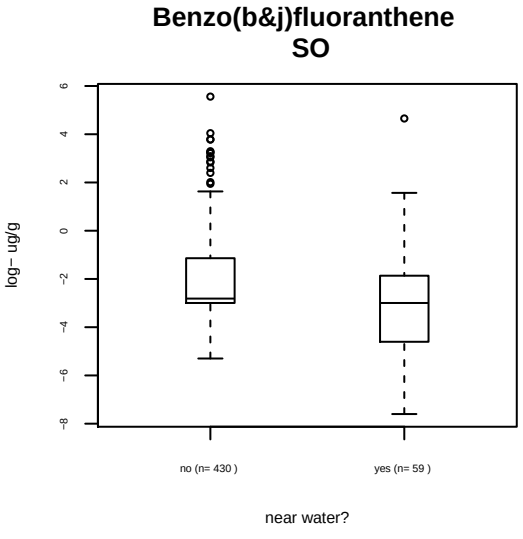

Benzo(a)pyrene
SO
ug/g
0
50
100
150
200
250
300
no (n= 430)
yes (n= 59)
near water?

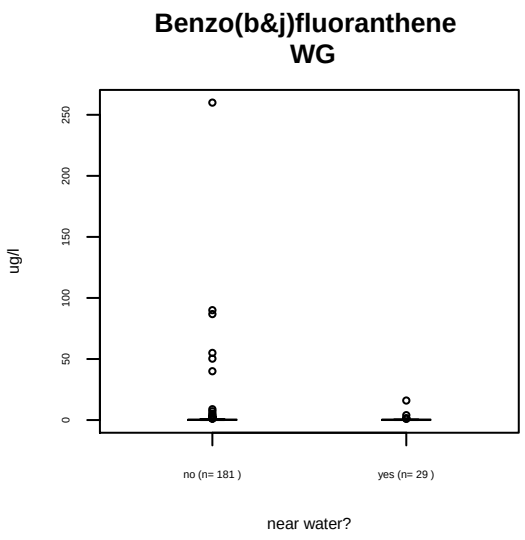

Benzo(a)pyrene
SO
log− ug/g
−8
−6
−4
−2
0
2
4
6
no (n= 430)
yes (n= 59)
near water?

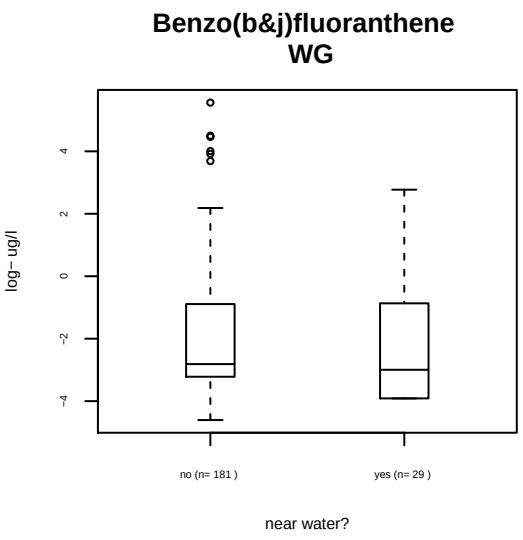

Benzo(a)pyrene
WG
ug/l
0
50
100
150
200
no (n= 166)
yes (n= 29)
near water?


Benzo(a)pyrene
WG
log− ug/l
−4
−2
0
2
4
no (n= 166)
yes (n= 29)
near water?


Benzo(b&j)fluoranthene
SO
ug/g
0
50
100
150
200
250
no (n= 430)
yes (n= 59)
near water?

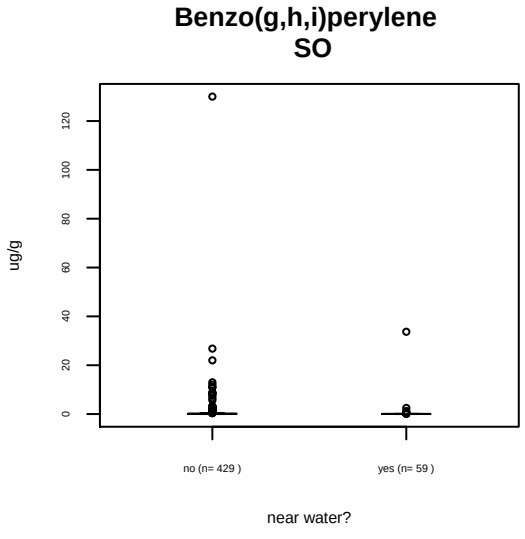

Benzo(b&j)fluoranthene
SO
log− ug/g/g
−8
−6
−4
−2
0
2
4
6
no (n= 430)
yes (n= 59)
near water?

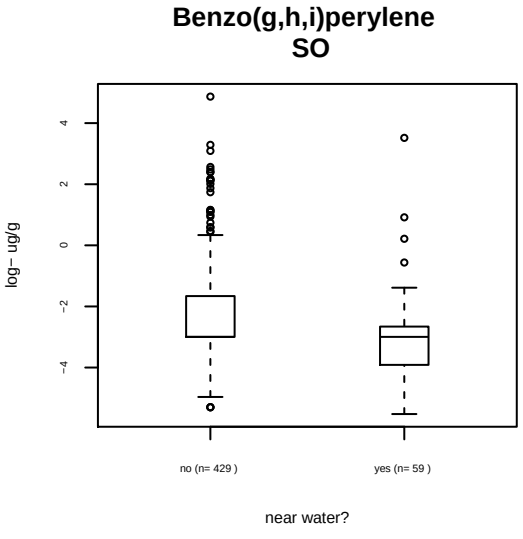

Benzo(b&j)fluoranthene
WG
ug/l
0
50
100
150
200
250
no (n= 181)
yes (n= 29)
near water?

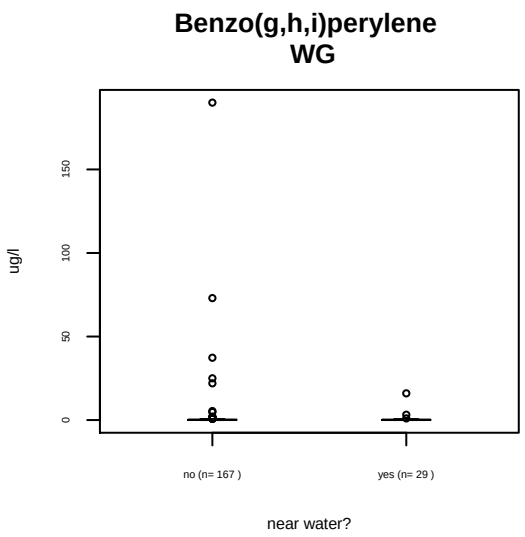

Benzo(b&j)fluoranthene
WG
log− ug/l
−4
−2
0
2
4
no (n= 181)
yes (n= 29)
near water?

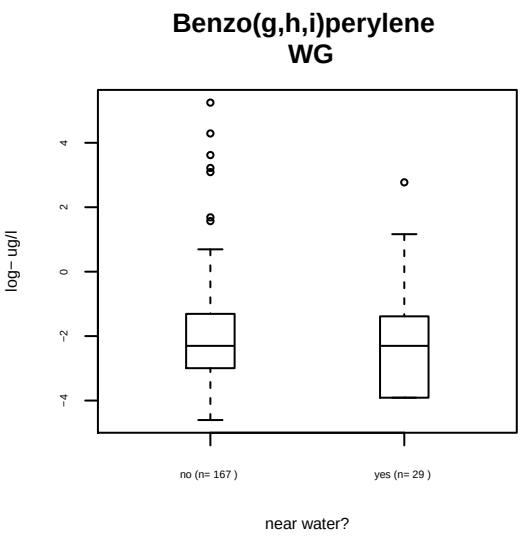

Benzo(e)pyrene
WG
ug/l
0.03
0.04
0.05
0.06
0.07
no (n= 5)
yes (n= 0)
near water?

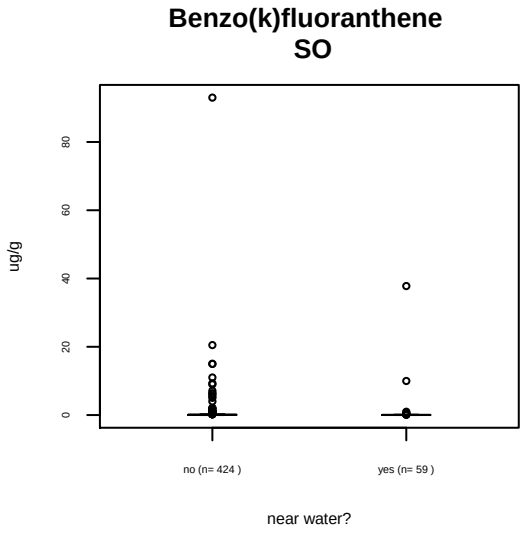

Benzo(e)pyrene
WG
log− ug/l
−4.0
−3.5
−3.0
−2.5
−2.0
no (n= 5)
yes (n= 0)
near water?

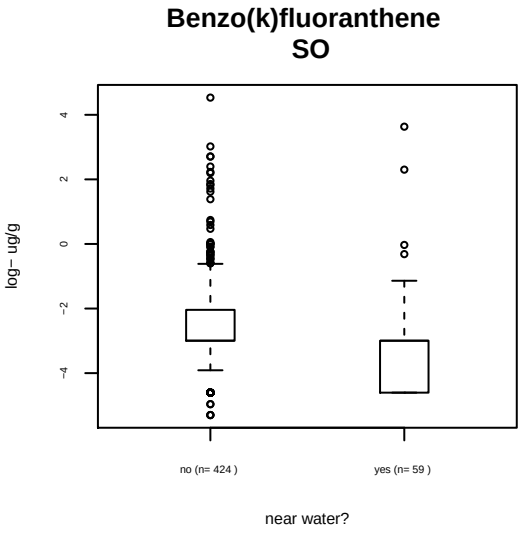

Benzo(g,h,i)perylene
SO
ug/g
0
20
40
60
80
100
120
no (n= 429)
yes (n= 59)
near water?

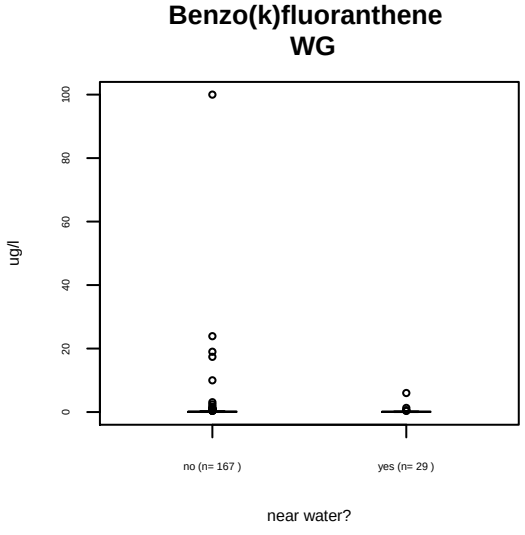

Benzo(g,h,i)perylene
SO
log− ug/g
−4
−2
0
2
4
no (n= 429)
yes (n= 59)
near water?

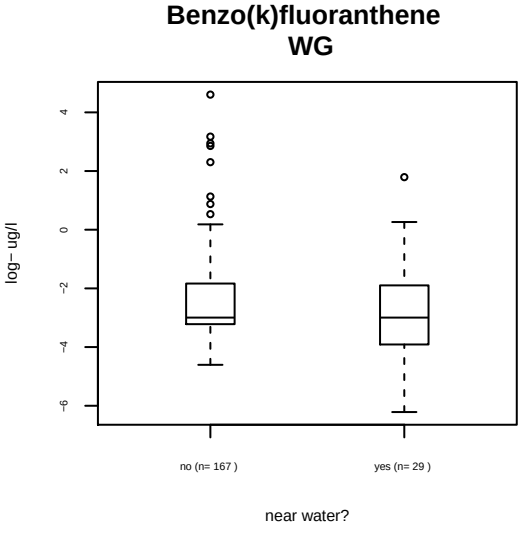

Benzo(g,h,i)perylene
WG
ug/l
0
50
100
150
no (n= 167)
yes (n= 29)
near water?

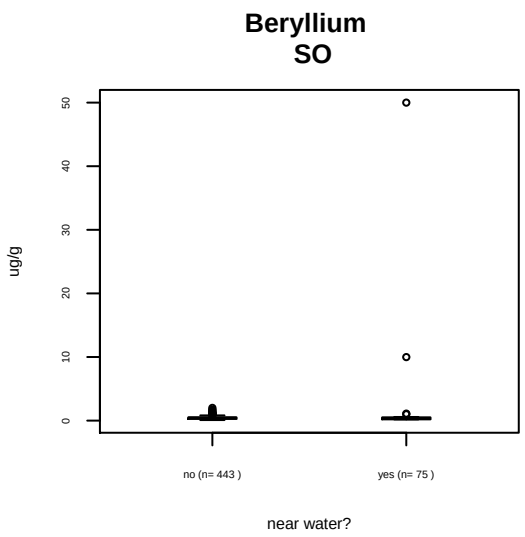

Benzo(g,h,i)perylene
WG
log− ug/l
−4
−2
0
2
4
no (n= 167)
yes (n= 29)
near water?

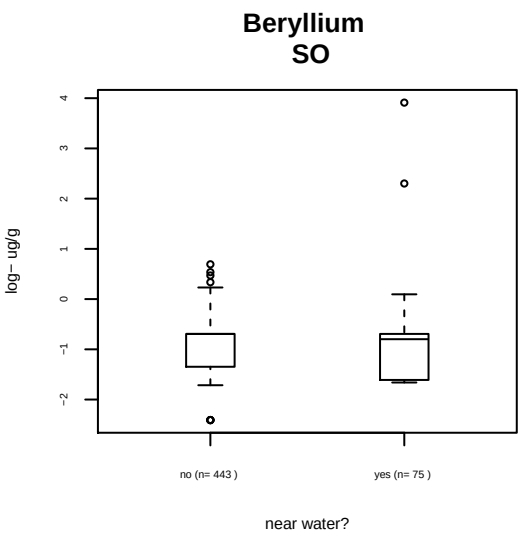

Benzo(k)fluoranthene
SO
ug/g
0
20
40
60
80
no (n= 424)
yes (n= 59)
near water?

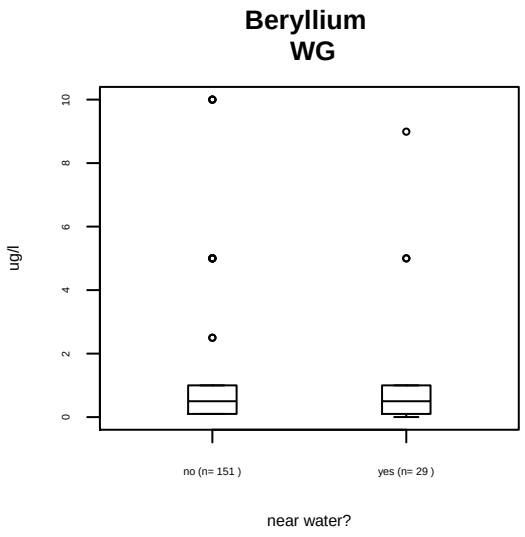

Benzo(k)fluoranthene
SO
log− ug/g
−4
−2
0
2
4
no (n= 424)
yes (n= 59)
near water?

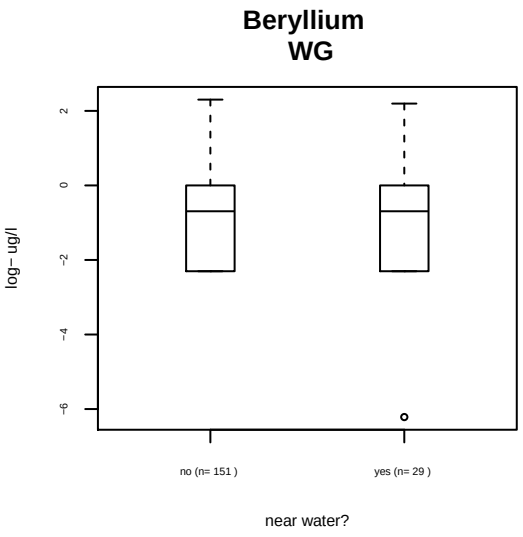

Benzo(k)fluoranthene
WG
ug/l
0
20
40
60
80
100
no (n= 167)
yes (n= 29)
near water?

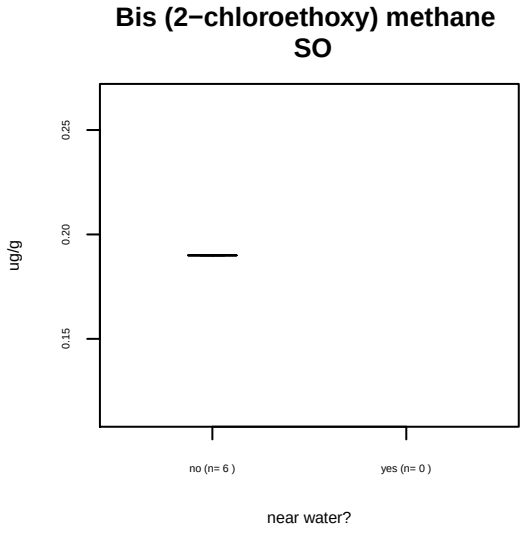

Benzo(k)fluoranthene
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 167)
yes (n= 29)
near water?

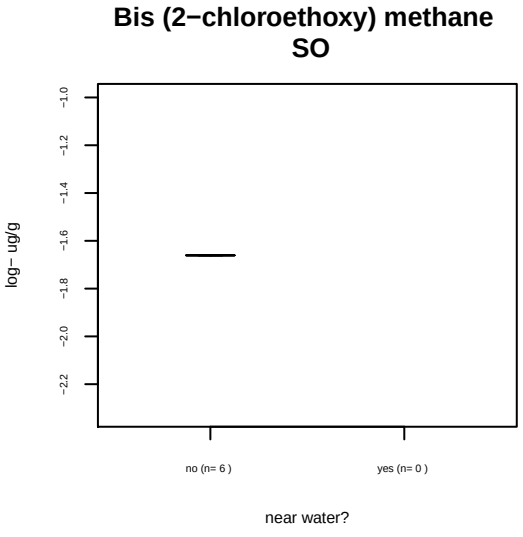

Beryllium
SO
ug/g
0
10
20
30
40
50
no (n= 443)
yes (n= 75)
near water?

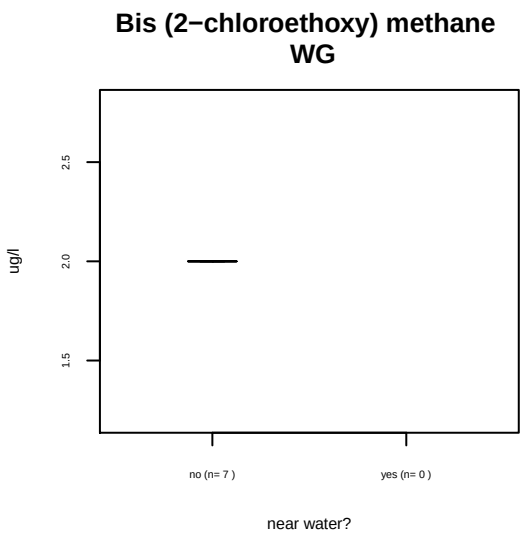

Beryllium
SO
log− ug/g
−2
−1
0
1
2
3
4
no (n= 443)
yes (n= 75)
near water?

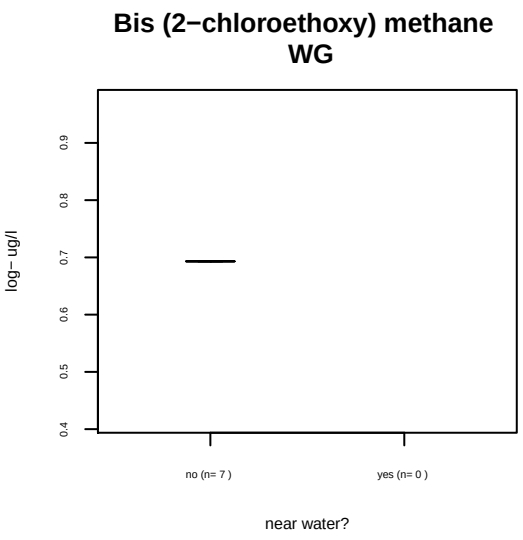

Beryllium
WG
ug/l
0
2
4
6
8
10
no (n= 151)
yes (n= 29)
near water?

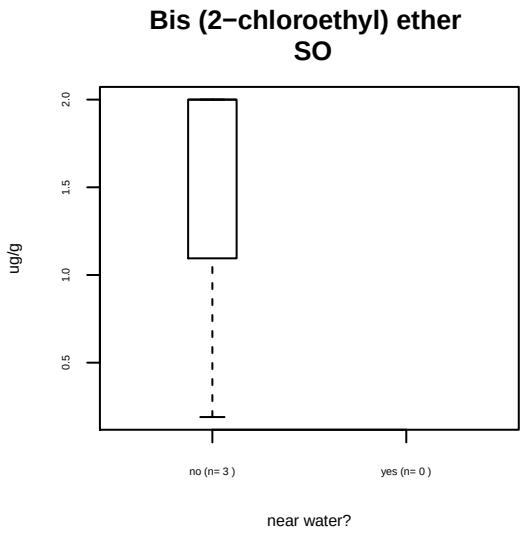

Beryllium
WG
log− ug/l
−6
−4
−2
0
2
no (n= 151)
yes (n= 29)
near water?

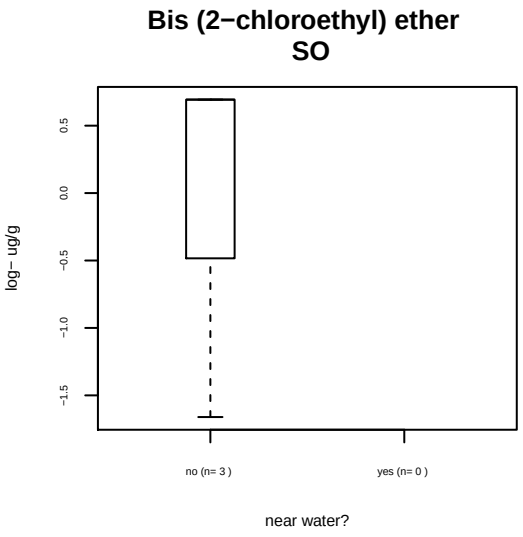

Bis (2−chloroethoxy) methane
SO
ug/g
0.15
0.20
0.25
no (n= 6)
yes (n= 0)
near water?

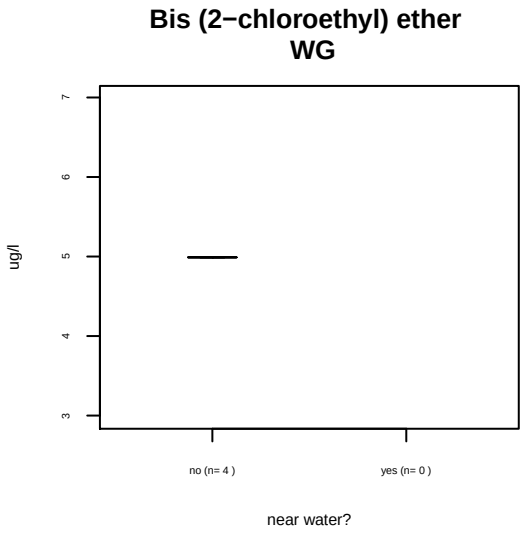

Bis (2−chloroethoxy) methane
SO
log− ug/g
−2.2
−2.0
−1.8
−1.6
−1.4
−1.2
−1.0
no (n= 6)
yes (n= 0)
near water?

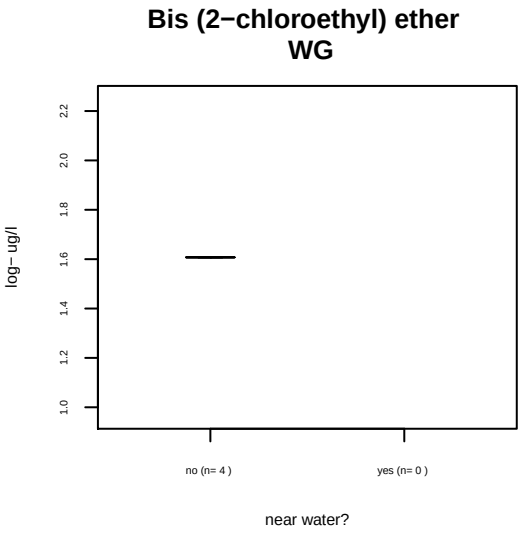

Bis (2−chloroethoxy) methane
WG
ug/l
2.5
2.0
1.5
no (n= 7)
yes (n= 0)
near water?

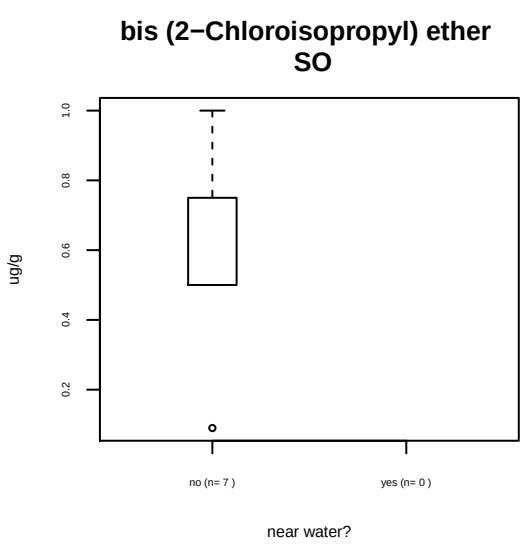

Bis (2−chloroethoxy) methane
WG
log− ug/l
0.9
0.8
0.7
0.6
0.5
0.4
no (n= 7)
yes (n= 0)
near water?

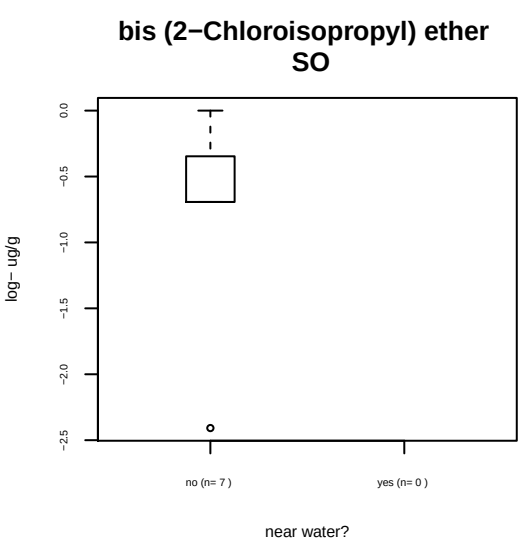

Bis (2−chloroethyl) ether
SO
ug/g
2.0
1.5
1.0
0.5
no (n= 3)
yes (n= 0)
near water?

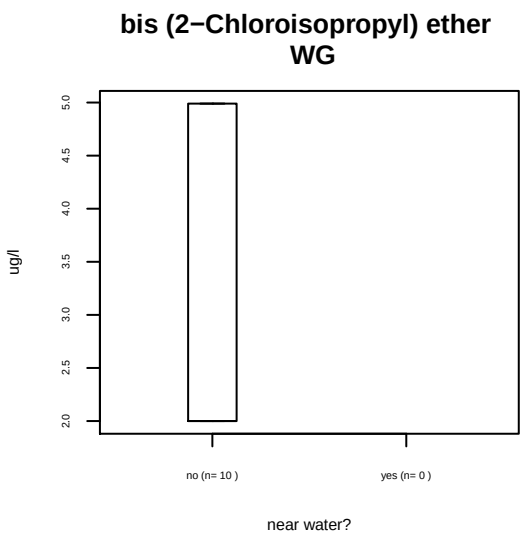

Bis (2−chloroethyl) ether
SO
log− ug/g
0.5
0.0
−0.5
−1.0
−1.5
no (n= 3)
yes (n= 0)
near water?

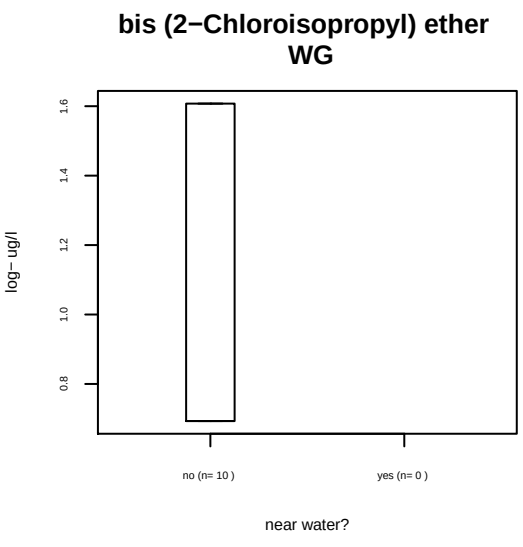

Bis (2−chloroethyl) ether
WG
ug/l
7
6
5
4
3
no (n= 4)
yes (n= 0)
near water?

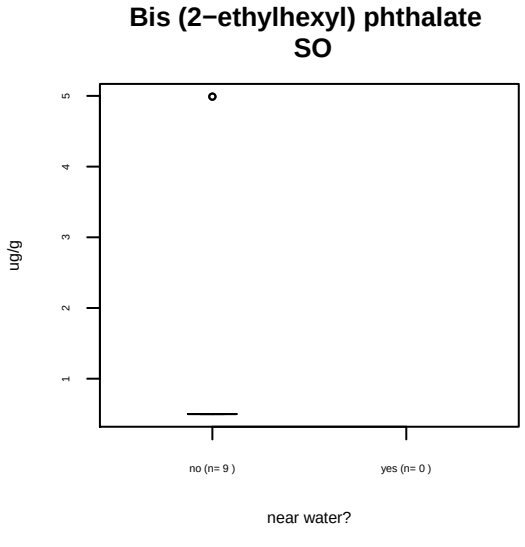

Bis (2−chloroethyl) ether
WG
log− ug/l
2.2
2.0
1.8
1.6
1.4
1.2
1.0
no (n= 4)
yes (n= 0)
near water?

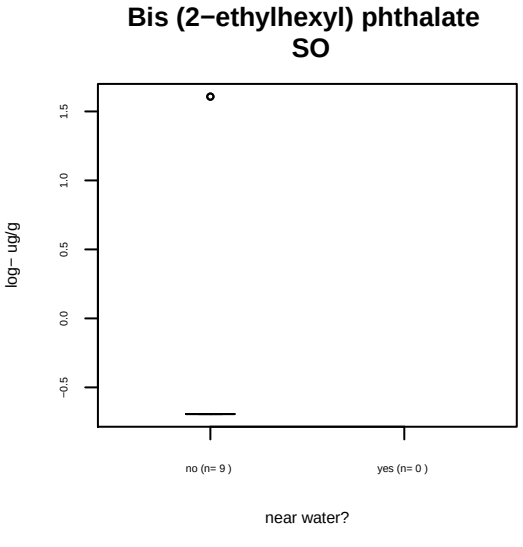

bis (2−Chloroisopropyl) ether
SO
ug/g
0.2
0.4
0.6
0.8
1.0
no (n= 7)
yes (n= 0)
near water?

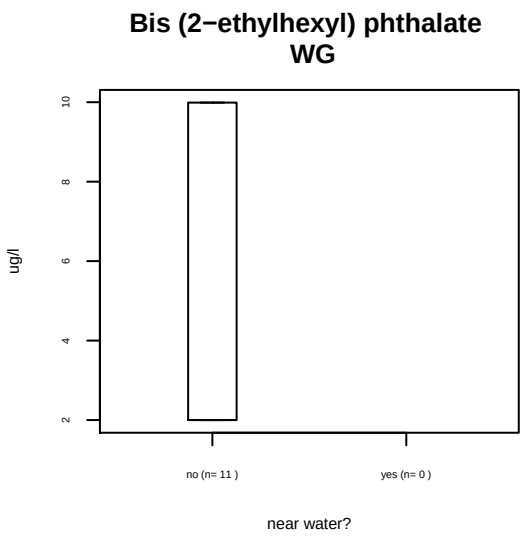

bis (2−Chloroisopropyl) ether
SO
log− ug/g
−2.5
−2.0
−1.5
−1.0
−0.5
0.0
no (n= 7)
yes (n= 0)
near water?

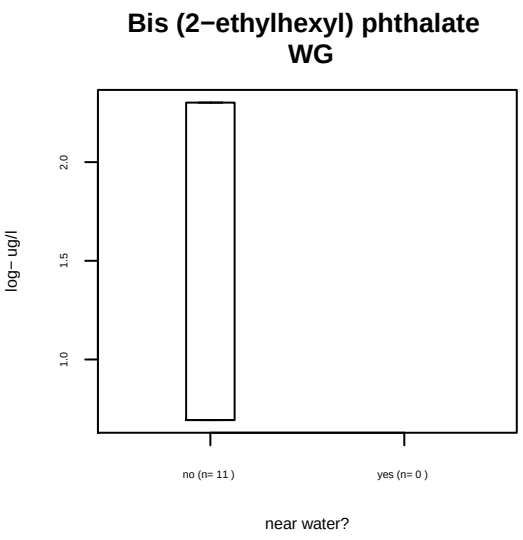

bis (2−Chloroisopropyl) ether
WG
ug/l
2.0
2.5
3.0
3.5
4.0
4.5
5.0
no (n= 10)
yes (n= 0)
near water?

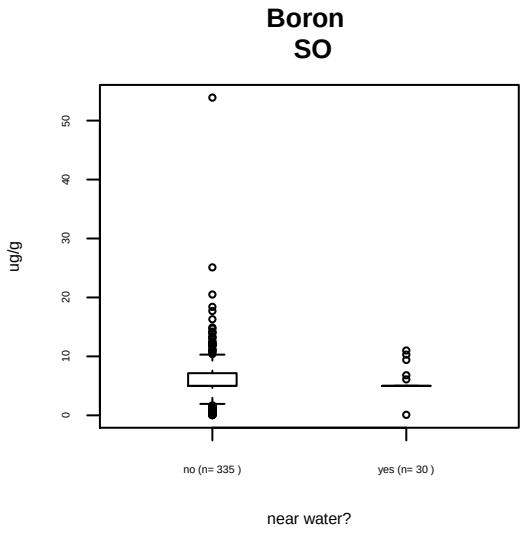

bis (2−Chloroisopropyl) ether
WG
log− ug/l
0.8
1.0
1.2
1.4
1.6
no (n= 10)
yes (n= 0)
near water?

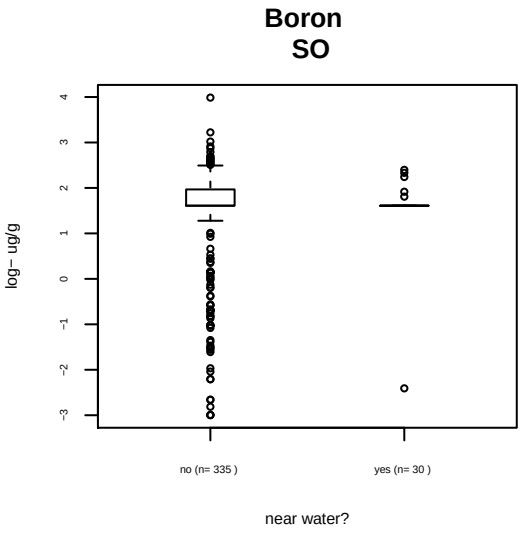

Bis (2−ethylhexyl) phthalate
SO
ug/gn
1
2
3
4
5
no (n= 9)
yes (n= 0)
near water?

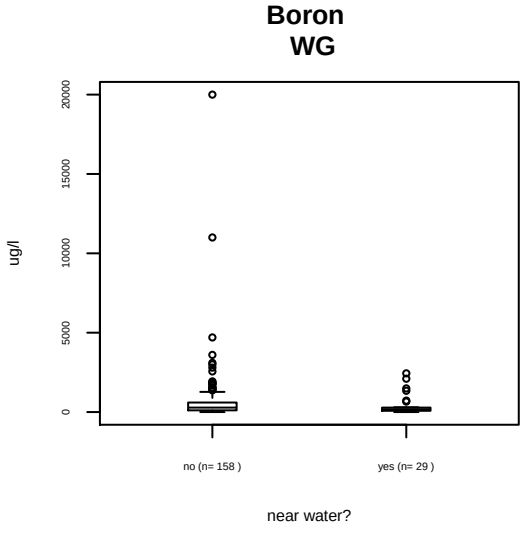

Bis (2−ethylhexyl) phthalate
SO
log− ug/g/n
−0.5
0.0
0.5
1.0
1.5
no (n= 9)
yes (n= 0)
near water?

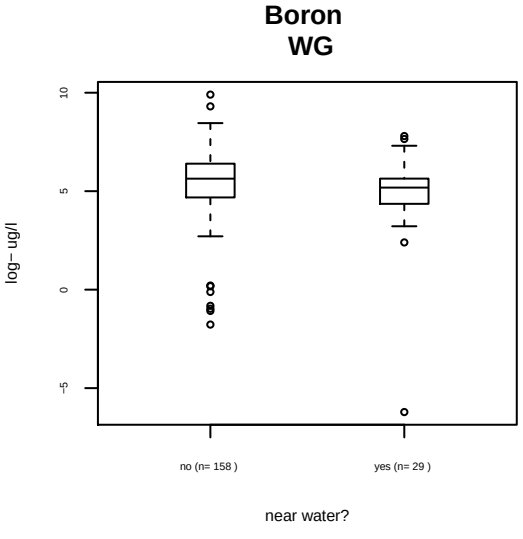

Bis (2−ethylhexyl) phthalate
WG
ug/l
2
4
6
8
10
no (n= 11)
yes (n= 0)
near water?

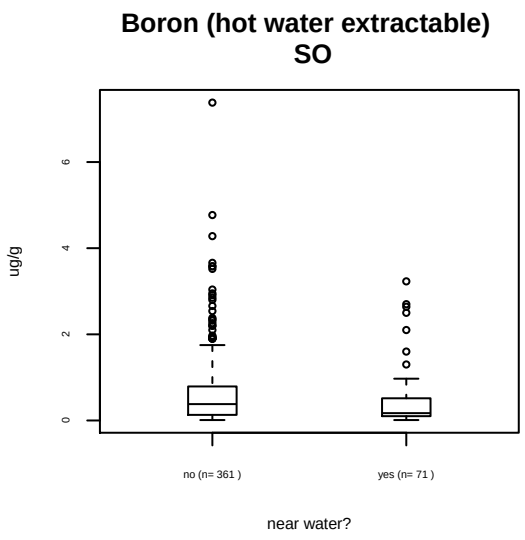

Bis (2−ethylhexyl) phthalate
WG
log− ug/l
1.0
1.5
2.0
no (n= 11)
yes (n= 0)
near water?

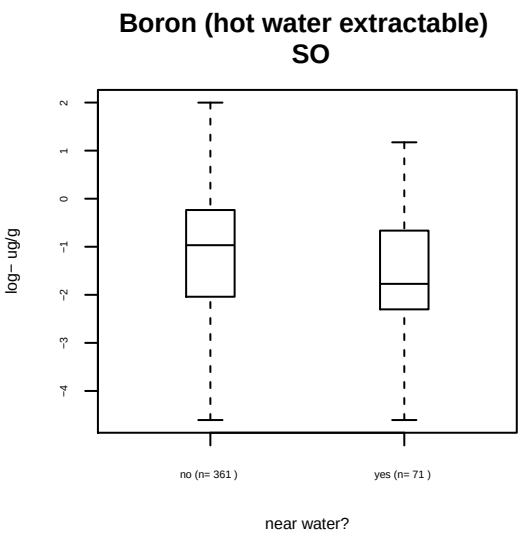

Boron
SO
ug/g
0
10
20
30
40
50
no (n= 335)
yes (n= 30)
near water?

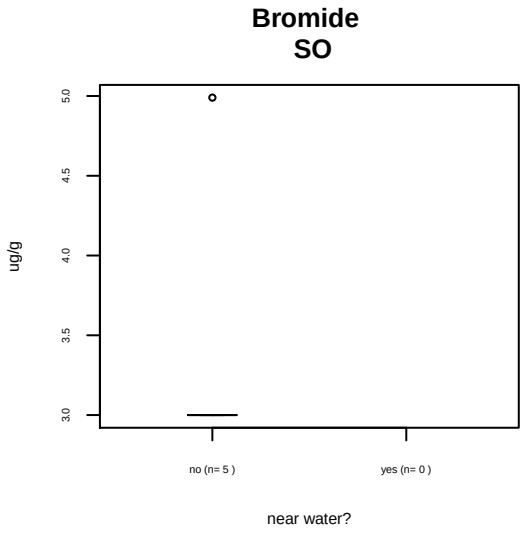

Boron
SO
log− ug/g
−3
−2
−1
0
1
2
3
4
no (n= 335)
yes (n= 30)
near water?

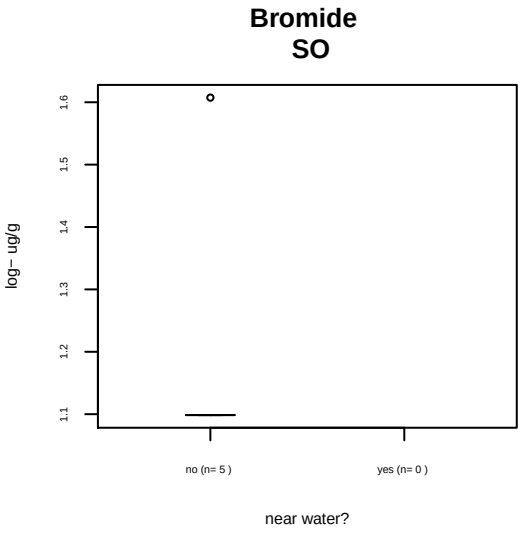

Boron
WG
ug/l
0
5000
10000
15000
20000
no (n= 158)
yes (n= 29)
near water?

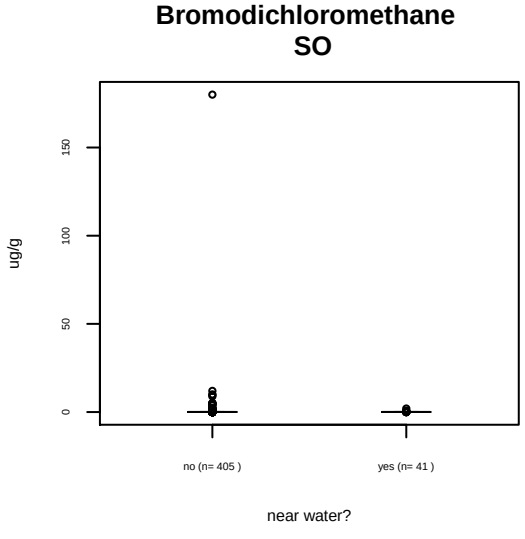

Boron
WG
log− ug/l
−5
0
5
10
no (n= 158)
yes (n= 29)
near water?

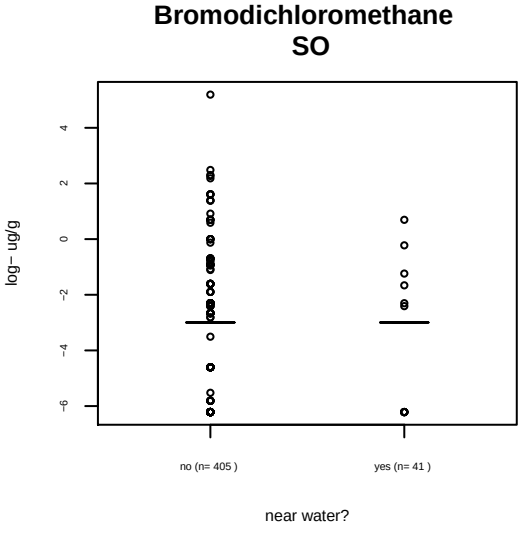

Boron (hot water extractable)
SO
ug/g
0
2
4
6
no (n= 361)
yes (n= 71)
near water?

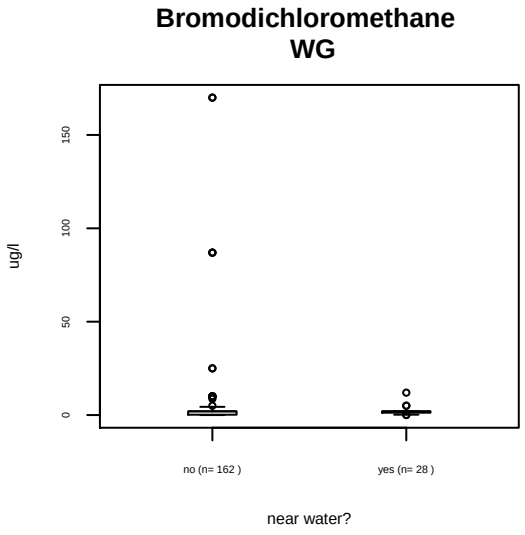

Boron (hot water extractable)
SO
log− ug/g
−4
−3
−2
−1
0
1
2
no (n= 361)
yes (n= 71)
near water?

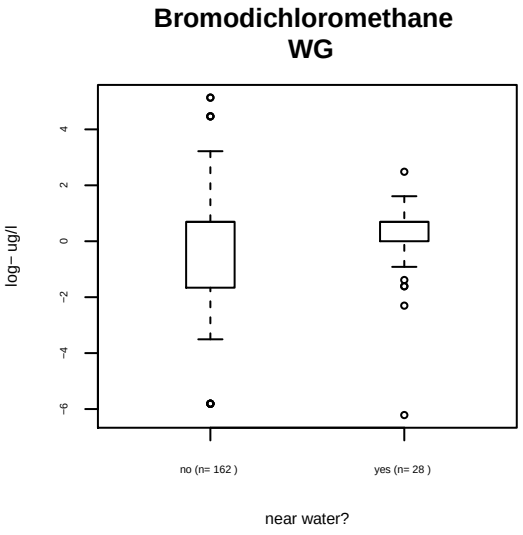

Bromide
SO
ug/g
3.0
3.5
4.0
4.5
5.0
no (n= 5)
yes (n= 0)
near water?

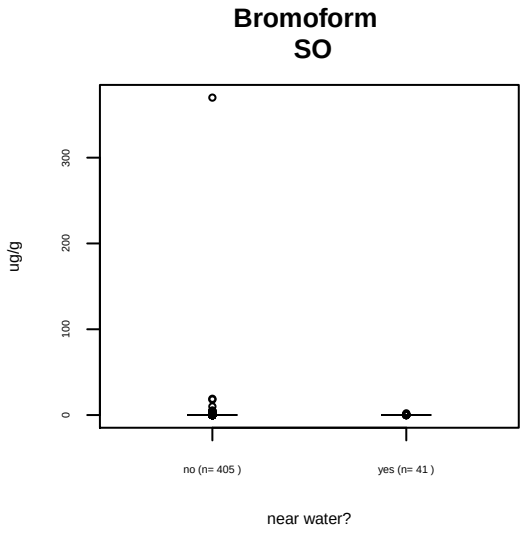

Bromide
SO
log− ug/g
1.1
1.2
1.3
1.4
1.5
1.6
no (n= 5)
yes (n= 0)
near water?

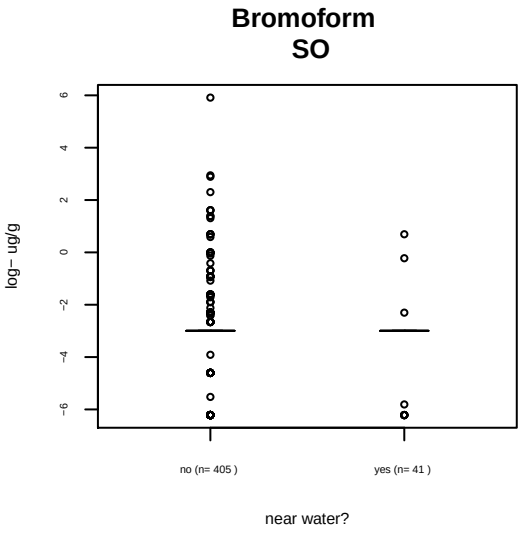

Bromodichloromethane
SO
ug/g
0
50
100
150
no (n= 405)
yes (n= 41)
near water?

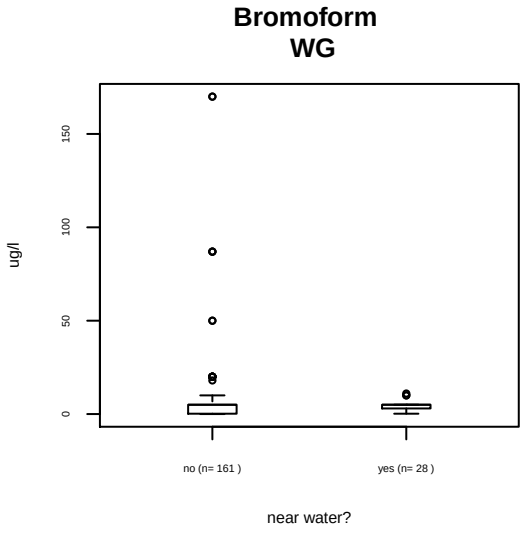

Bromodichloromethane
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 41)
near water?

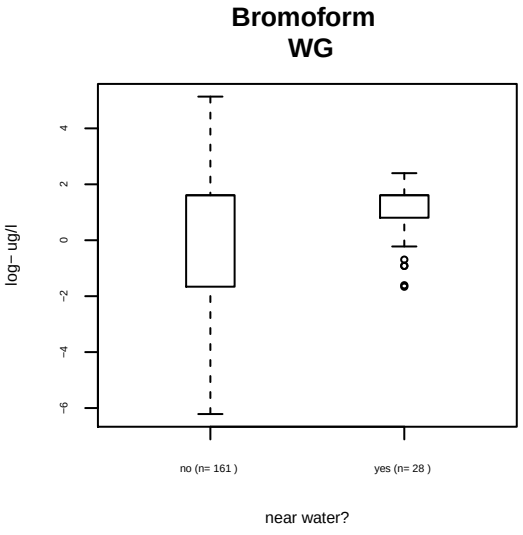

Bromodichloromethane
WG
ug/l
0
50
100
150
no (n= 162)
yes (n= 28)
near water?

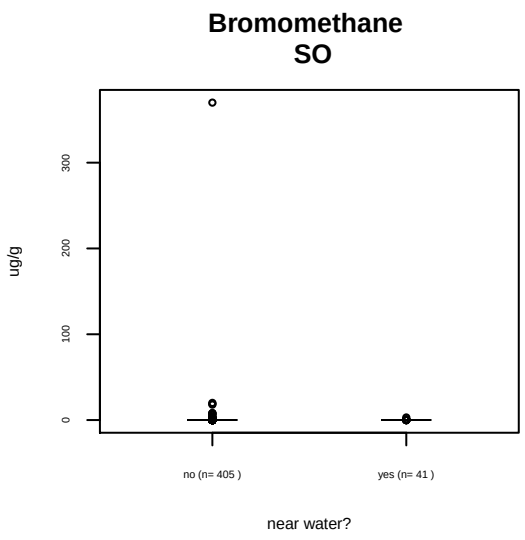

Bromodichloromethane
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 162)
yes (n= 28)
near water?

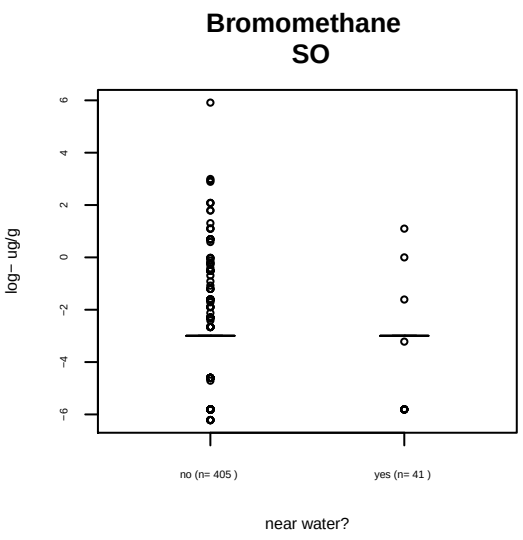

Bromoform
SO
ug/g
0
100
200
300
no (n= 405)
yes (n= 41)
near water?

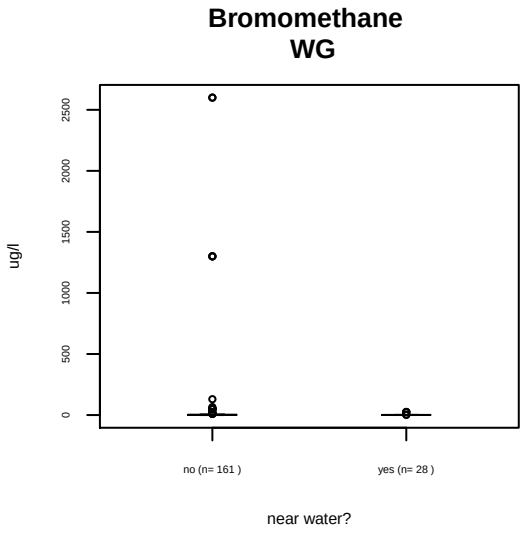

Bromoform
SO
log− ug/g
−6
−4
−2
0
2
4
6
no (n= 405)
yes (n= 41)
near water?

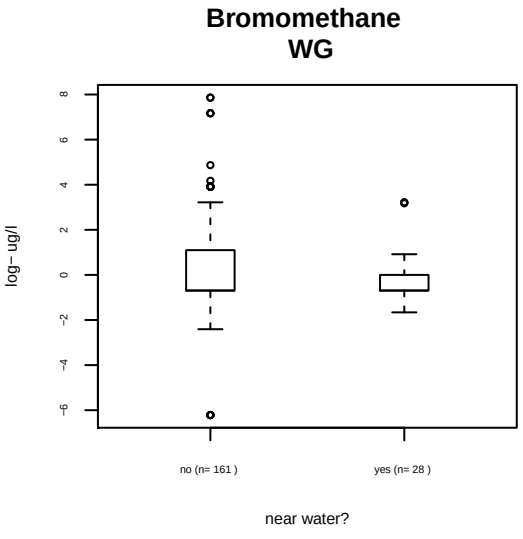

Bromoform
WG
ug/l
0
50
100
150
no (n= 161)
yes (n= 28)
near water?

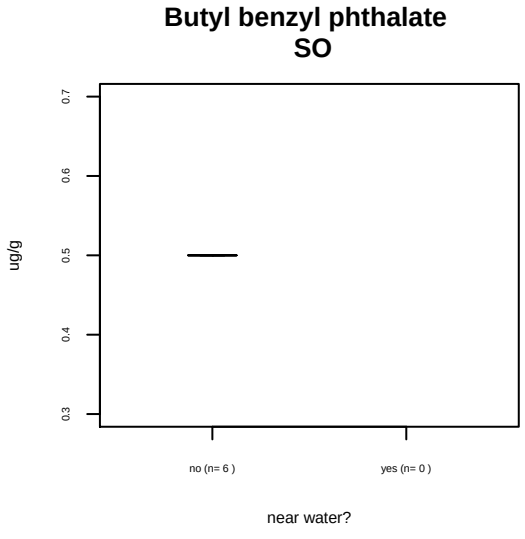

Bromoform
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 161)
yes (n= 28)
near water?

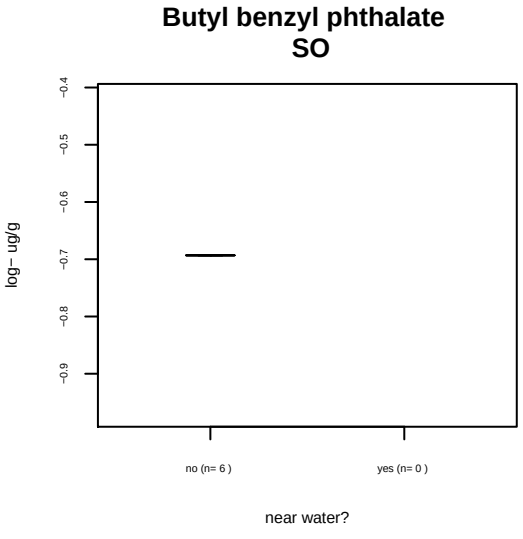

Bromomethane
SO
ug/g
0
100
200
300
no (n= 405)
yes (n= 41)
near water?

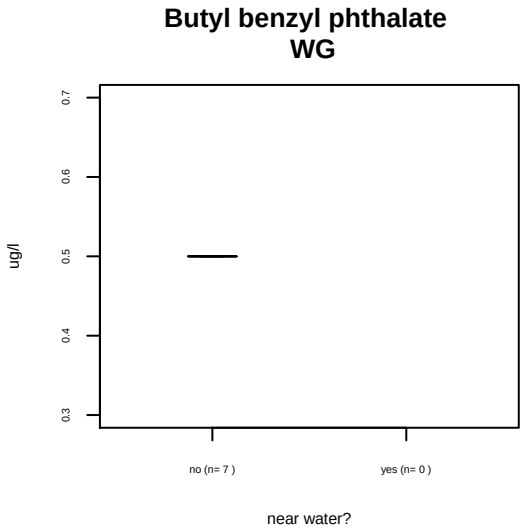

Bromomethane
SO
log− ug/g
−6
−4
−2
0
2
4
6
no (n= 405)
yes (n= 41)
near water?

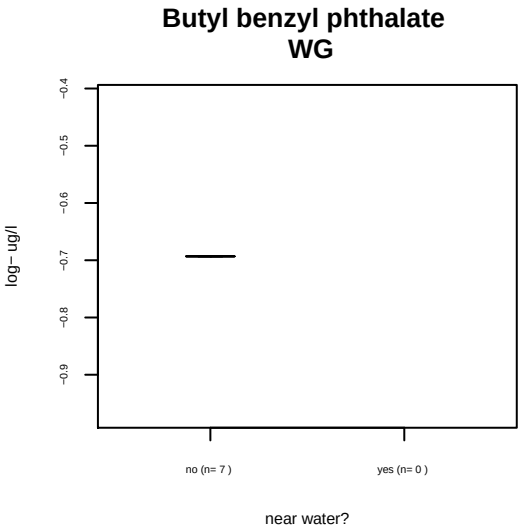

Bromomethane
WG
ug/l
0
500
1000
1500
2000
2500
no (n= 161)
yes (n= 28)
near water?

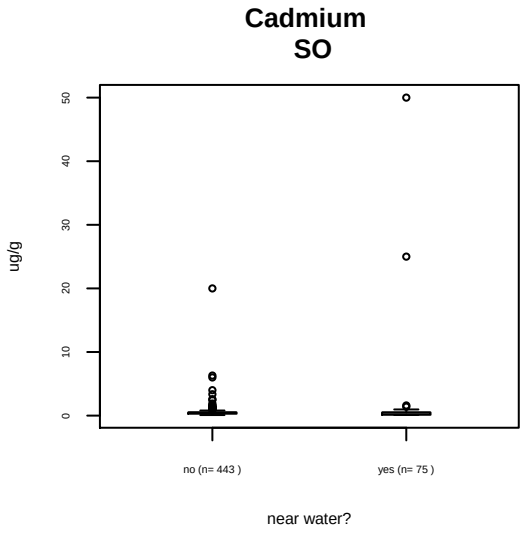

Bromomethane
WG
log− ug/l
−6
−4
−2
0
2
4
6
8
no (n= 161)
yes (n= 28)
near water?

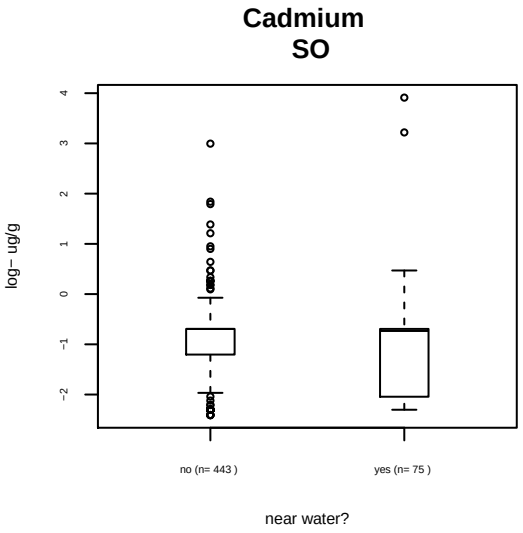

Butyl benzyl phthalate
SO
ug/g
0.3
0.4
0.5
0.6
0.7
no (n= 6)
yes (n= 0)
near water?

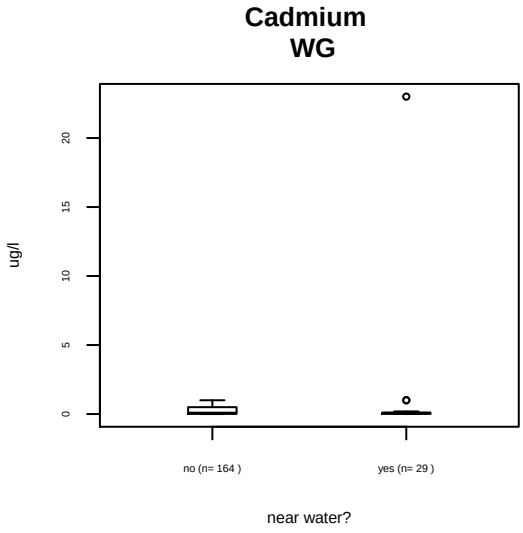

Butyl benzyl phthalate
SO
log− ug/g
−0.9
−0.8
−0.7
−0.6
−0.5
−0.4
no (n= 6)
yes (n= 0)
near water?

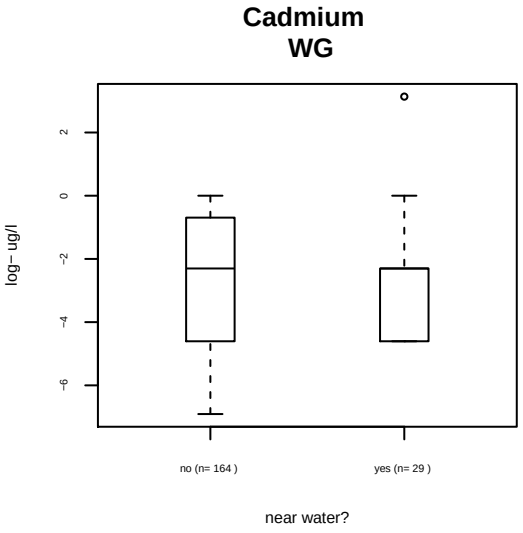

Butyl benzyl phthalate
WG
ug/l
0.3
0.4
0.5
0.6
0.7
no (n= 7)
yes (n= 0)
near water?

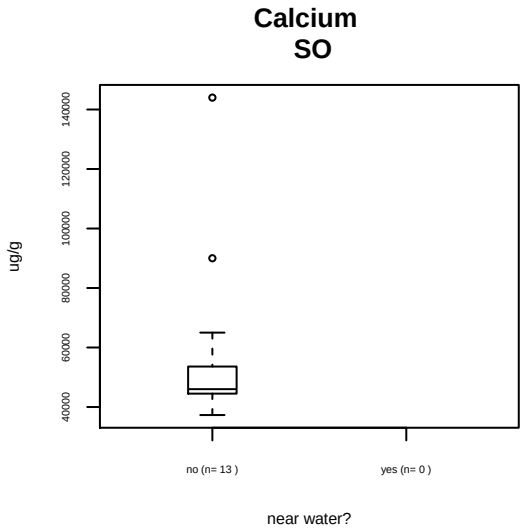

Butyl benzyl phthalate
WG
log− ug/l
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
no (n= 7)
yes (n= 0)
near water?

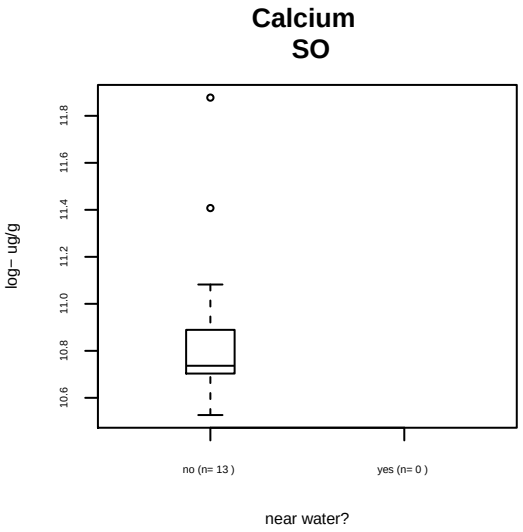

Cadmium
SO
ug/g
0
10
20
30
40
50
no (n= 443)
yes (n= 75)
near water?

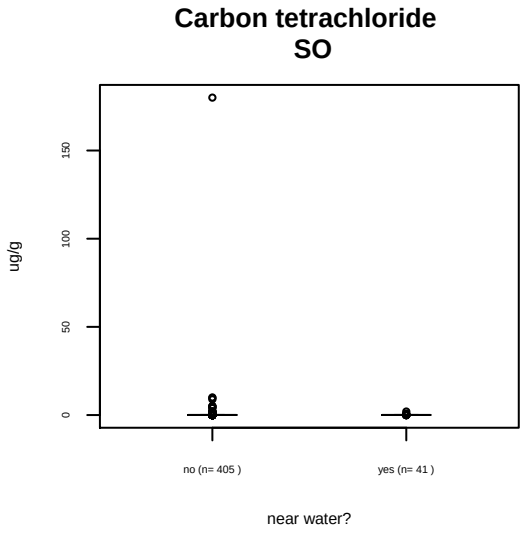

Cadmium
SO
log− ug/g
−2
−1
0
1
2
3
4
no (n= 443)
yes (n= 75)
near water?

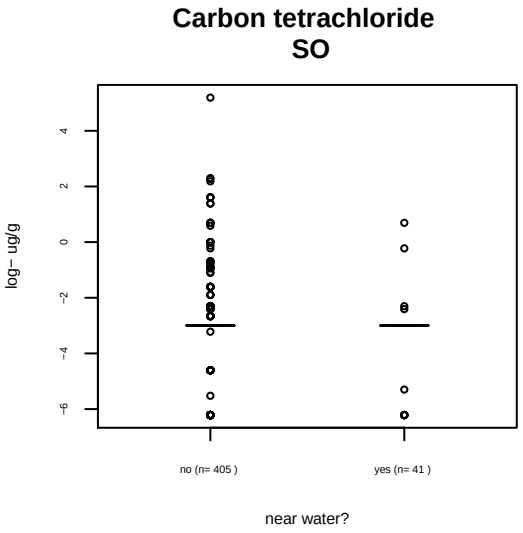

Cadmium
WG
ug/l
0
5
10
15
20
no (n= 164)
yes (n= 29)
near water?

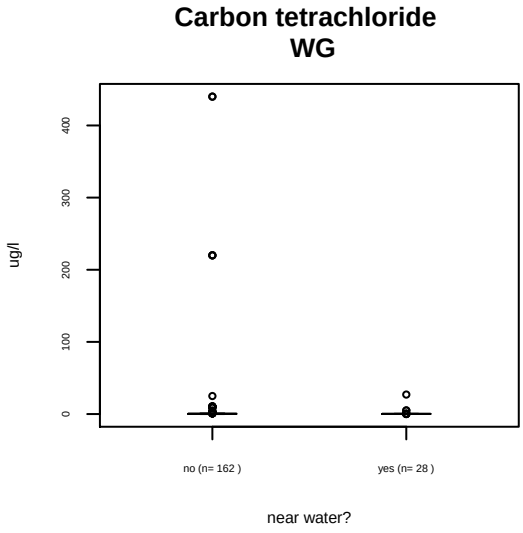

Cadmium
WG
log− ug/l
−6
−4
−2
0
2
no (n= 164)
yes (n= 29)
near water?

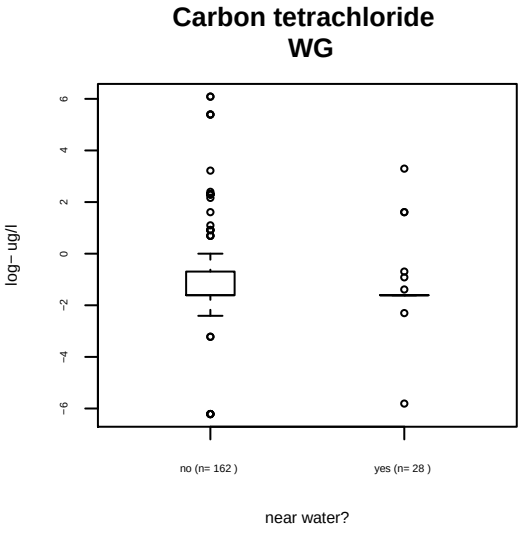

Calcium
SO
ug/g
40000
60000
80000
100000
120000
140000
no (n= 13)
yes (n= 0)
near water?

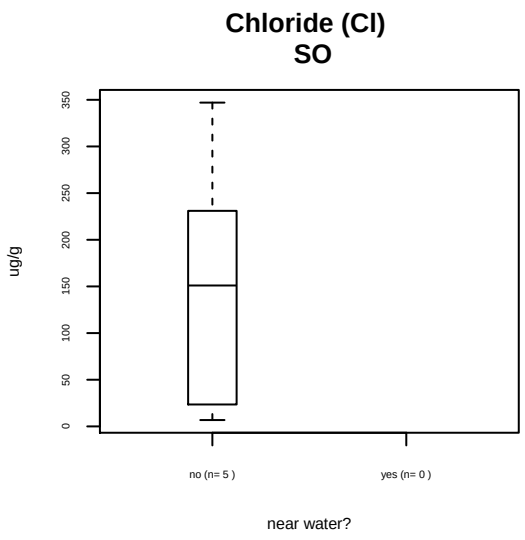

Calcium
SO
log− ug/g
10.6
10.8
11.0
11.2
11.4
11.6
11.8
no (n= 13)
yes (n= 0)
near water?

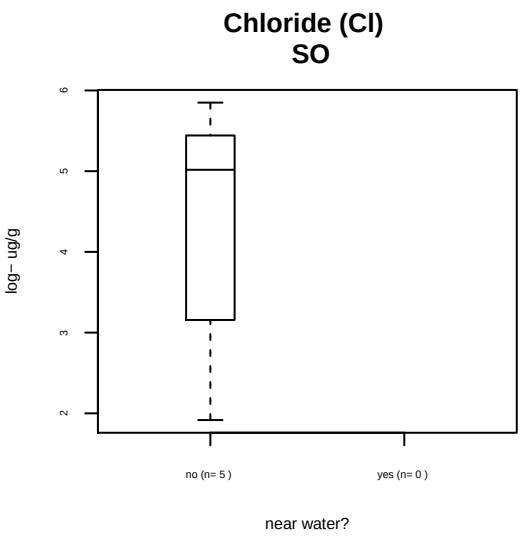

Carbon tetrachloride
SO
ug/g
0
50
100
150
no (n= 405)
yes (n= 41)
near water?

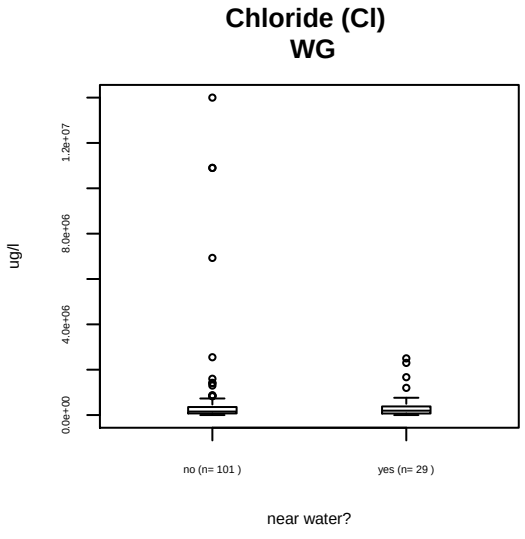

Carbon tetrachloride
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 41)
near water?

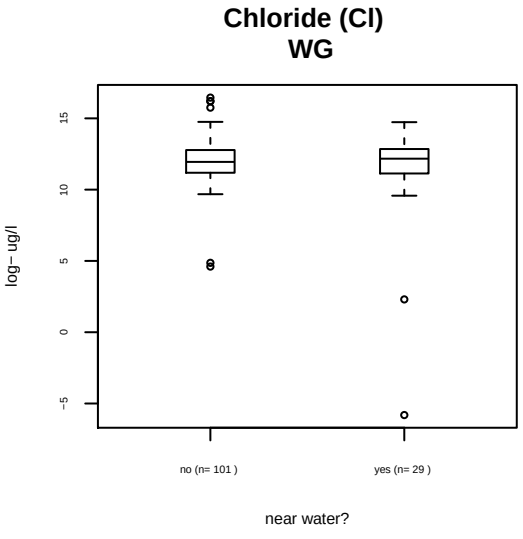

Carbon tetrachloride
WG
ug/l
0
100
200
300
400
no (n= 162)
yes (n= 28)
near water?

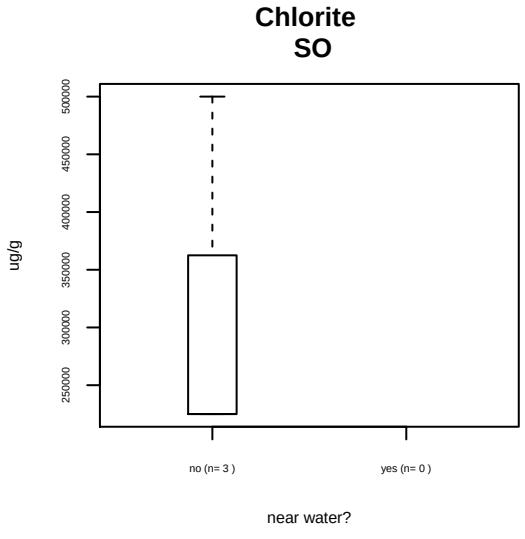

Carbon tetrachloride
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 162)
yes (n= 28)
near water?

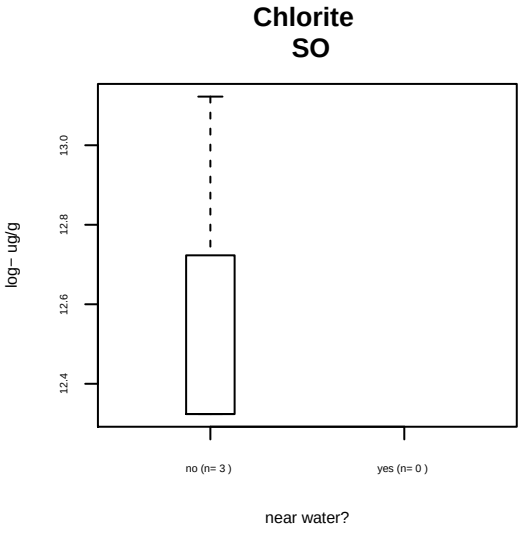

Chloride (Cl)
SO
ug/g
0
50
100
150
200
250
300
350
no (n= 5)
yes (n= 0)
near water?

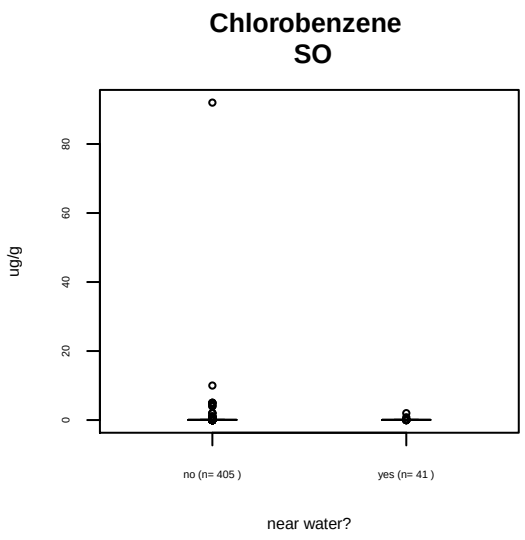

Chloride (Cl)
SO
log− ug/g
2
3
4
5
6
no (n= 5)
yes (n= 0)
near water?

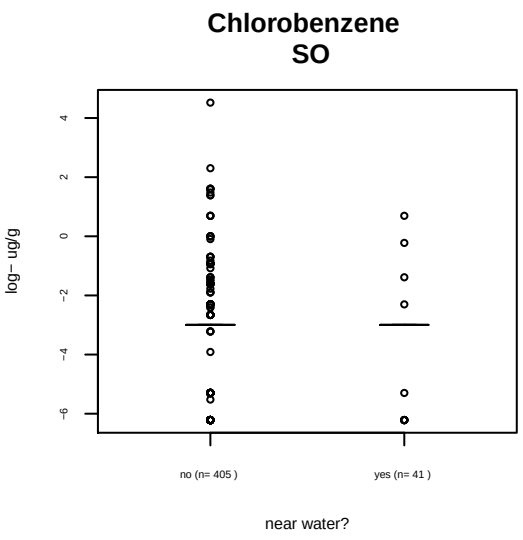

Chloride (Cl)
WG
ug/l
0.0e+00
4.0e+06
8.0e+06
1.2e+07
no (n= 101)
yes (n= 29)
near water?

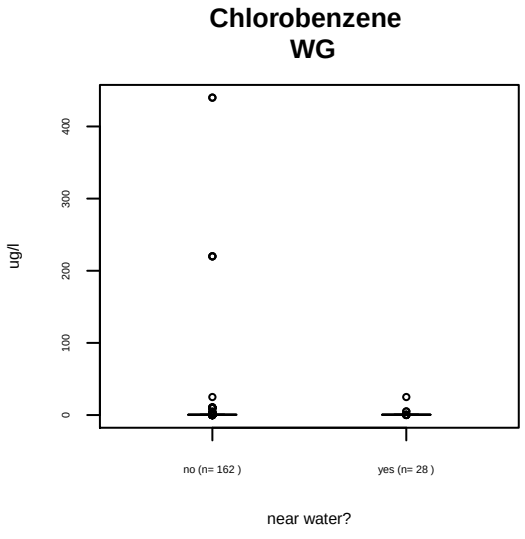

Chloride (Cl)
WG
log− ug/l
−5
0
5
10
15
no (n= 101)
yes (n= 29)
near water?

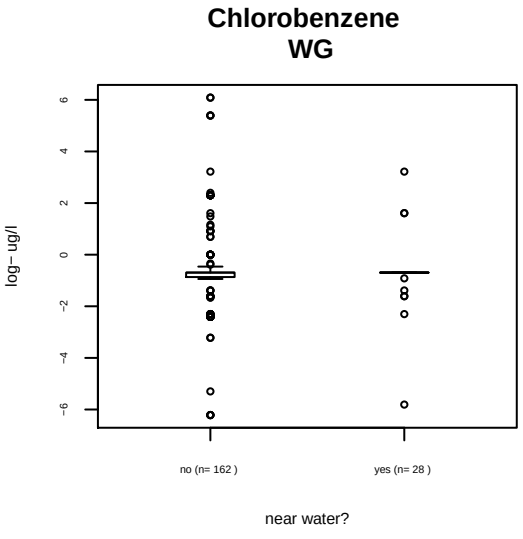

Chlorite
SO
ug/g
250000
300000
350000
400000
450000
500000
no (n= 3)
yes (n= 0)
near water?

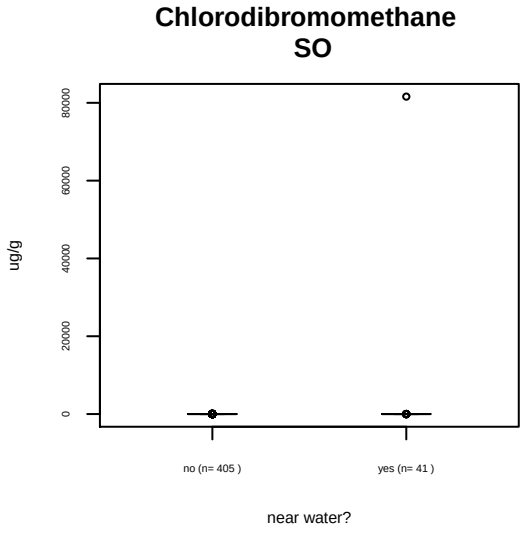

Chlorite
SO
log− ug/g
12.4
12.6
12.8
13.0
no (n= 3)
yes (n= 0)
near water?

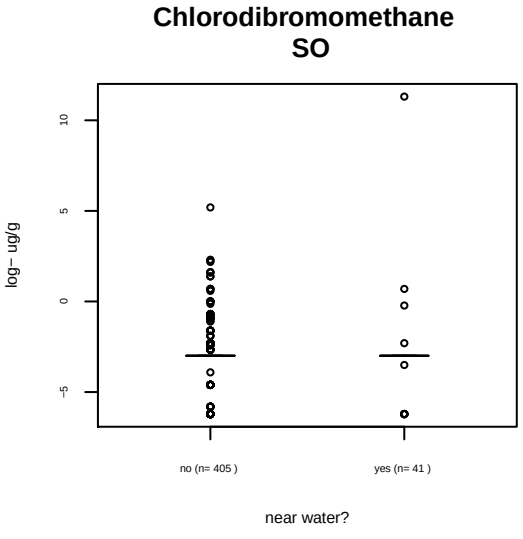

Chlorobenzene
SO
ug/g
0
20
40
60
80
no (n= 405)
yes (n= 41)
near water?

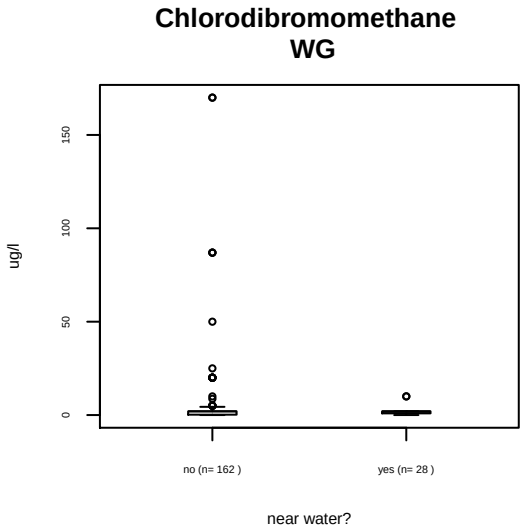

Chlorobenzene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 41)
near water?

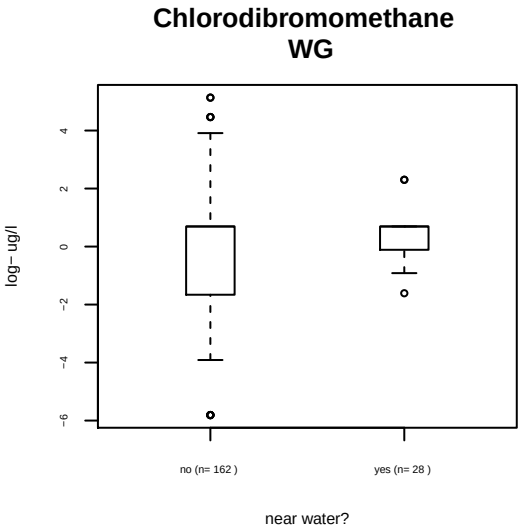

Chlorobenzene
WG
ug/l
0
100
200
300
400
no (n= 162)
yes (n= 28)
near water?

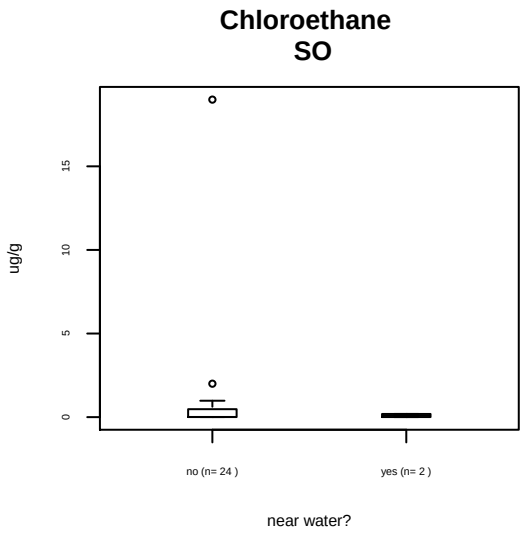

Chlorobenzene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 162)
yes (n= 28)
near water?

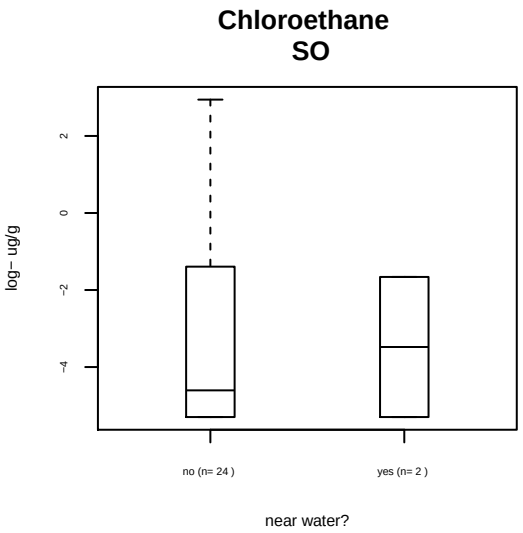

Chlorodibromomethane
SO
ug/g
0
20000
40000
60000
80000
no (n= 405)
yes (n= 41)
near water?

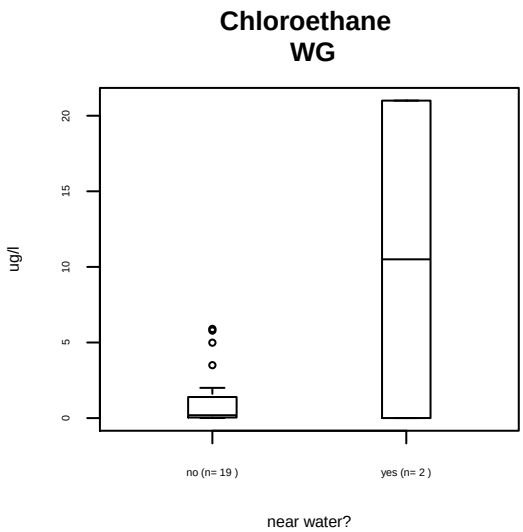

Chlorodibromomethane
SO
log− ug/g/g
−5
0
5
10
no (n= 405)
yes (n= 41)
near water?

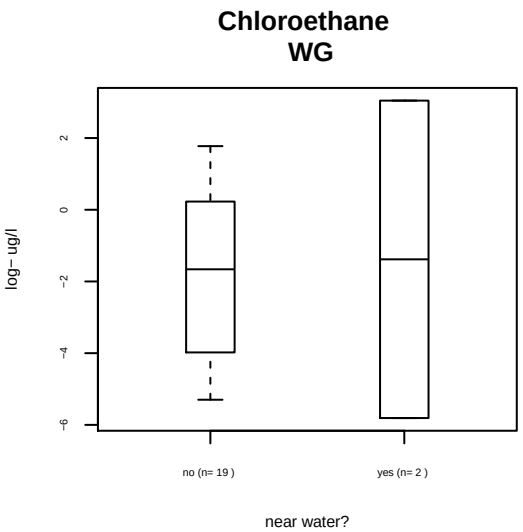

Chlorodibromomethane
WG
ug/l
0
50
100
150
no (n= 162)
yes (n= 28)
near water?

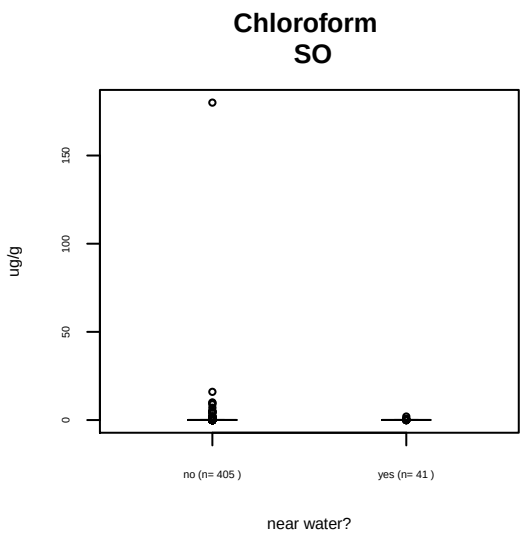

Chlorodibromomethane
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 162)
yes (n= 28)
near water?

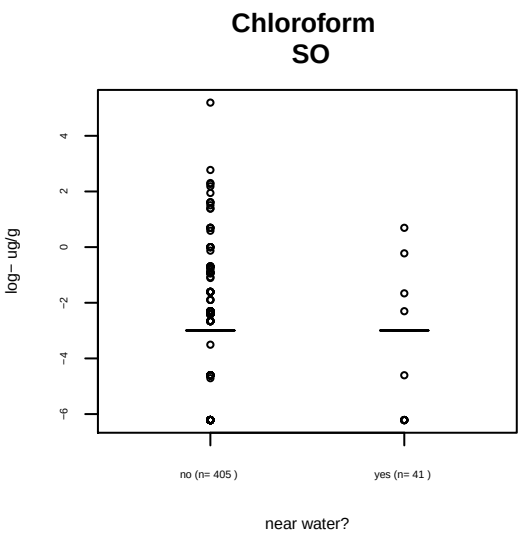

Chloroethane
SO
ug/g
0
5
10
15
no (n= 24)
yes (n= 2)
near water?

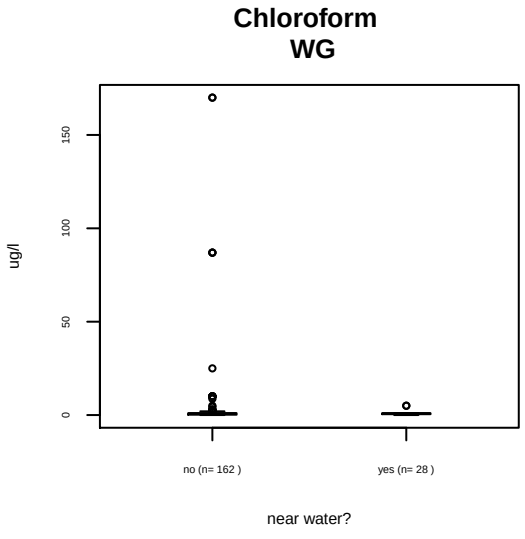

Chloroethane
SO
log− ug/g
−4
−2
0
2
no (n= 24)
yes (n= 2)
near water?

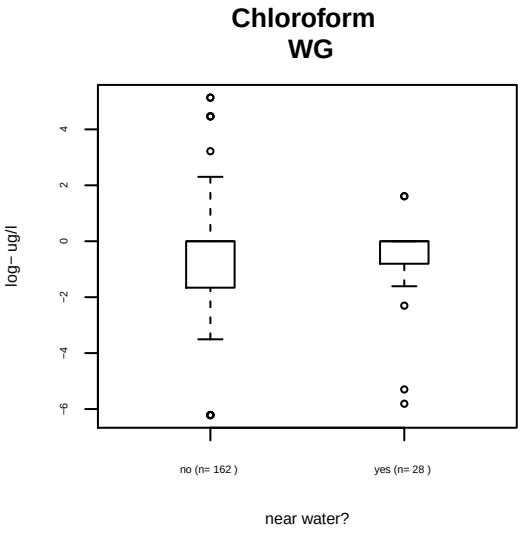

Chloroethane
WG
ug/l
0
5
10
15
20
no (n= 19)
yes (n= 2)
near water?

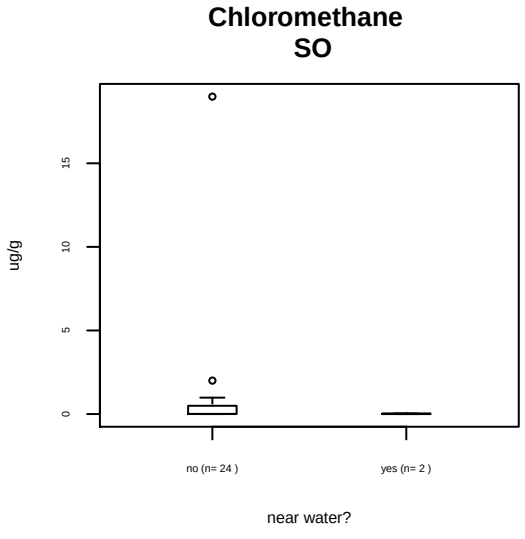

Chloroethane
WG
log− ug/l
−6
−4
−2
0
2
no (n= 19)
yes (n= 2)
near water?

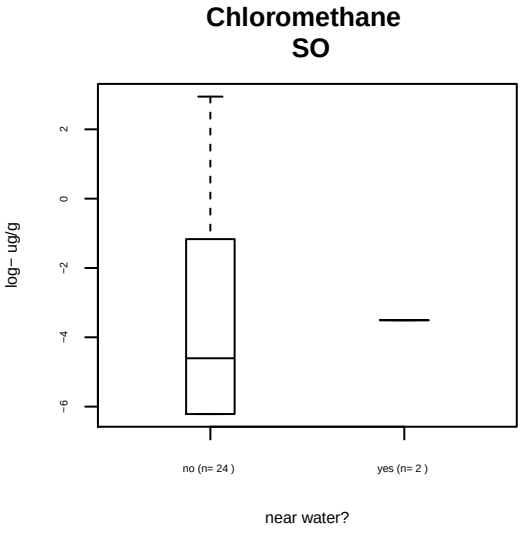

Chloroform
SO
ug/g
0
50
100
150
no (n= 405)
yes (n= 41)
near water?

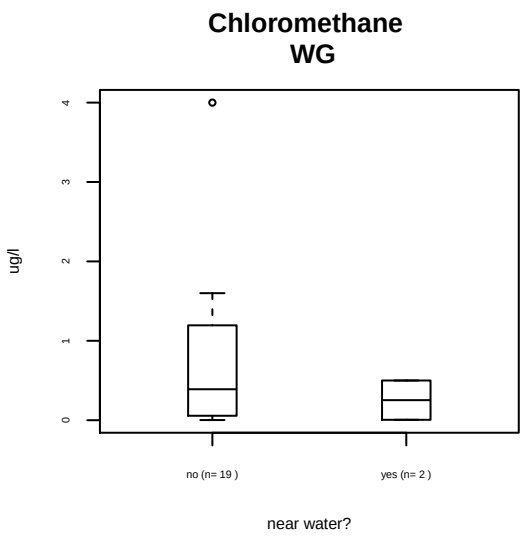

Chloroform
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 41)
near water?

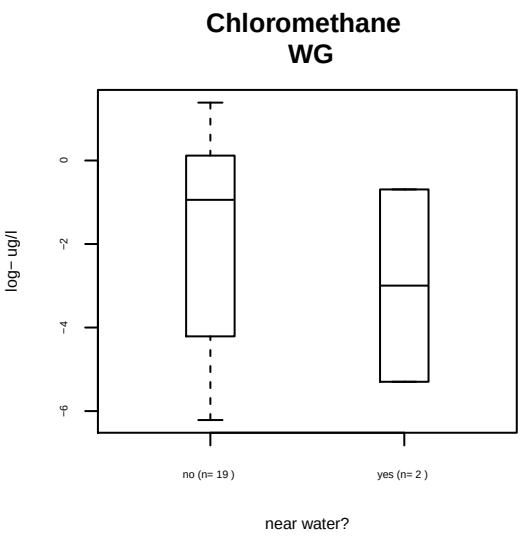

Chloroform
WG
ug/l
0
50
100
150
no (n= 162)
yes (n= 28)
near water?

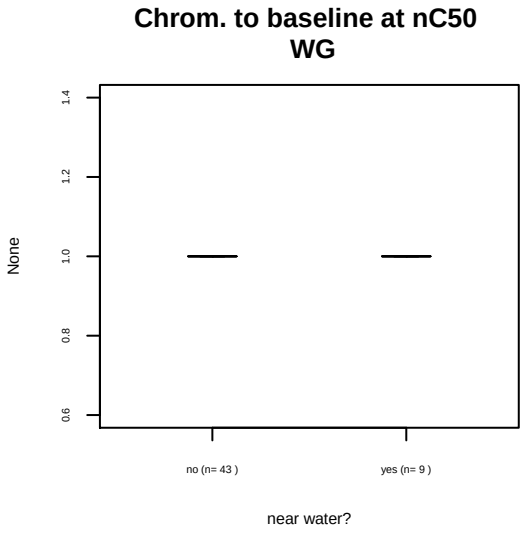

Chloroform
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 162)
yes (n= 28)
near water?

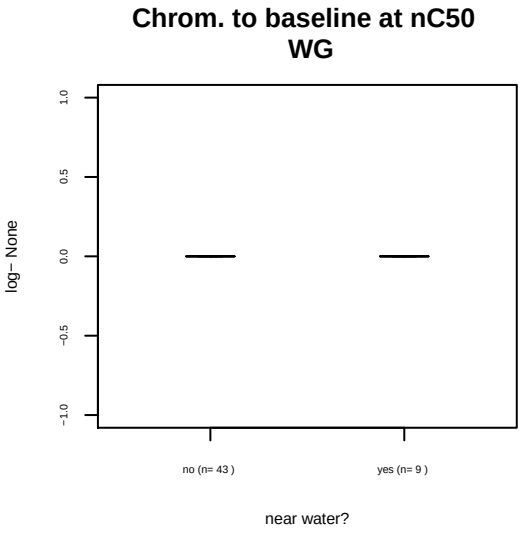

Chloromethane
SO
ug/g
0
5
10
15
no (n= 24)
yes (n= 2)
near water?

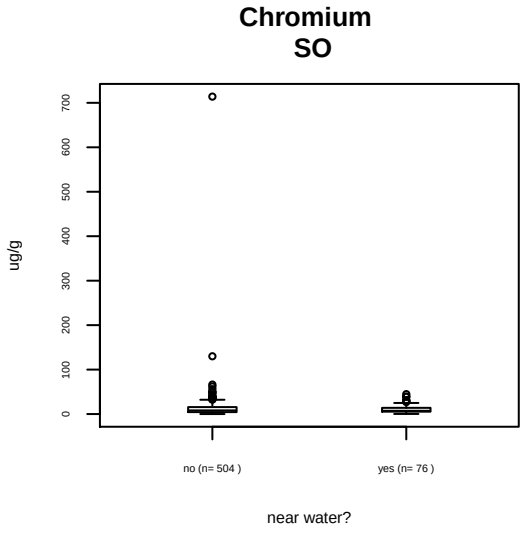

Chloromethane
SO
log− ug/g
−6
−4
−2
0
2
no (n= 24)
yes (n= 2)
near water?

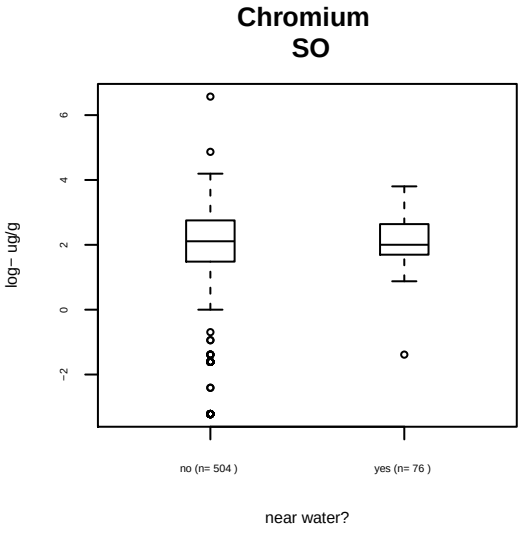

Chloromethane
WG
ug/l
0
1
2
3
4
no (n= 19)
yes (n= 2)
near water?

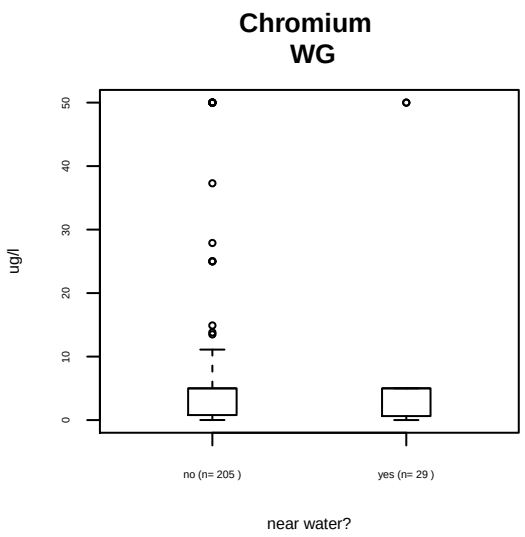

Chloromethane
WG
log− ug/l
0
−2
−4
−6
no (n= 19)
yes (n= 2)
near water?

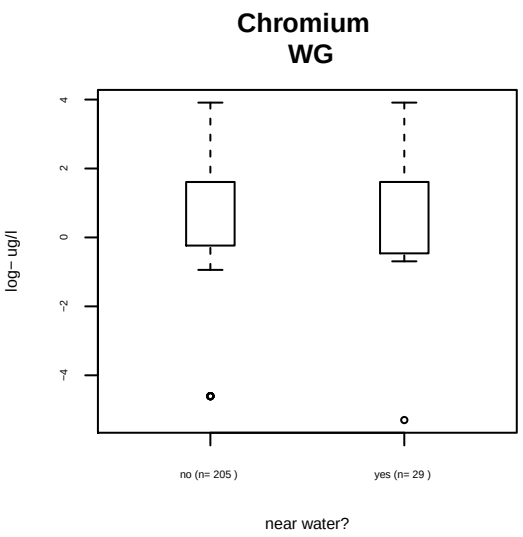

Chrom. to baseline at nC50
WG
None
0.6
0.8
1.0
1.2
1.4
no (n= 43)
yes (n= 9)
near water?

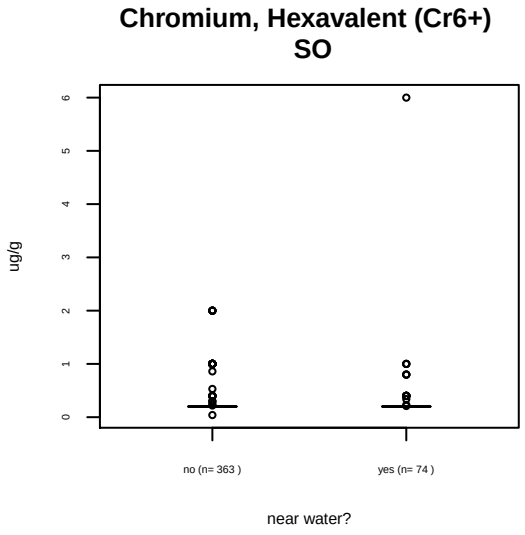

Chrom. to baseline at nC50
WG
log− None
−1.0
−0.5
0.0
0.5
1.0
no (n= 43)
yes (n= 9)
near water?

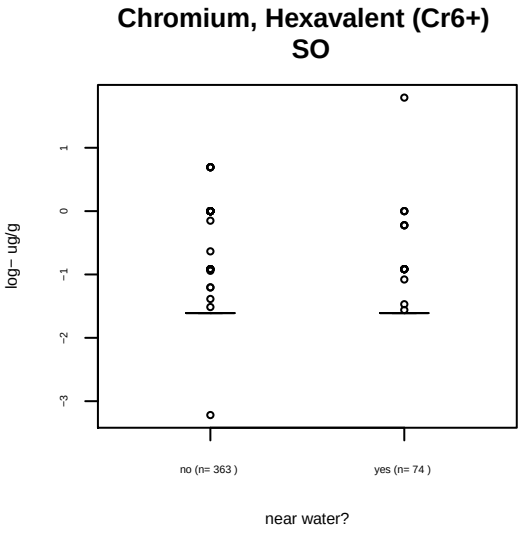

Chromium
SO
ug/g
0
100
200
300
400
500
600
700
no (n= 504)
yes (n= 76)
near water?

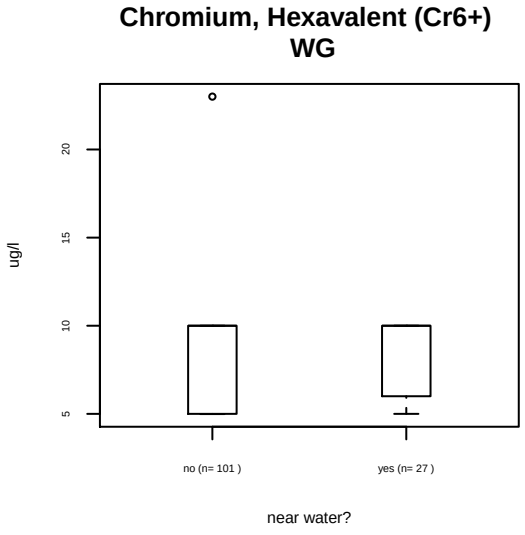

Chromium
SO
log− ug/g
−2
0
2
4
6
no (n= 504)
yes (n= 76)
near water?

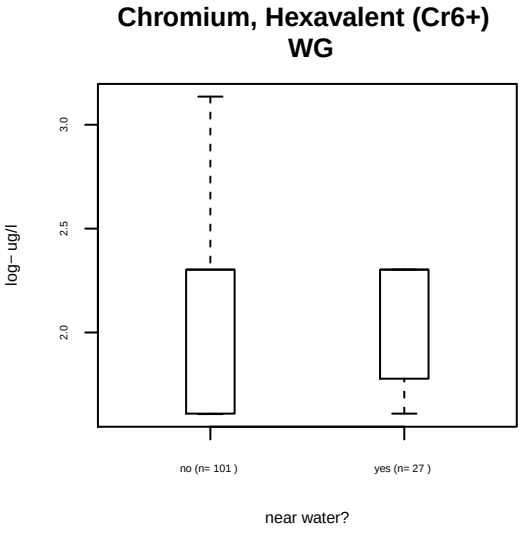

Chromium
WG
ug/l
0
10
20
30
40
50
no (n= 205)
yes (n= 29)
near water?

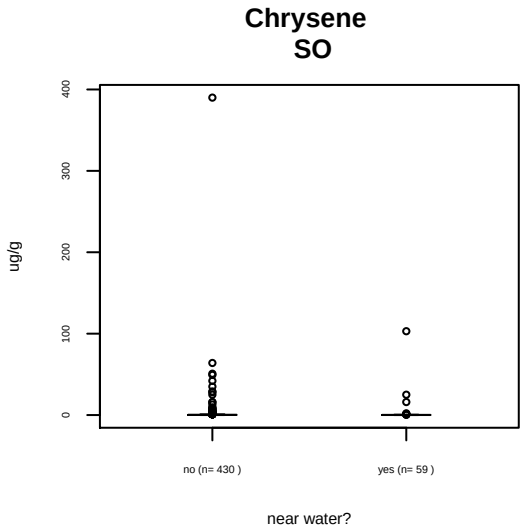

Chromium
WG
log− ug/l
−4
−2
0
2
4
no (n= 205)
yes (n= 29)
near water?

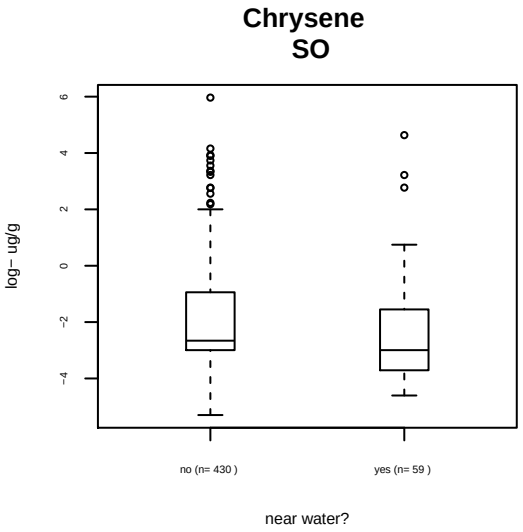

Chromium, Hexavalent (Cr6+)
SO
ug/g
0
1
2
3
4
5
6
no (n= 363)
yes (n= 74)
near water?

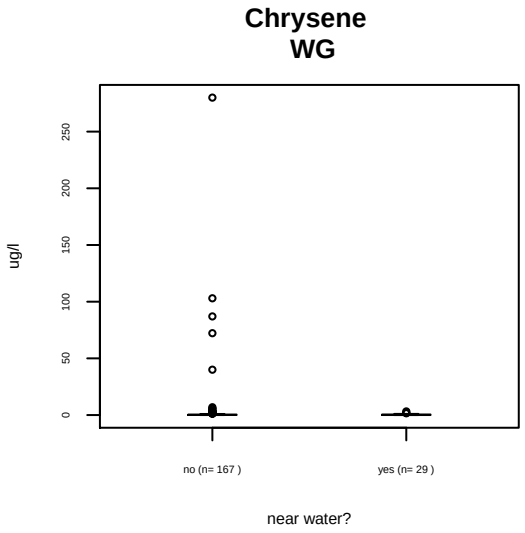

Chromium, Hexavalent (Cr6+)
SO
log− ug/g
−3
−2
−1
0
1
no (n= 363)
yes (n= 74)
near water?

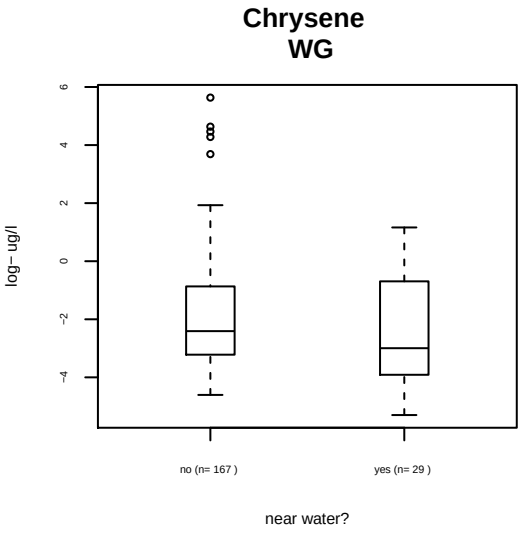

Chromium, Hexavalent (Cr6+)
WG
ug/l
5
10
15
20
no (n= 101)
yes (n= 27)
near water?

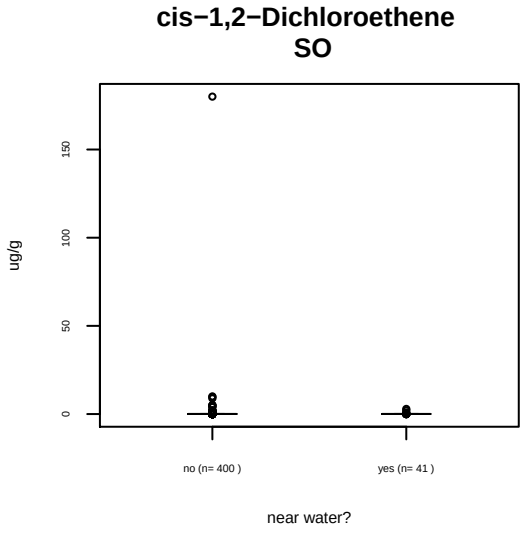

Chromium, Hexavalent (Cr6+)
WG
log− ug/l
2.0
2.5
3.0
no (n= 101)
yes (n= 27)
near water?

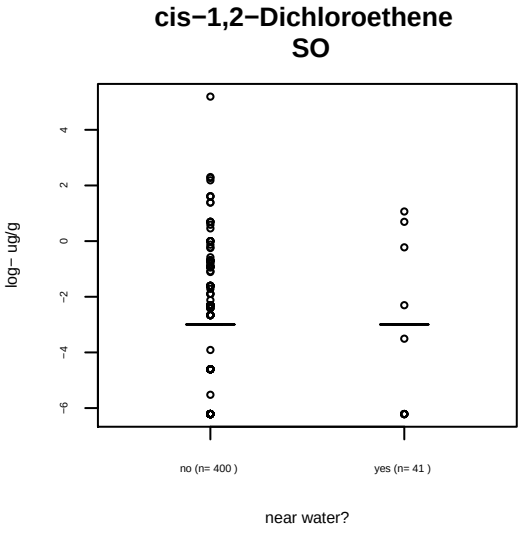

Chrysene
SO
ug/g
0
100
200
300
400
no (n= 430)
yes (n= 59)
near water?

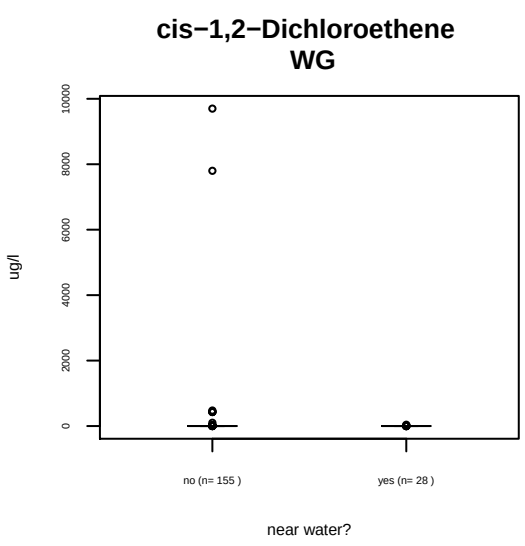

Chrysene
SO
log− ug/g
−4
−2
0
2
4
6
no (n= 430)
yes (n= 59)
near water?

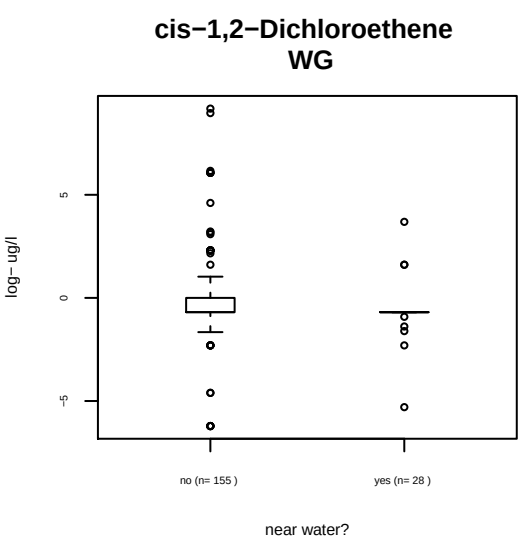

Chrysene
WG
ug/l
0
50
100
150
200
250
no (n= 167)
yes (n= 29)
near water?

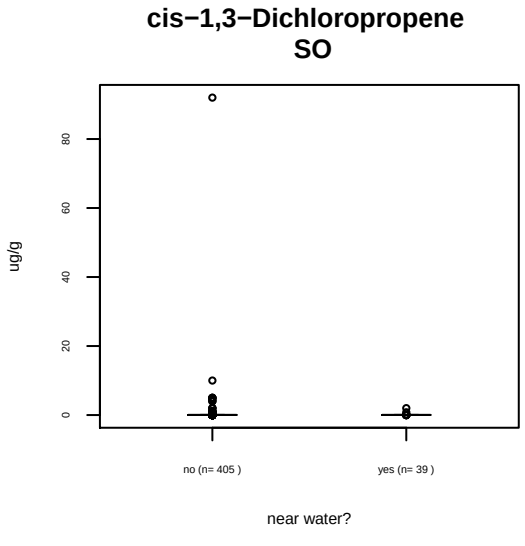

Chrysene
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 167)
yes (n= 29)
near water?

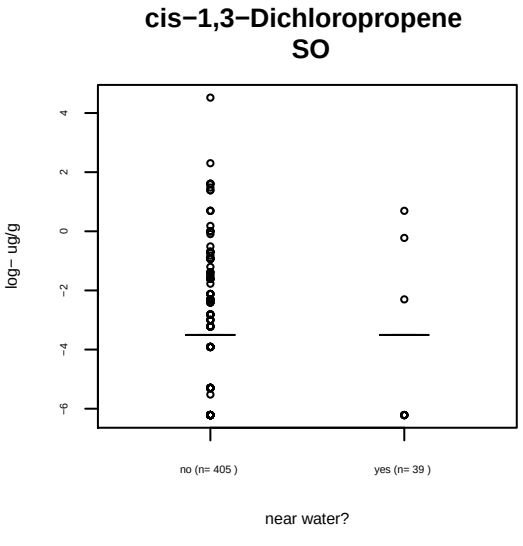

cis−1,2−Dichloroethene
SO
ug/g
0
50
100
150
no (n= 400)
yes (n= 41)
near water?

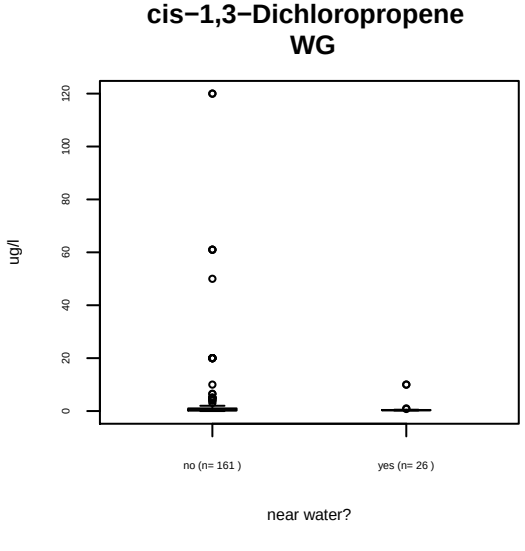

cis−1,2−Dichloroethene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 400)
yes (n= 41)
near water?

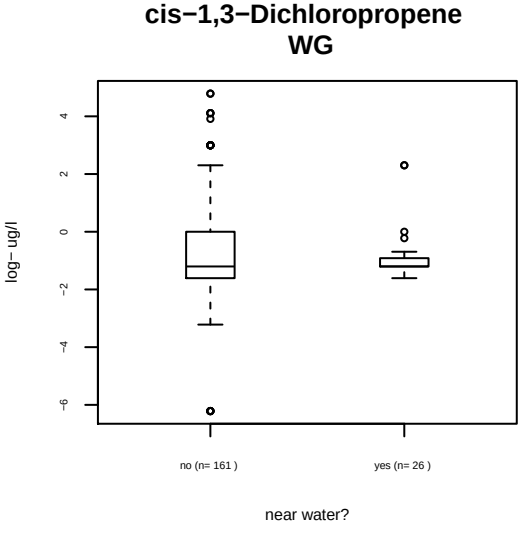

cis−1,2−Dichloroethene
WG
ug/l
0
2000
4000
6000
8000
10000
no (n= 155)
yes (n= 28)
near water?

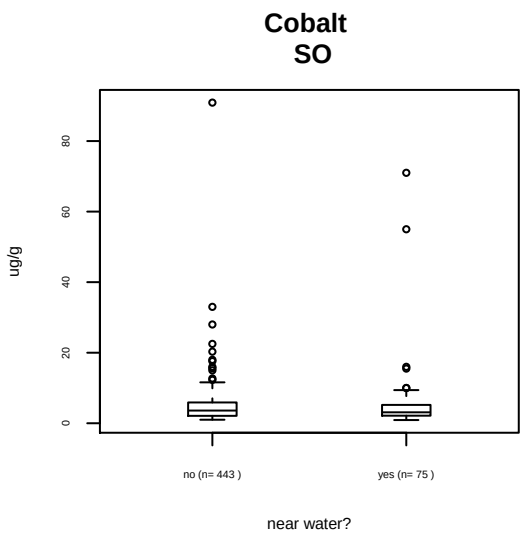

cis−1,2−Dichloroethene
WG
log− ug/l
−5
0
5
no (n= 155)
yes (n= 28)
near water?

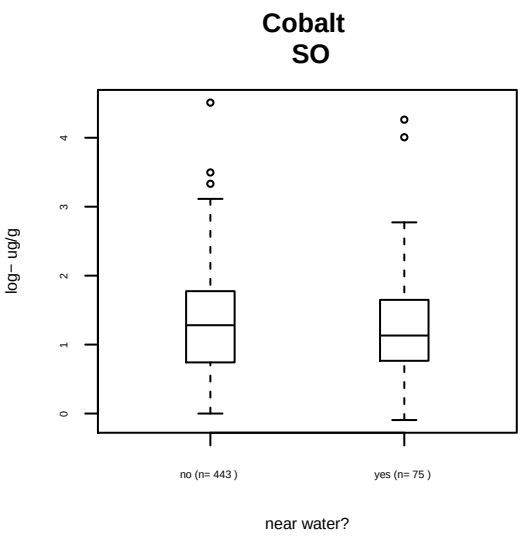

cis−1,3−Dichloropropene
SO
ug/g
0
20
40
60
80
no (n= 405)
yes (n= 39)
near water?

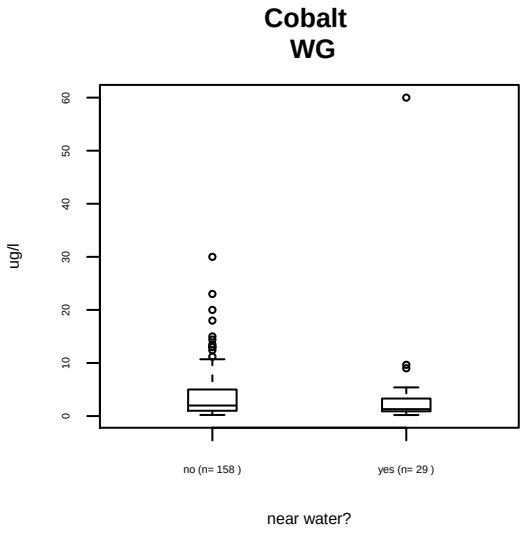

cis−1,3−Dichloropropene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 39)
near water?

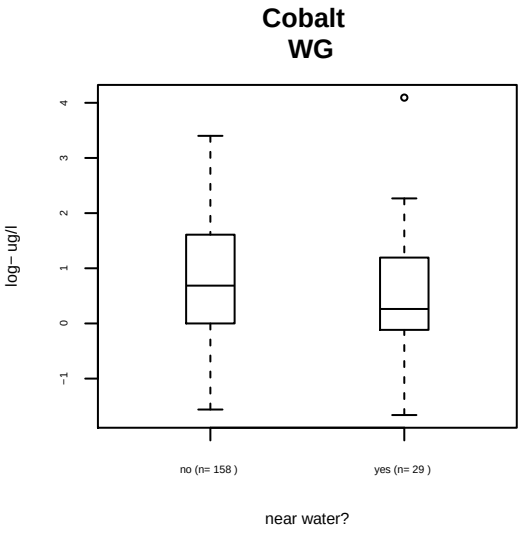

cis−1,3−Dichloropropene
WG
ug/l
0
20
40
60
80
100
120
no (n= 161)
yes (n= 26)
near water?

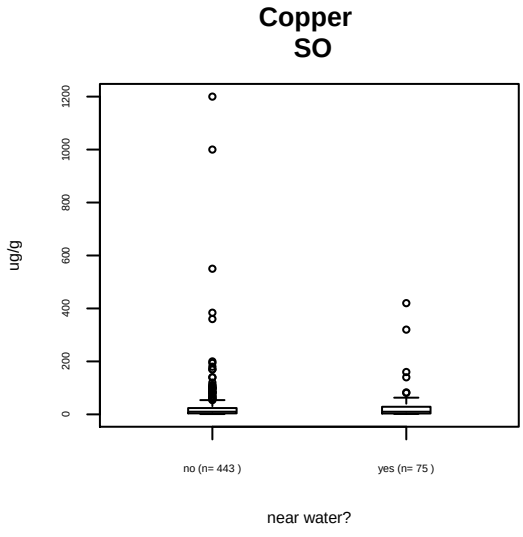

cis−1,3−Dichloropropene
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 161)
yes (n= 26)
near water?

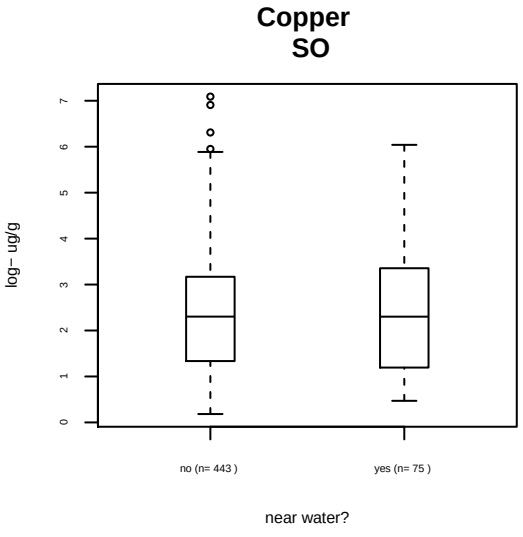

Cobalt
SO
ug/g
0
20
40
60
80
no (n= 443)
yes (n= 75)
near water?

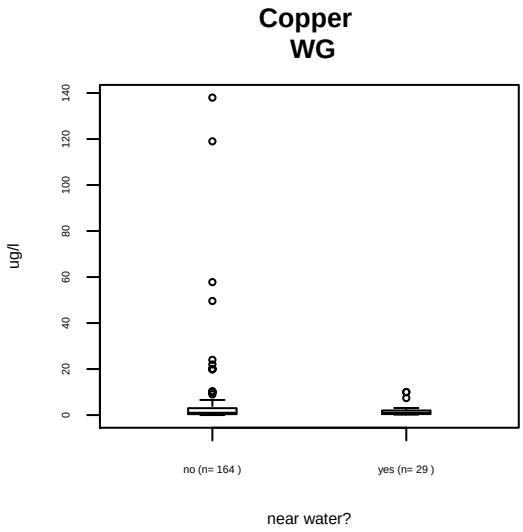

Cobalt
SO
log− ug/g
0
1
2
3
4
no (n= 443)
yes (n= 75)
near water?

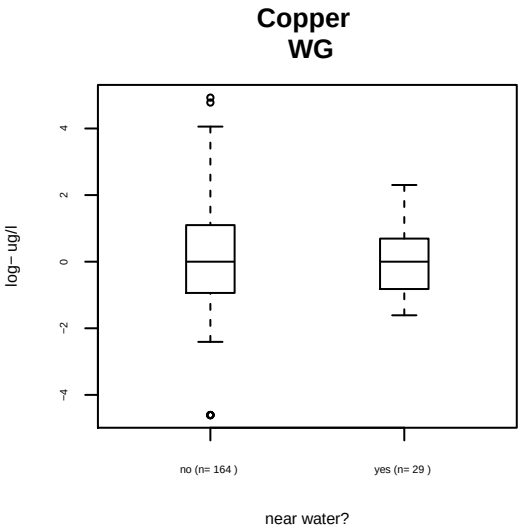

Cobalt
WG
ug/l
0
10
20
30
40
50
60
no (n= 158)
yes (n= 29)
near water?

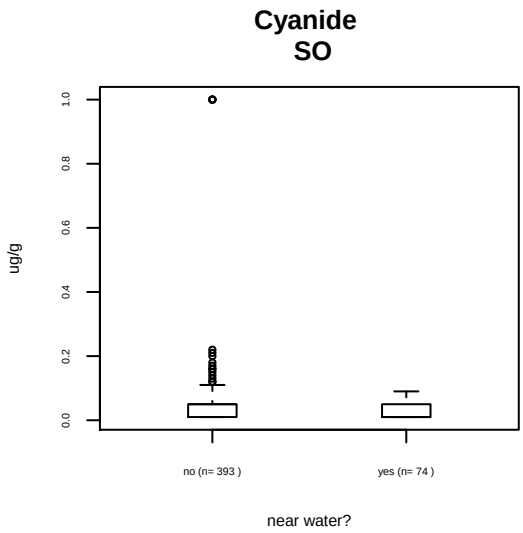

Cobalt
WG
log− ug/l
−1
0
1
2
3
4
no (n= 158)
yes (n= 29)
near water?

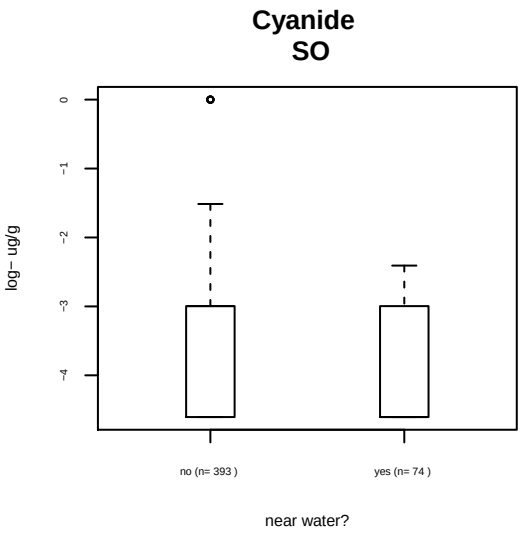

Copper
SO
ug/gn
0
200
400
600
800
1000
1200
no (n= 443)
yes (n= 75)
near water?

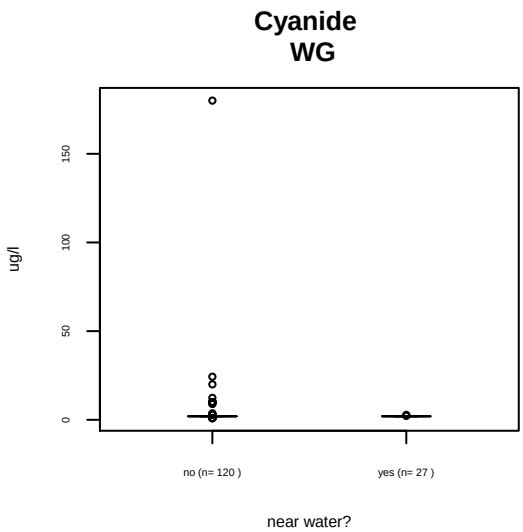

Copper
SO
log− ug/g/g
0
1
2
3
4
5
6
7
no (n= 443)
yes (n= 75)
near water?

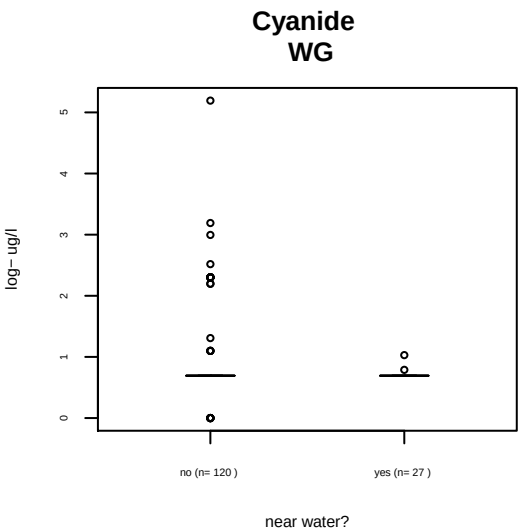

Copper
WG
ug/l
0
20
40
60
80
100
120
140
no (n= 164)
yes (n= 29)
near water?

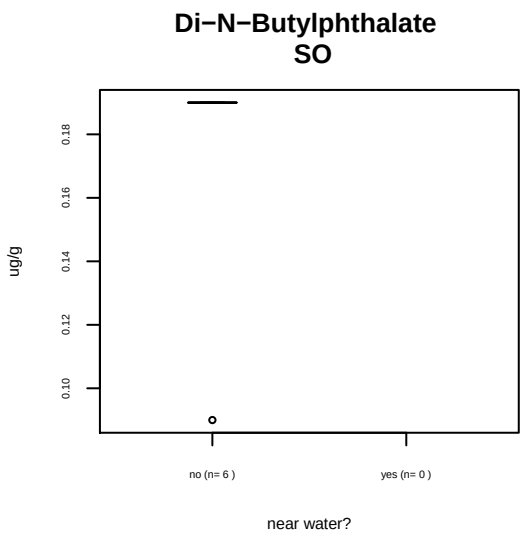

Copper
WG
log− ug/l
−4
−2
0
2
4
no (n= 164)
yes (n= 29)
near water?

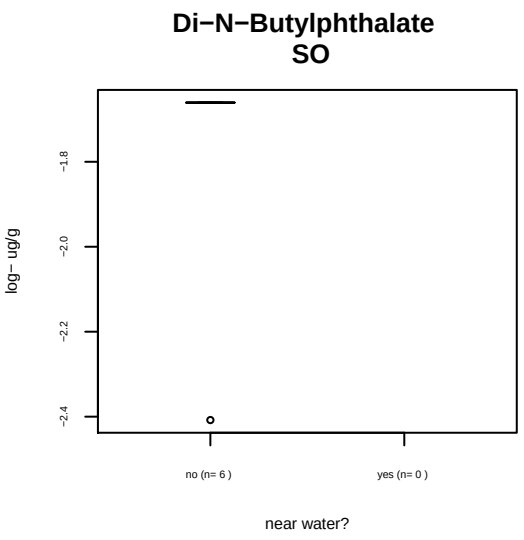

Cyanide
SO
ug/g
0.0
0.2
0.4
0.6
0.8
1.0
no (n= 393)
yes (n= 74)
near water?

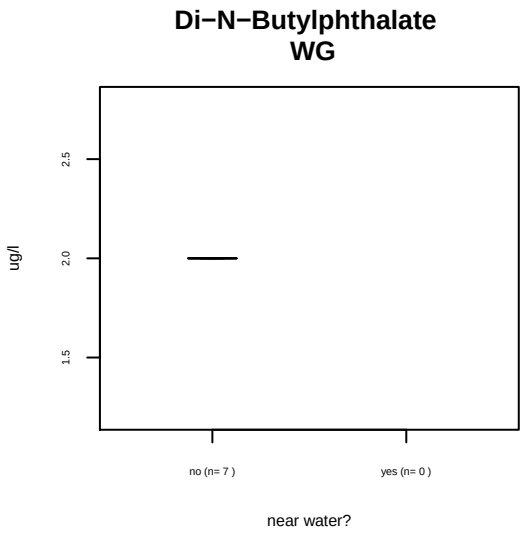

Cyanide
SO
log− ug/g
−4
−3
−2
−1
0
no (n= 393)
yes (n= 74)
near water?

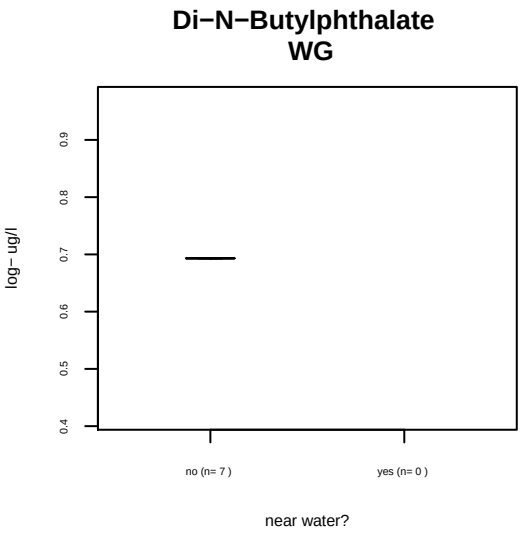

Cyanide
WG
ug/l
0
50
100
150
no (n= 120)
yes (n= 27)
near water?

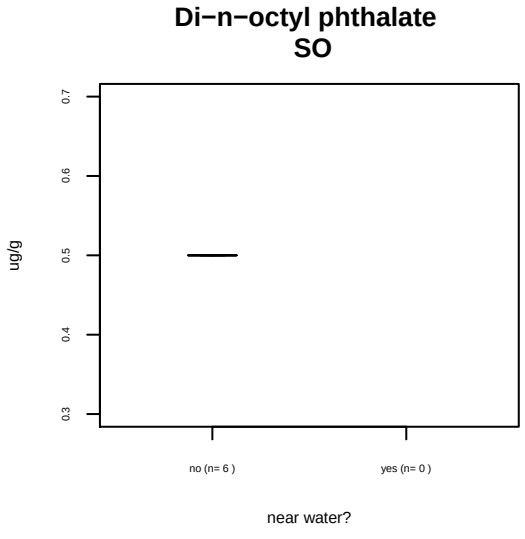

Cyanide
WG
log− ug/l
0
1
2
3
4
5
no (n= 120)
yes (n= 27)
near water?

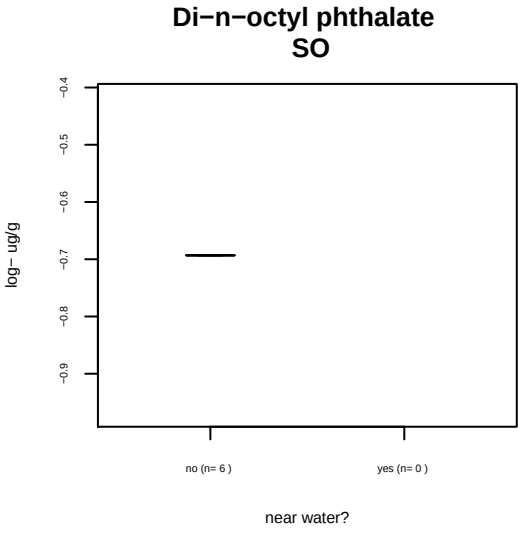

Di−N−Butylphthalate
SO
ug/g
0.10
0.12
0.14
0.16
0.18
no (n= 6)
yes (n= 0)
near water?

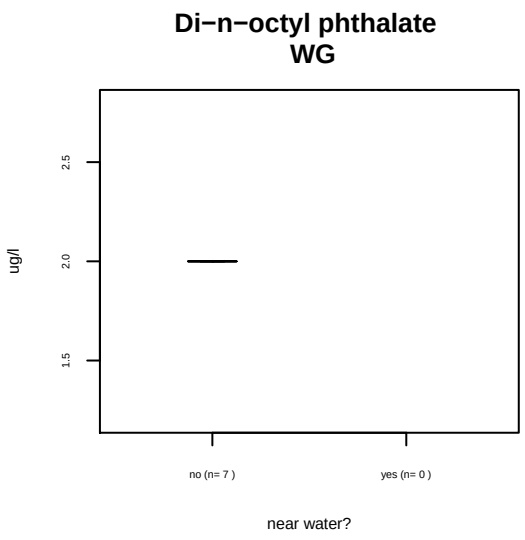

Di−N−Butylphthalate
SO
log− ug/g
−2.4
−2.2
−2.0
−1.8
no (n= 6)
yes (n= 0)
near water?

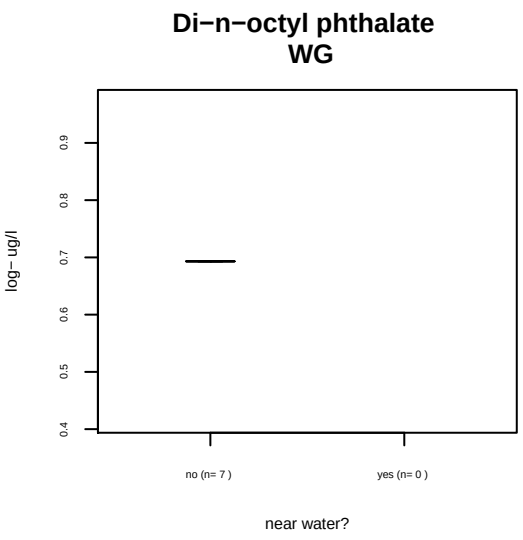

Di−N−Butylphthalate
WG
ug/l
1.5
2.0
2.5
no (n= 7)
yes (n= 0)
near water?

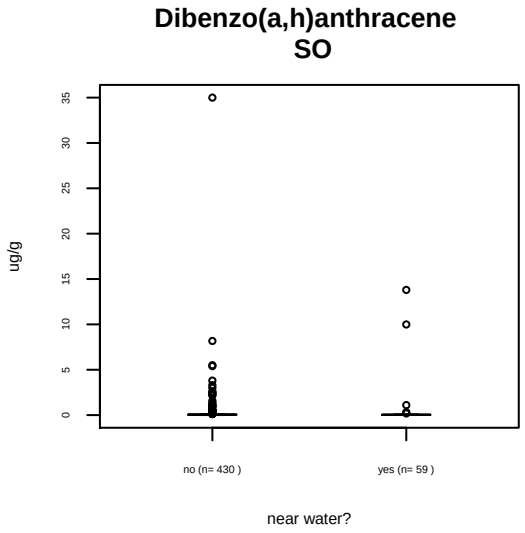

Di−N−Butylphthalate
WG
log− ug/l
0.4
0.5
0.6
0.7
0.8
0.9
no (n= 7)
yes (n= 0)
near water?

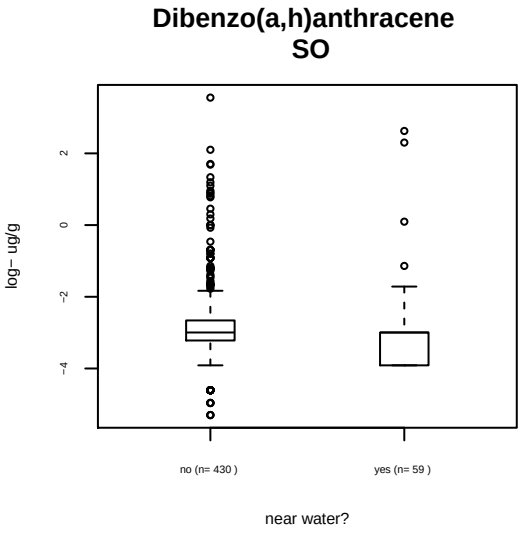

Di−n−octyl phthalate
SO
ug/g
0.3
0.4
0.5
0.6
0.7
no (n= 6)
yes (n= 0)
near water?

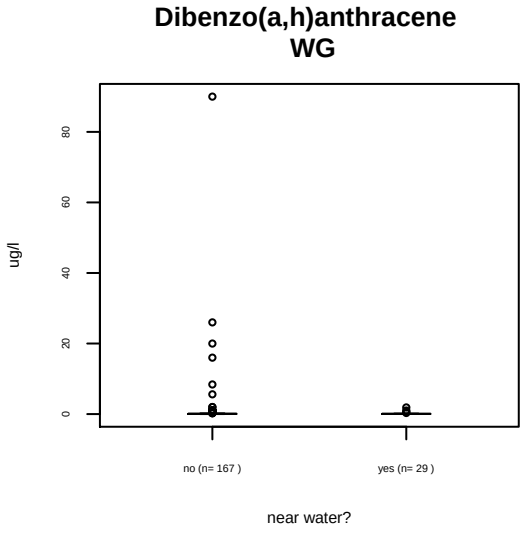

Di−n−octyl phthalate
SO
log− ug/g
−0.9
−0.8
−0.7
−0.6
−0.5
−0.4
no (n= 6)
yes (n= 0)
near water?

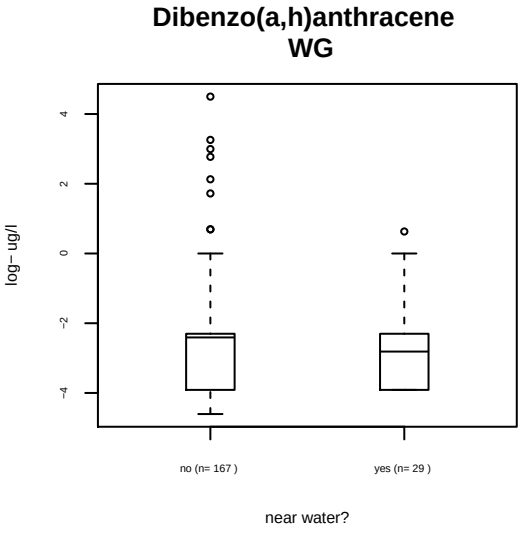

Di−n−octyl phthalate
WG
ug/l
2.5
2.0
1.5
no (n= 7)
yes (n= 0)
near water?

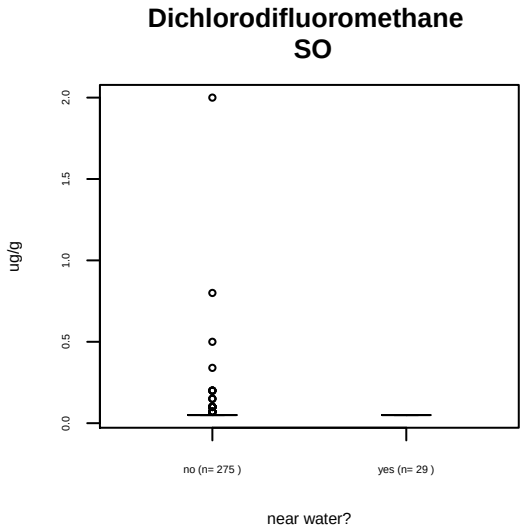

Di−n−octyl phthalate
WG
log− ug/l
0.9
0.8
0.7
0.6
0.5
0.4
no (n= 7)
yes (n= 0)
near water?

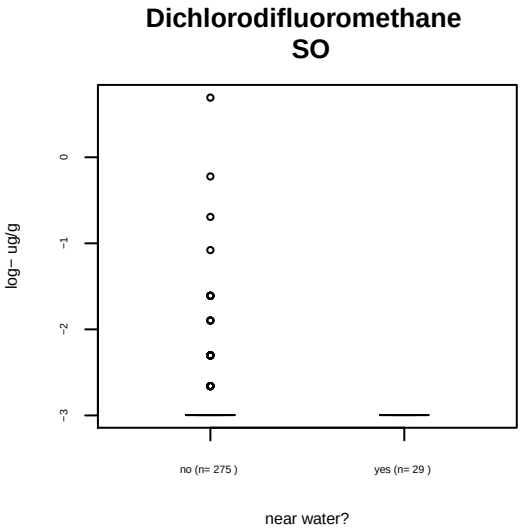

Dibenzo(a,h)anthracene
SO
ug/g
35
30
25
20
15
10
5
0
no (n= 430)
yes (n= 59)
near water?

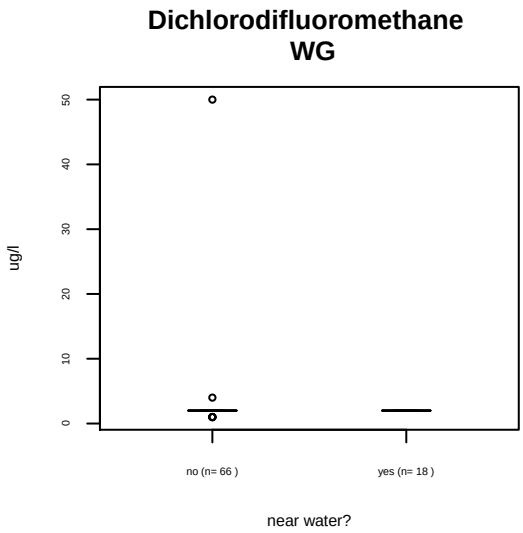

Dibenzo(a,h)anthracene
SO
log− ug/g
2
0
−2
−4
no (n= 430)
yes (n= 59)
near water?

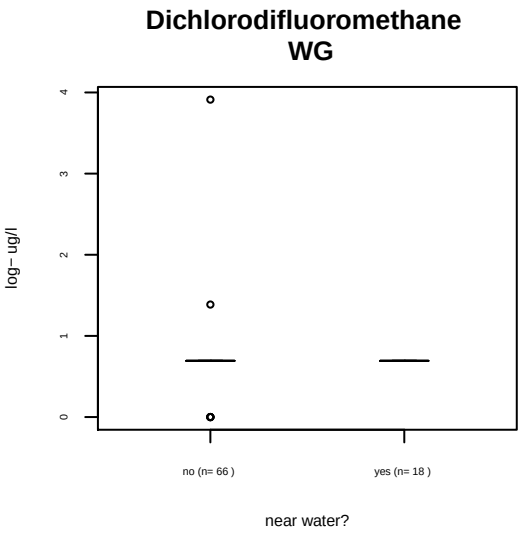

Dibenzo(a,h)anthracene
WG
ug/l
80
60
40
20
0
no (n= 167)
yes (n= 29)
near water?

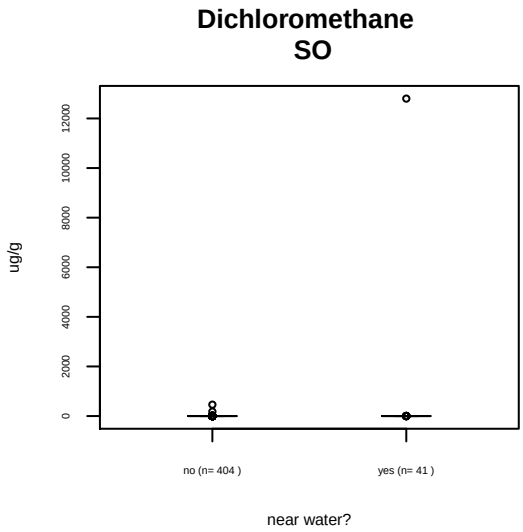

Dibenzo(a,h)anthracene
WG
log− ug/l
4
2
0
−2
−4
no (n= 167)
yes (n= 29)
near water?

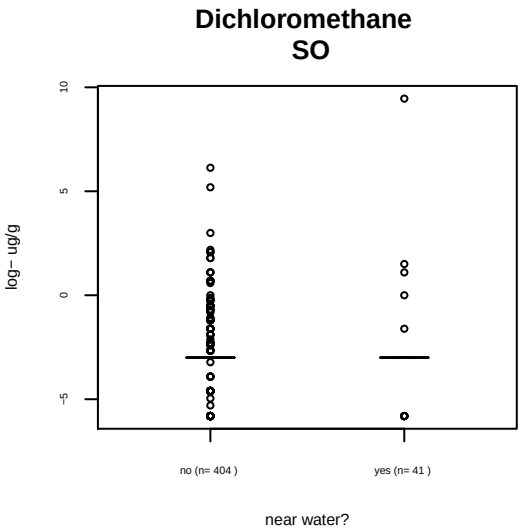

Dichlorodifluoromethane
SO
ug/g
0.0
0.5
1.0
1.5
2.0
no (n= 275)
yes (n= 29)
near water?

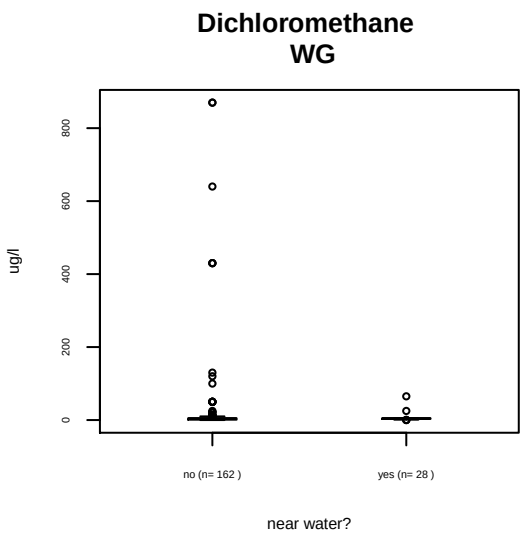

Dichlorodifluoromethane
SO
log− ug/g
−3
−2
−1
0
no (n= 275)
yes (n= 29)
near water?

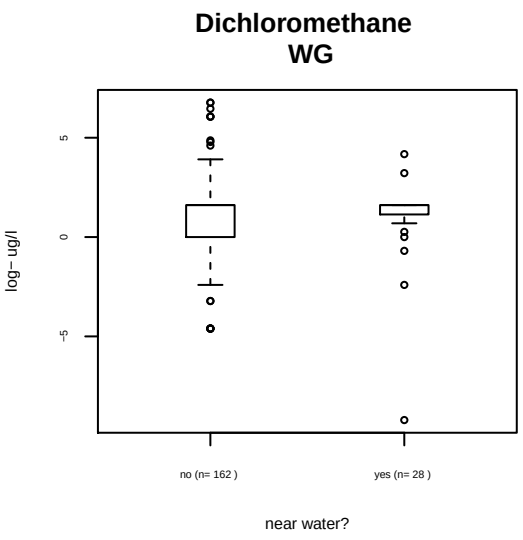

Dichlorodifluoromethane
WG
ug/l
0
10
20
30
40
50
no (n= 66)
yes (n= 18)
near water?

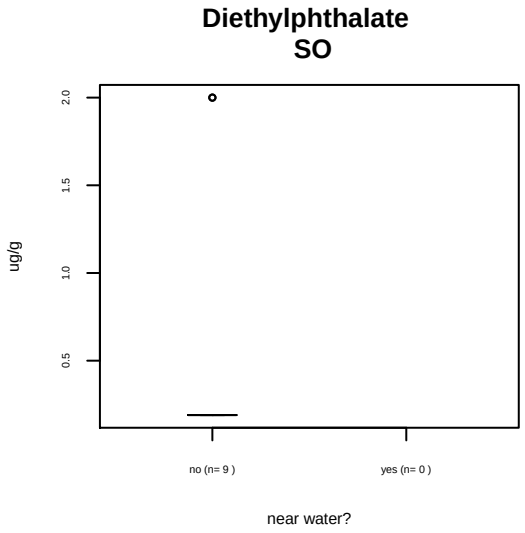

Dichlorodifluoromethane
WG
log− ug/l
0
1
2
3
4
no (n= 66)
yes (n= 18)
near water?

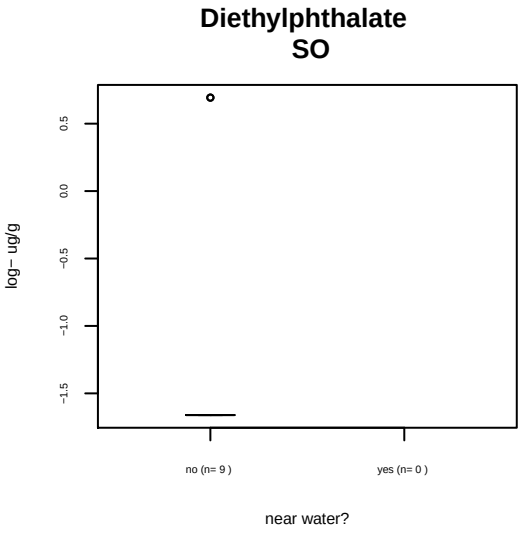

Dichloromethane
SO
ug/g
0
2000
4000
6000
8000
10000
12000
no (n= 404)
yes (n= 41)
near water?

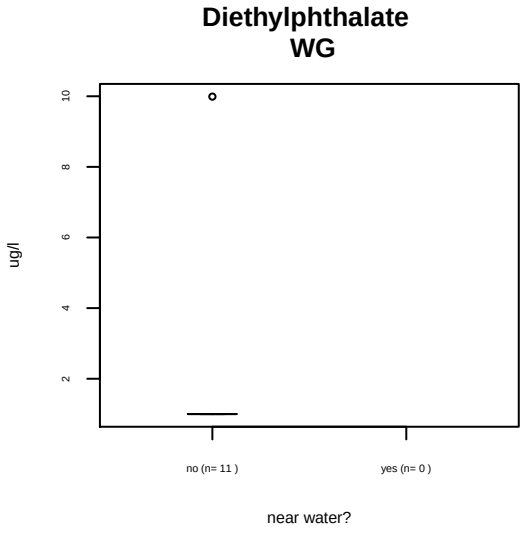

Dichloromethane
SO
log− ug/g/g
−5
0
5
10
no (n= 404)
yes (n= 41)
near water?

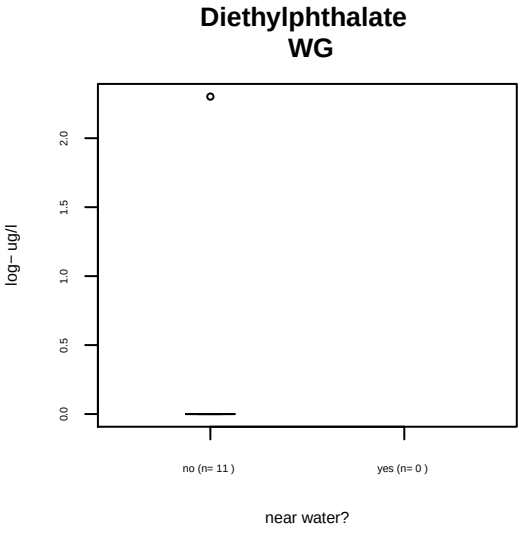

Dichloromethane
WG
ug/l
0
200
400
600
800
no (n= 162)
yes (n= 28)
near water?

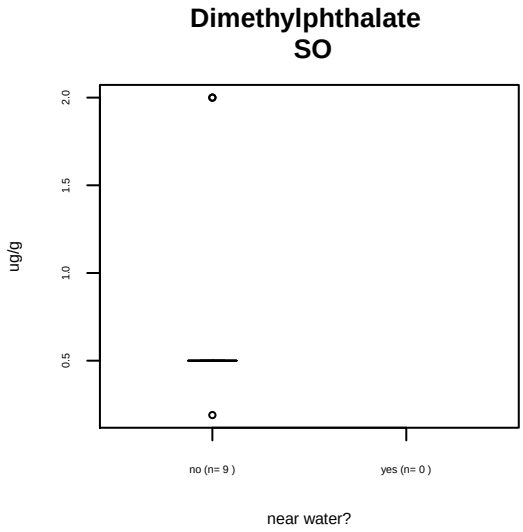

Dichloromethane
WG
log− ug/l
−5
0
5
no (n= 162)
yes (n= 28)
near water?

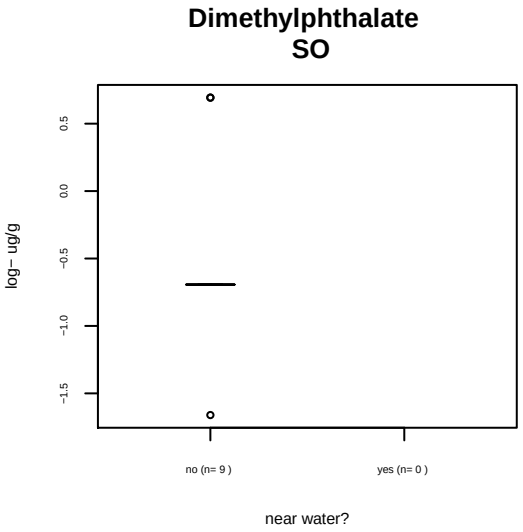

Diethylphthalate
SO
ug/g
0.5
1.0
1.5
2.0
no (n= 9)
yes (n= 0)
near water?

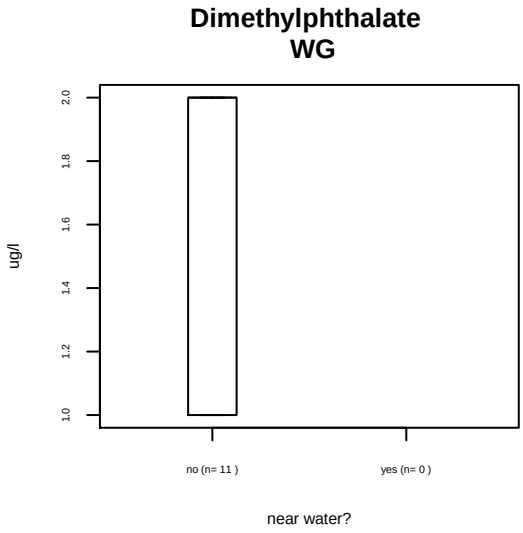

Diethylphthalate
SO
log− ug/g
−1.5
−1.0
−0.5
0.0
0.5
no (n= 9)
yes (n= 0)
near water?

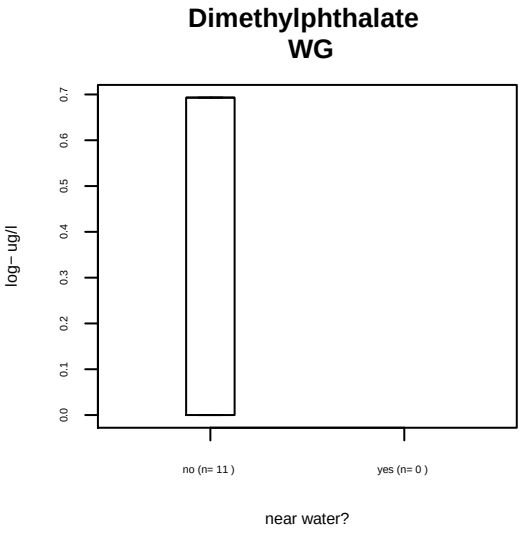

Diethylphthalate
WG
ug/l
2
4
6
8
10
no (n= 11)
yes (n= 0)
near water?

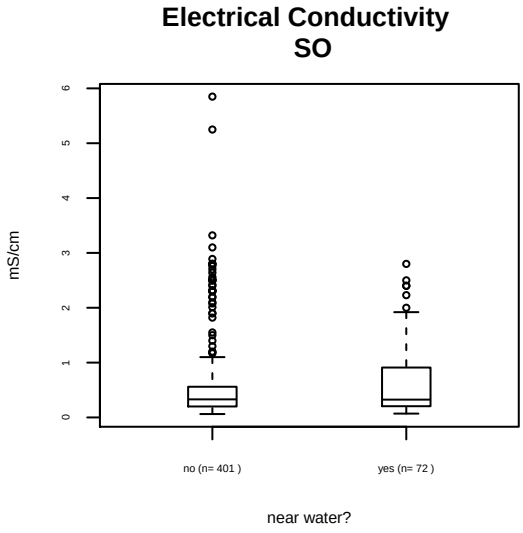

Diethylphthalate
WG
log− ug/l
0.0
0.5
1.0
1.5
2.0
no (n= 11)
yes (n= 0)
near water?

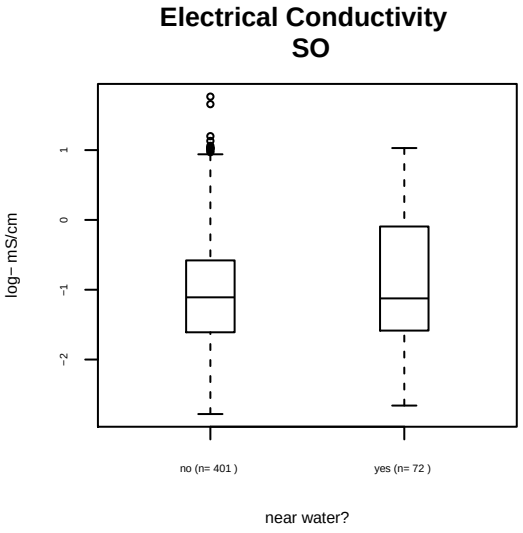

Dimethylphthalate
SO
ug/g
2.0
1.5
1.0
0.5
no (n= 9)
yes (n= 0)
near water?

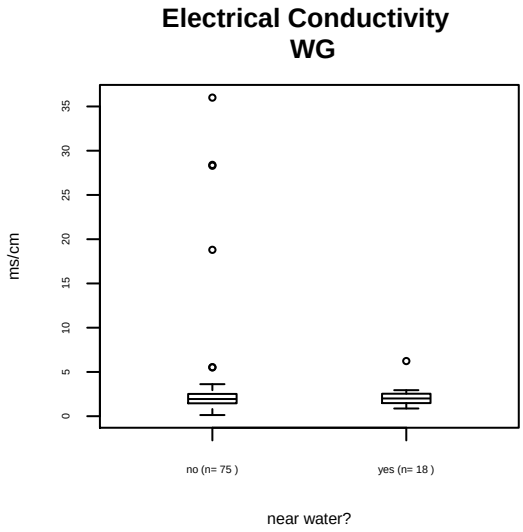

Dimethylphthalate
SO
log− ug/g
0.5
0.0
−0.5
−1.0
−1.5
no (n= 9)
yes (n= 0)
near water?

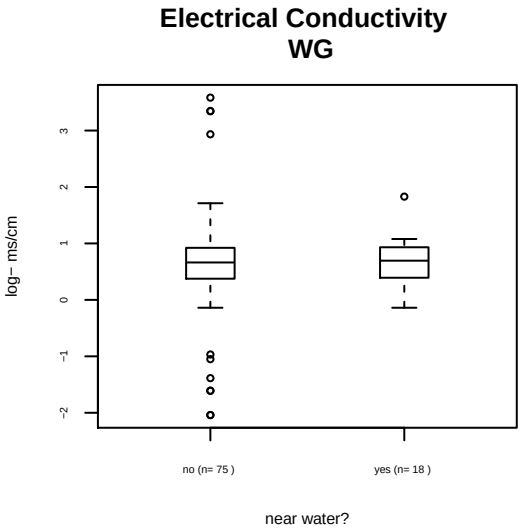

Dimethylphthalate
WG
ug/l
2.0
1.8
1.6
1.4
1.2
1.0
no (n= 11)
yes (n= 0)
near water?

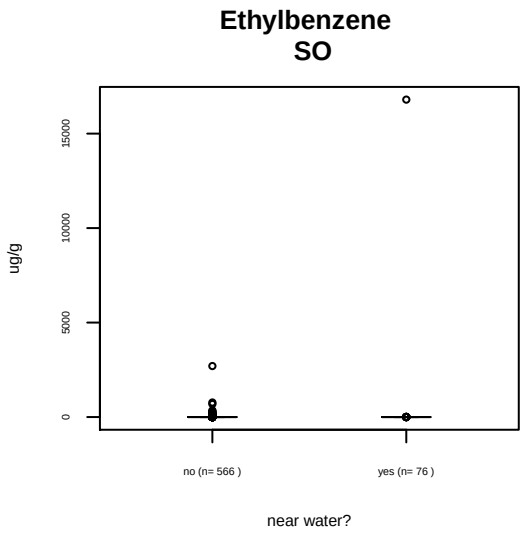

Dimethylphthalate
WG
log− ug/l
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
no (n= 11)
yes (n= 0)
near water?

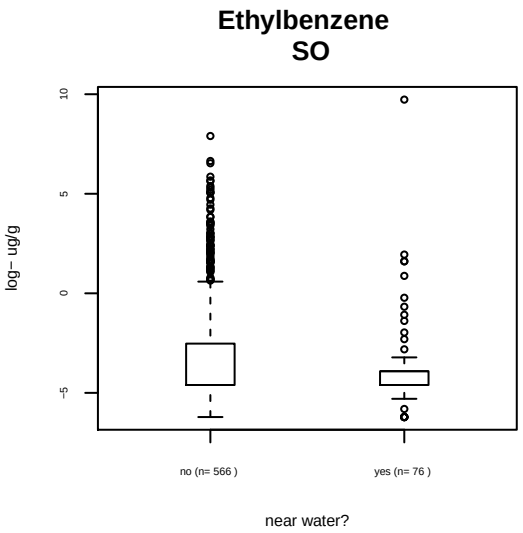

Electrical Conductivity
SO
mS/cm
6
5
4
3
2
1
0
no (n= 401)
yes (n= 72)
near water?

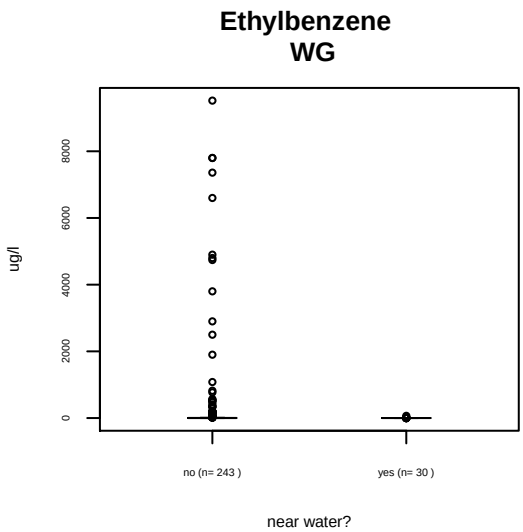

Electrical Conductivity
SO
log− mS/cm
1
0
−1
−2
no (n= 401)
yes (n= 72)
near water?

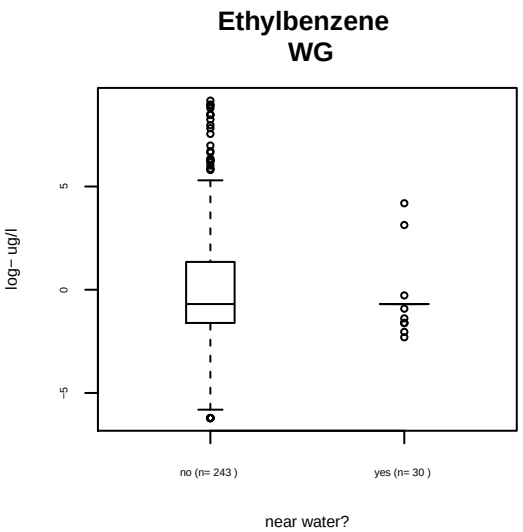

Electrical Conductivity
WG
ms/cm
0
5
10
15
20
25
30
35
no (n= 75)
yes (n= 18)
near water?

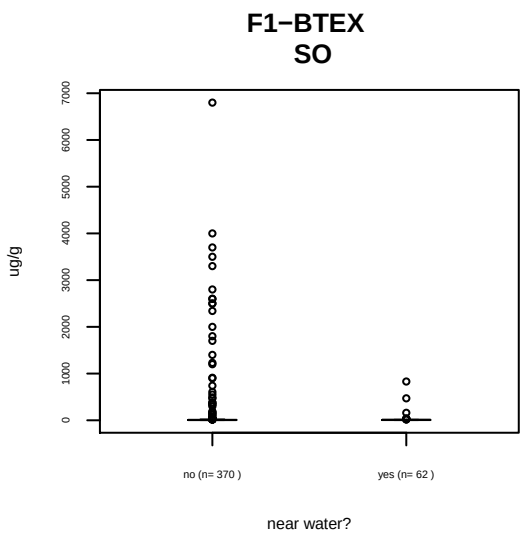

Electrical Conductivity
WG
log− ms/cm
−2
−1
0
1
2
3
no (n= 75)
yes (n= 18)
near water?

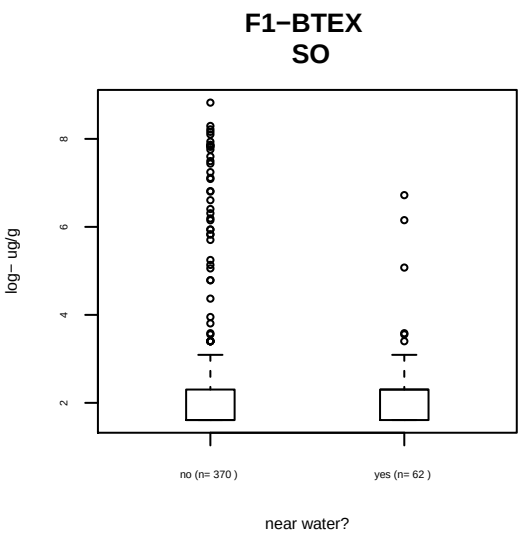

Ethylbenzene
SO
ug/g
0
5000
10000
15000
no (n= 566)
yes (n= 76)
near water?

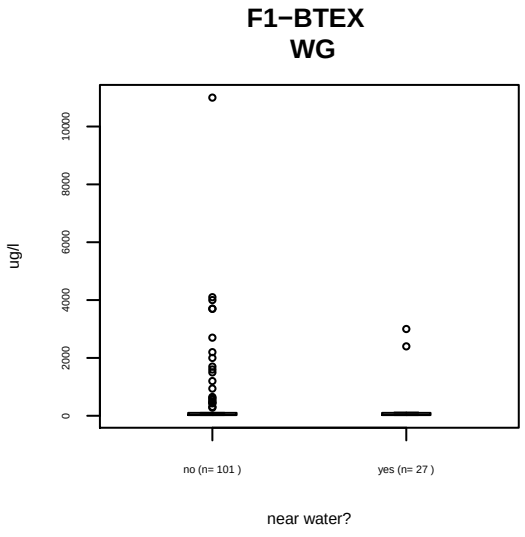

Ethylbenzene
SO
log− ug/g
−5
0
5
10
no (n= 566)
yes (n= 76)
near water?

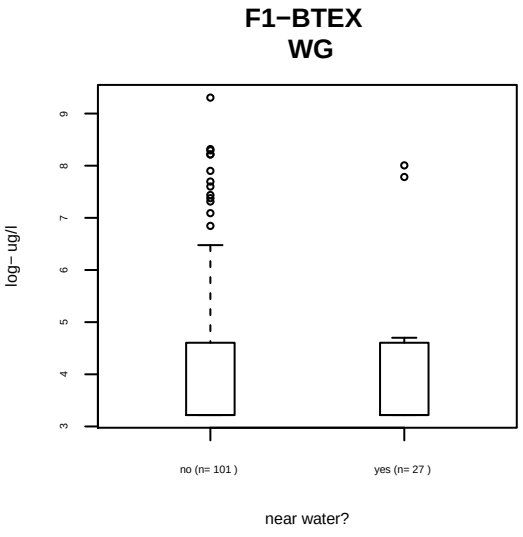

Ethylbenzene
WG
ug/l
0
2000
4000
6000
8000
no (n= 243)
yes (n= 30)
near water?

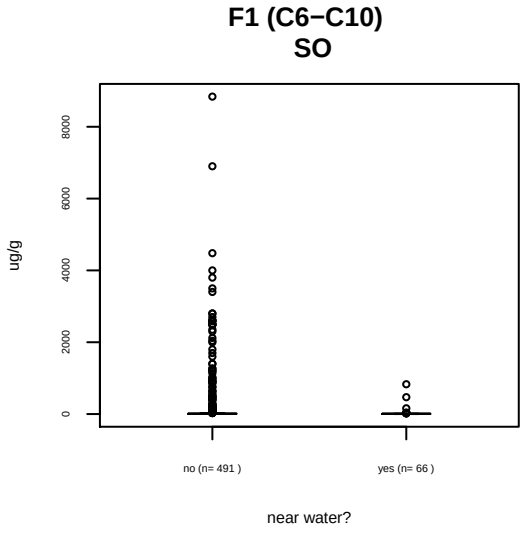

Ethylbenzene
WG
log− ug/l
−5
0
5
no (n= 243)
yes (n= 30)
near water?

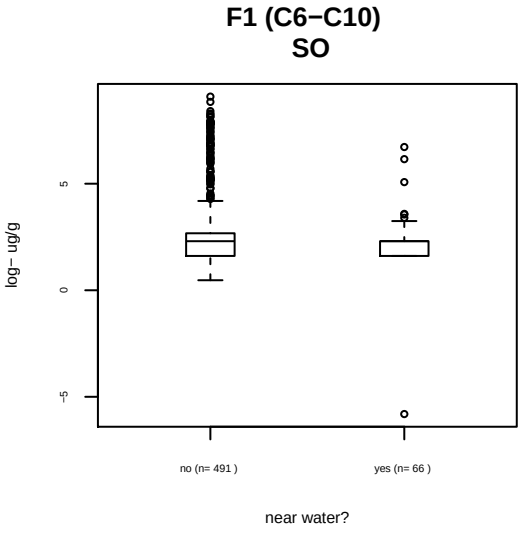

F1−BTEX
SO
ug/g
0
1000
2000
3000
4000
5000
6000
7000
no (n= 370)
yes (n= 62)
near water?

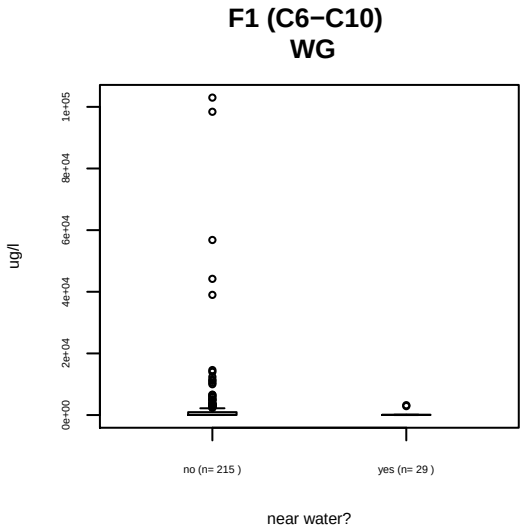

F1−BTEX
SO
log− ug/g
2
4
6
8
no (n= 370)
yes (n= 62)
near water?

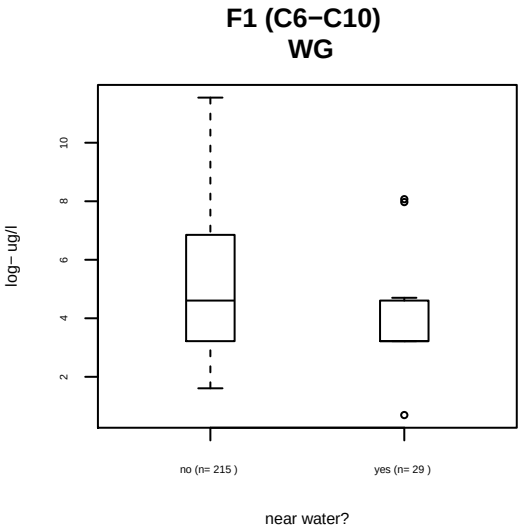

F1−BTEX
WG
ug/l
0
2000
4000
6000
8000
10000
no (n= 101)
yes (n= 27)
near water?

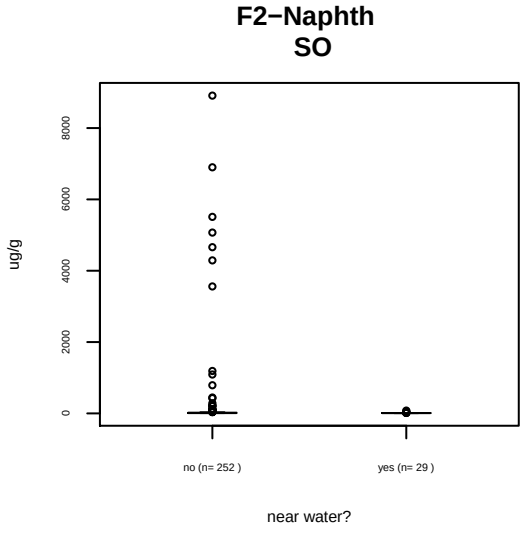

F1−BTEX
WG
log− ug/l
3
4
5
6
7
8
9
no (n= 101)
yes (n= 27)
near water?

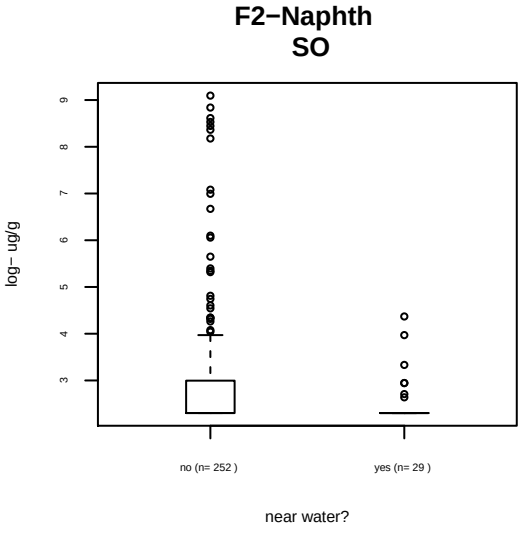

F1 (C6−C10)
SO
ug/g
0
2000
4000
6000
8000
no (n= 491)
yes (n= 66)
near water?

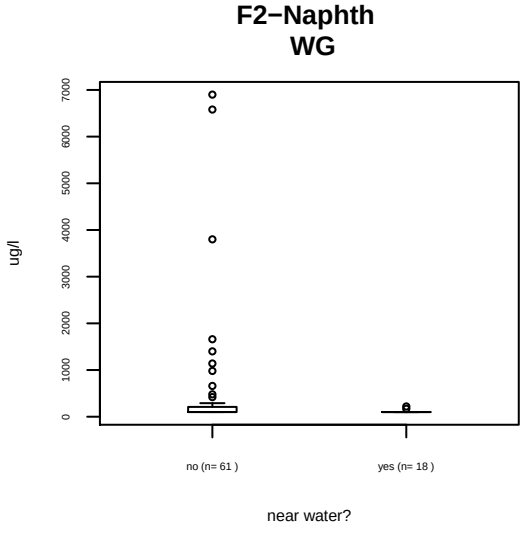

F1 (C6−C10)
SO
log− ug/g
−5
0
5
no (n= 491)
yes (n= 66)
near water?

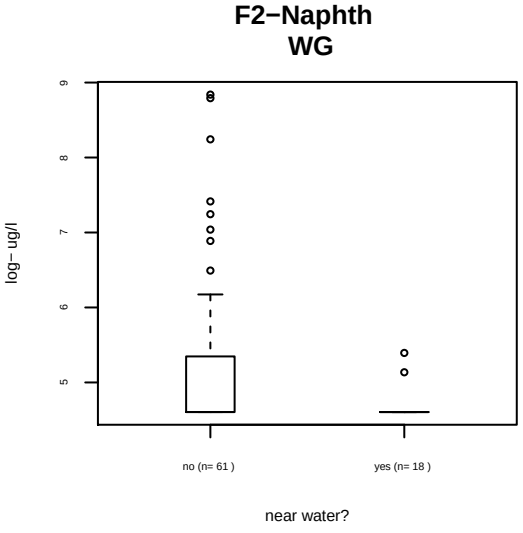

F1 (C6−C10)
WG
ug/l
0e+00
2e+04
4e+04
6e+04
8e+04
1e+05
no (n= 215)
yes (n= 29)
near water?

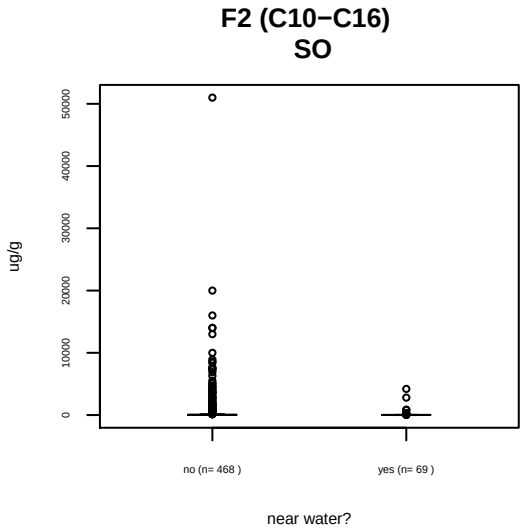

F1 (C6−C10)
WG
log− ug/l
2
4
6
8
10
no (n= 215)
yes (n= 29)
near water?

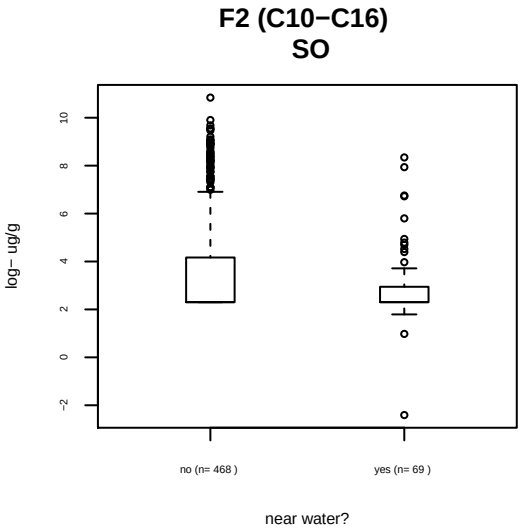

F2−Naphth
SO
ug/g
0
2000
4000
6000
8000
no (n= 252)
yes (n= 29)
near water?

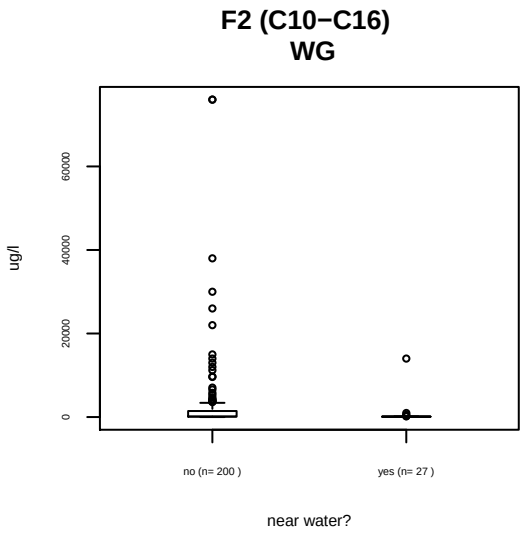

F2−Naphth
SO
log− ug/g
3
4
5
6
7
8
9
no (n= 252)
yes (n= 29)
near water?

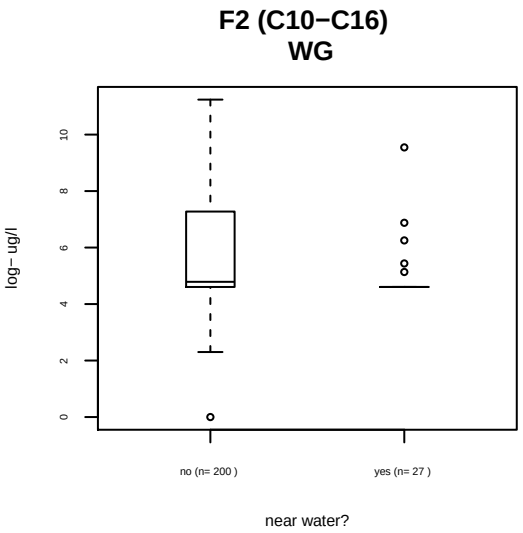

F2−Naphth
WG
ug/l
0
1000
2000
3000
4000
5000
6000
7000
no (n= 61)
yes (n= 18)
near water?

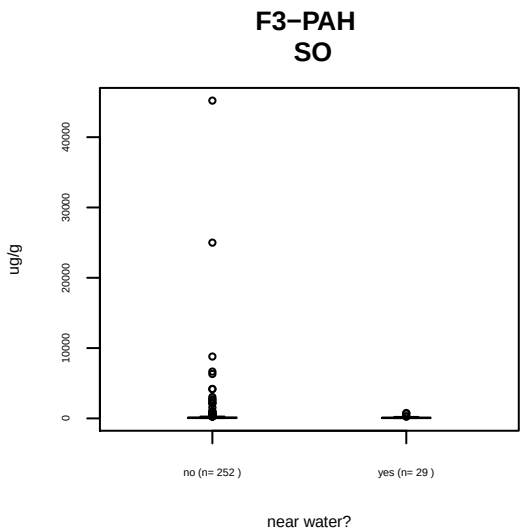

F2−Naphth
WG
log− ug/l
5
6
7
8
9
no (n= 61)
yes (n= 18)
near water?

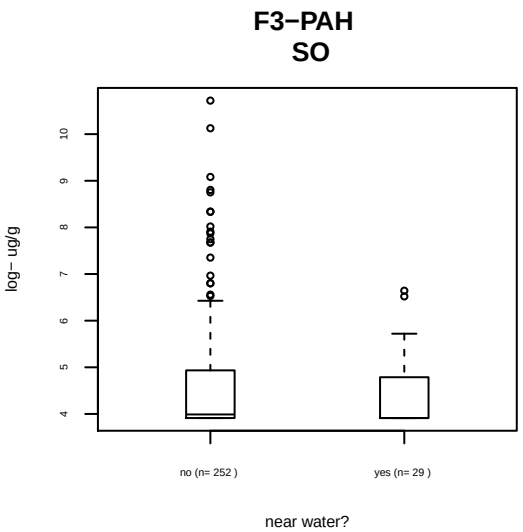

F2 (C10−C16)
SO
ug/g
0
10000
20000
30000
40000
50000
no (n= 468)
yes (n= 69)
near water?

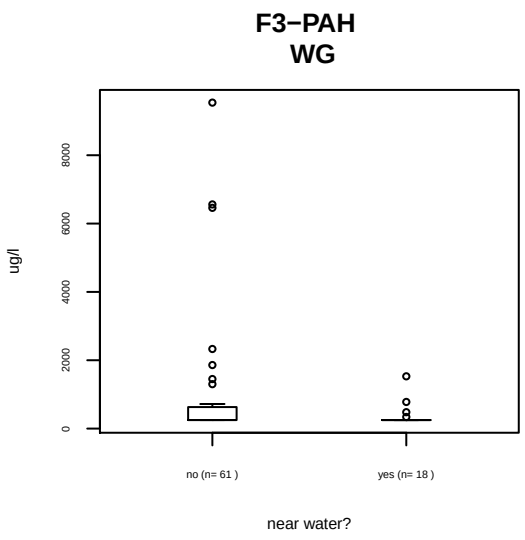

F2 (C10−C16)
SO
log− ug/g
−2
0
2
4
6
8
10
no (n= 468)
yes (n= 69)
near water?

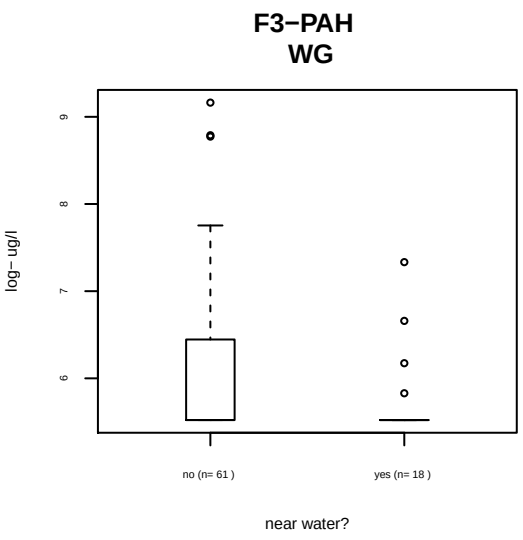

F2 (C10−C16)
WG
ug/g
0
20000
40000
60000
no (n= 200)
yes (n= 27)
near water?

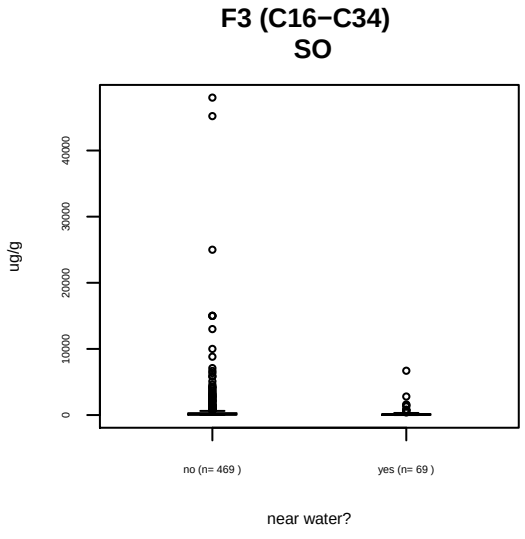

F2 (C10−C16)
WG
log− ug/g
0
2
4
6
8
10
no (n= 200)
yes (n= 27)
near water?

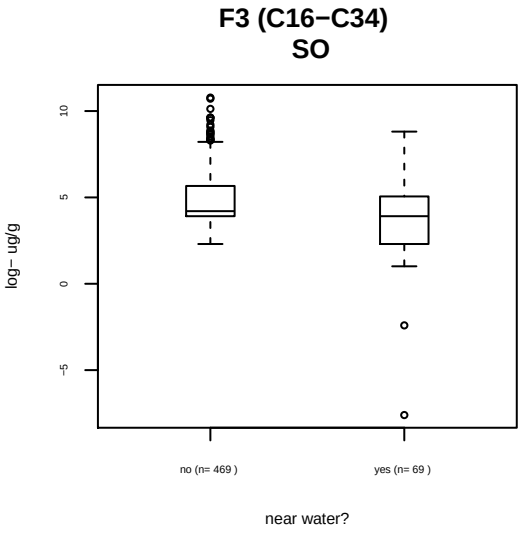

F3−PAH
SO
ug/g
0
10000
20000
30000
40000
no (n= 252)
yes (n= 29)
near water?

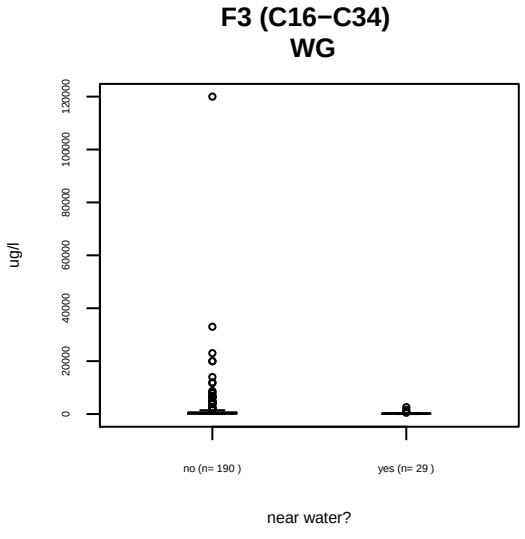

F3−PAH
SO
log− ug/g
4
5
6
7
8
9
10
no (n= 252)
yes (n= 29)
near water?

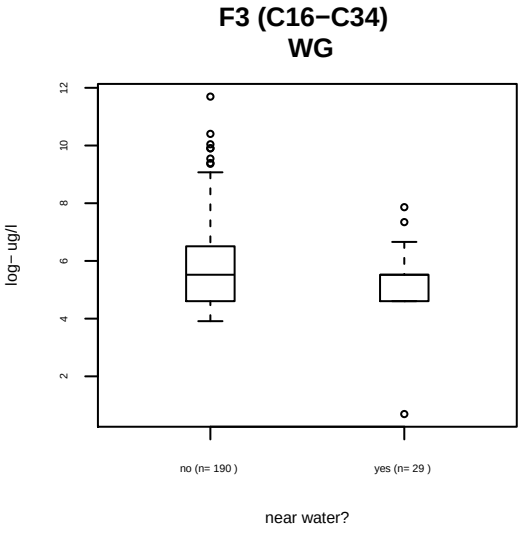

F3−PAH
WG
ug/l
0
2000
4000
6000
8000
no (n= 61)
yes (n= 18)
near water?

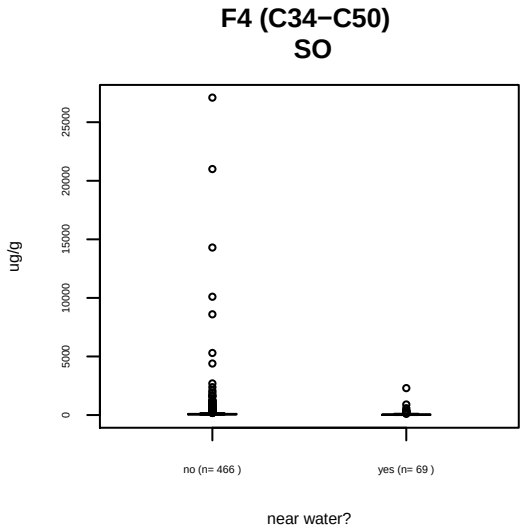

F3−PAH
WG
log− ug/l
6
7
8
9
no (n= 61)
yes (n= 18)
near water?

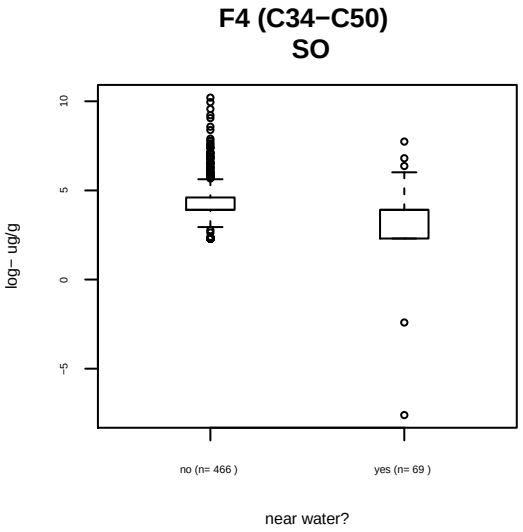

F3 (C16−C34)
SO
ug/g
0
10000
20000
30000
40000
no (n= 469)
yes (n= 69)
near water?

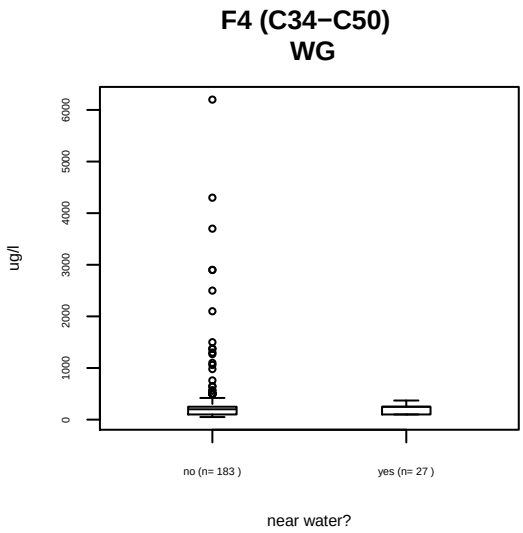

F3 (C16−C34)
SO
log− ug/g
−5
0
5
10
no (n= 469)
yes (n= 69)
near water?

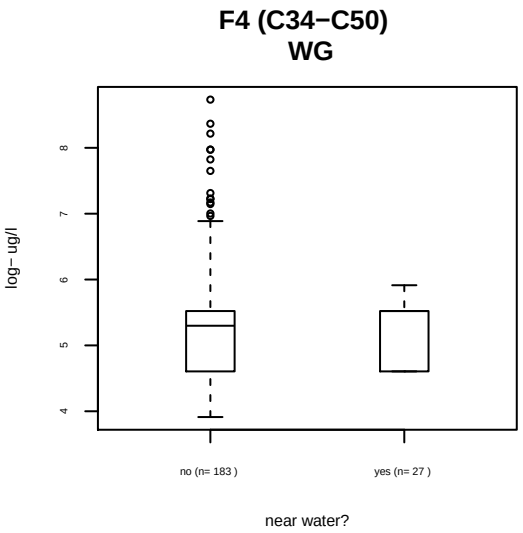

F3 (C16−C34)
WG
ug/l
0
20000
40000
60000
80000
100000
120000
no (n= 190)
yes (n= 29)
near water?

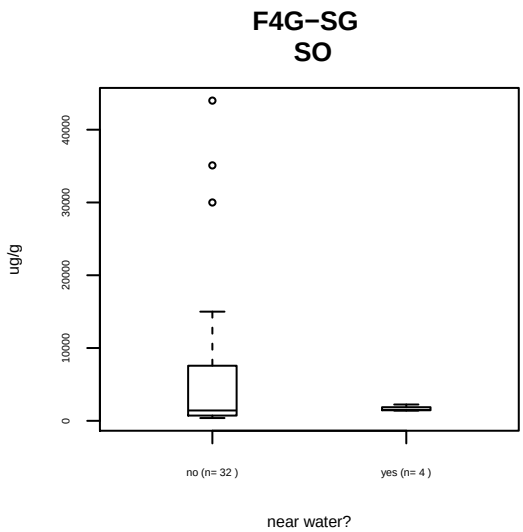

F3 (C16−C34)
WG
log− ug/l
2
4
6
8
10
12
no (n= 190)
yes (n= 29)
near water?

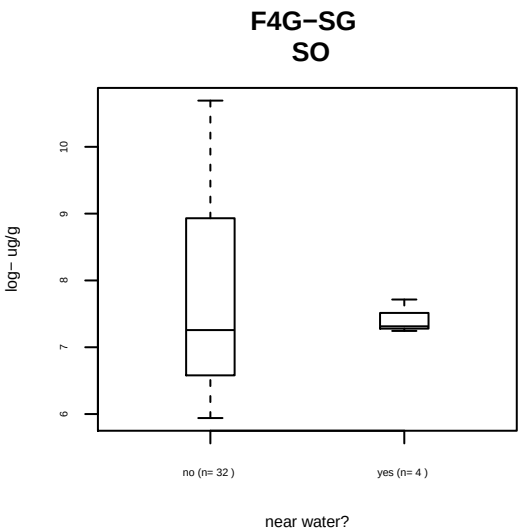

F4 (C34−C50)
SO
ug/g
0
5000
10000
15000
20000
25000
no (n= 466)
yes (n= 69)
near water?

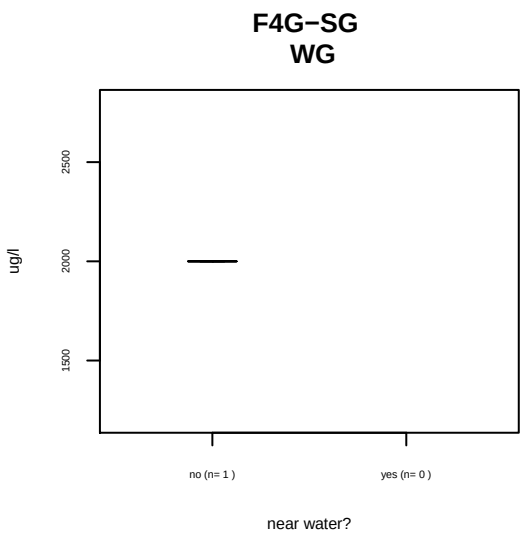

F4 (C34−C50)
SO
log− ug/g
−5
0
5
10
no (n= 466)
yes (n= 69)
near water?

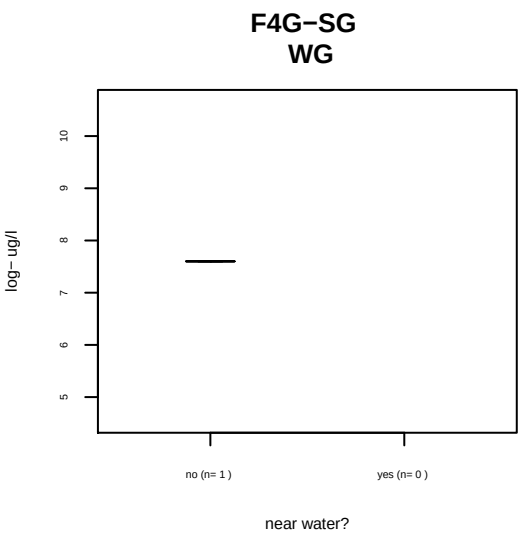

F4 (C34−C50)
WG
ug/l
0
1000
2000
3000
4000
5000
6000
no (n= 183)
yes (n= 27)
near water?

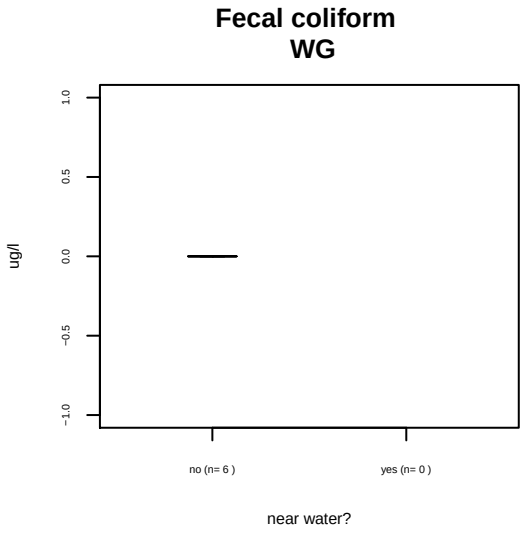

F4 (C34−C50)
WG
log− ug/l
4
5
6
7
8
no (n= 183)
yes (n= 27)
near water?

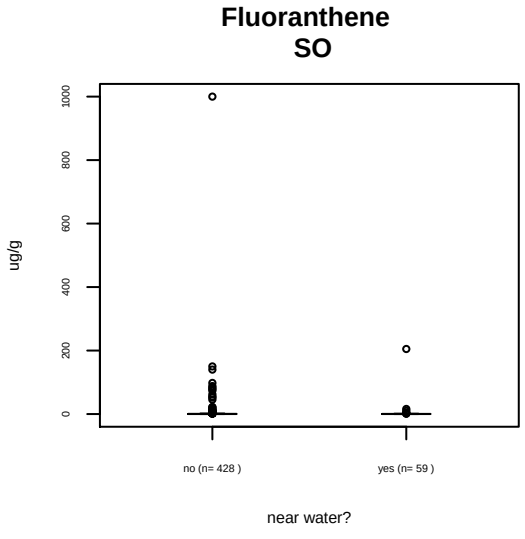

F4G−SG
SO
ug/gn
0
10000
20000
30000
40000
no (n= 32)
yes (n= 4)
near water?

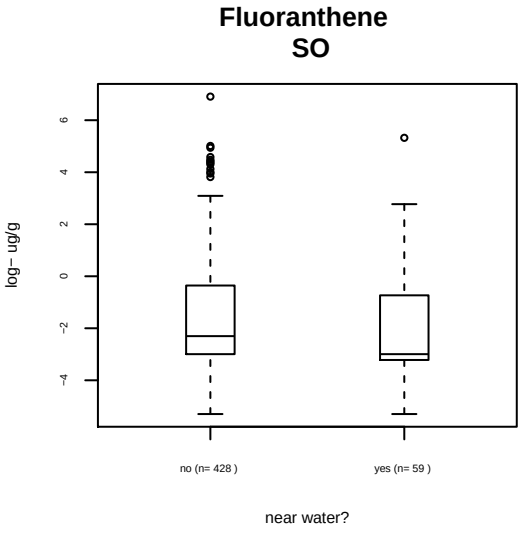

F4G−SG
SO
log− ug/g/gn
6
7
8
9
10
no (n= 32)
yes (n= 4)
near water?

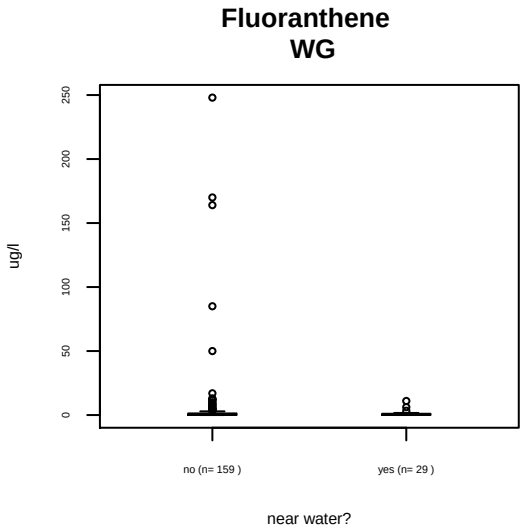

F4G−SG
WG
ug/l
2500
2000
1500
no (n= 1)
yes (n= 0)
near water?

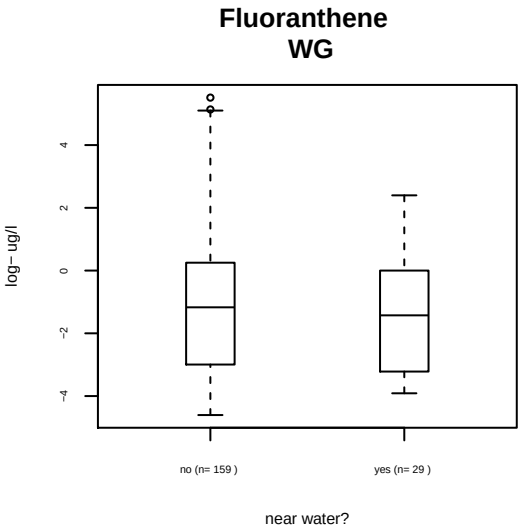

F4G−SG
WG
log− ug/l
10
9
8
7
6
5
no (n= 1)
yes (n= 0)
near water?

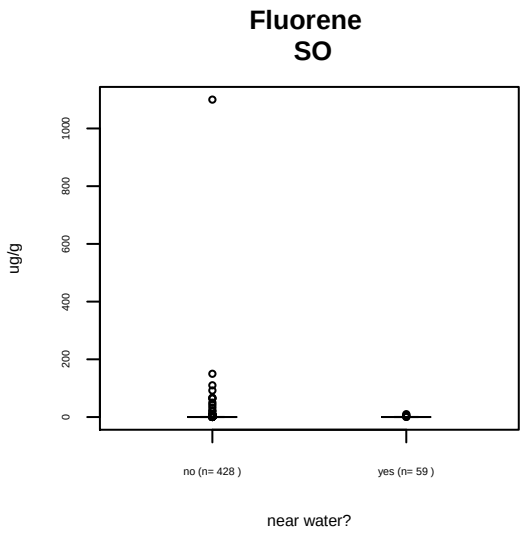

Fecal coliform
WG
ug/l
1.0
0.5
0.0
−0.5
−1.0
no (n= 6)
yes (n= 0)
near water?

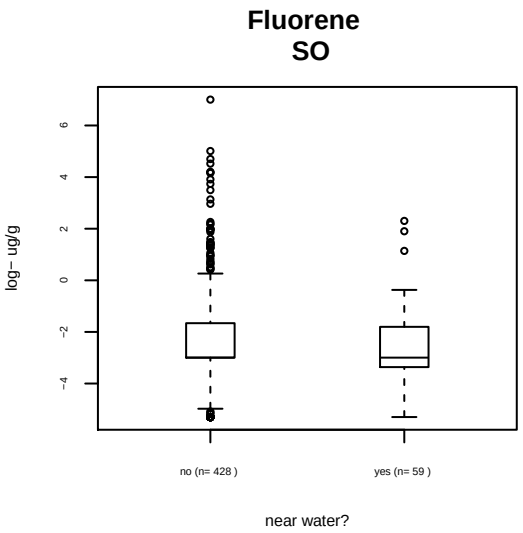

Fluoranthene
SO
ug/g
1000
800
600
400
200
0
no (n= 428)
yes (n= 59)
near water?

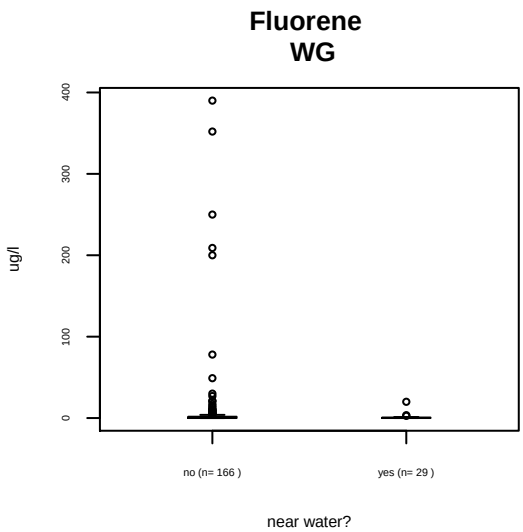

Fluoranthene
SO
log− ug/g
6
4
2
0
−2
−4
no (n= 428)
yes (n= 59)
near water?

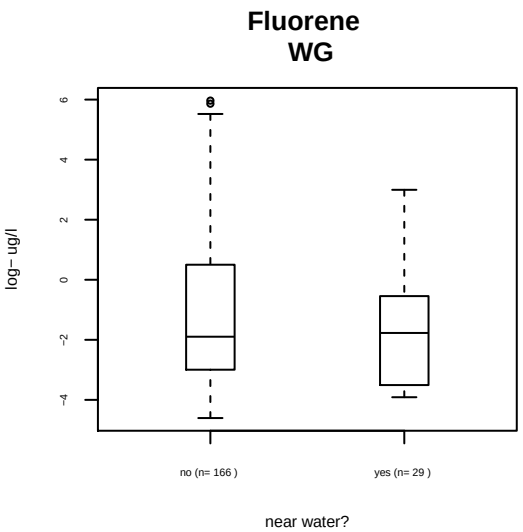

Fluoranthene
WG
ug/l
0
50
100
150
200
250
no (n= 159)
yes (n= 29)
near water?

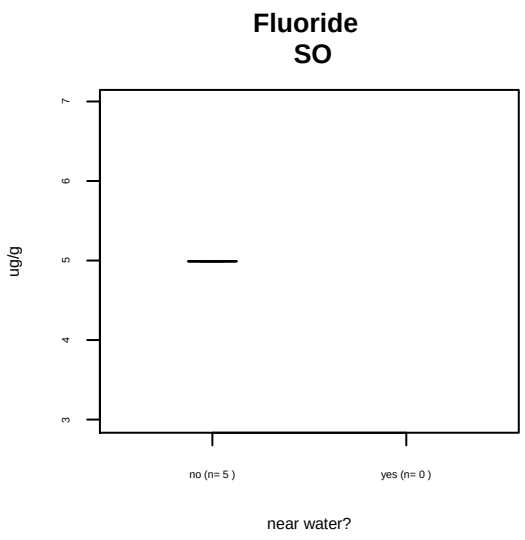

Fluoranthene
WG
log− ug/l
−4
−2
0
2
4
no (n= 159)
yes (n= 29)
near water?

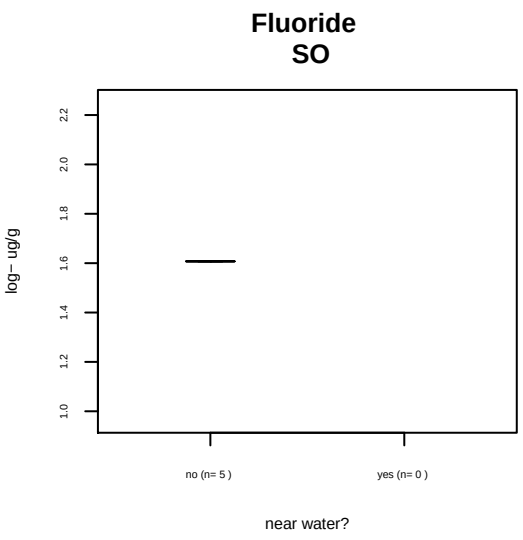

Fluorene
SO
ug/g
0
200
400
600
800
1000
no (n= 428)
yes (n= 59)
near water?

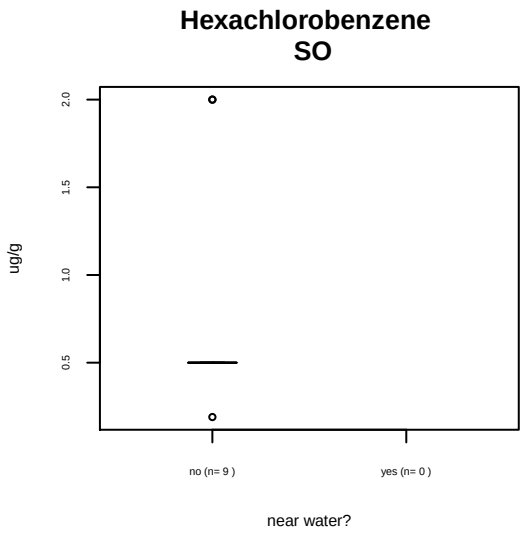

Fluorene
SO
log− ug/g
−4
−2
0
2
4
6
no (n= 428)
yes (n= 59)
near water?

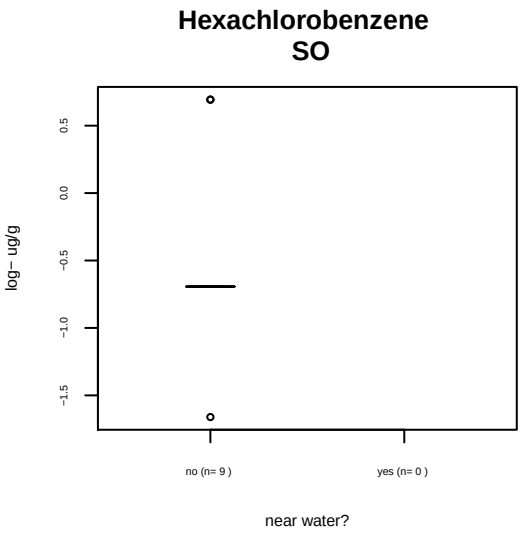

Fluorene
WG
ug/l
0
100
200
300
400
no (n= 166)
yes (n= 29)
near water?

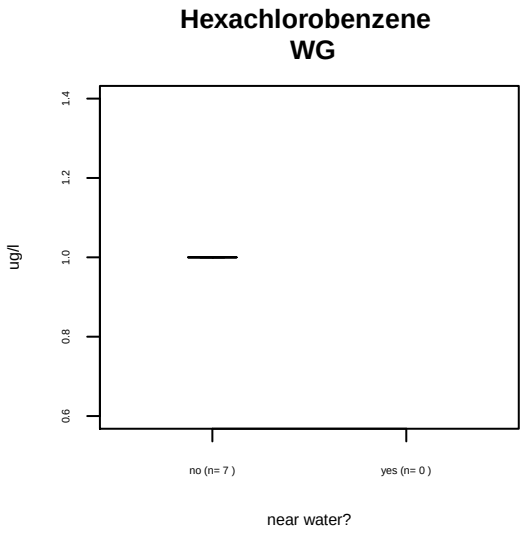

Fluorene
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 166)
yes (n= 29)
near water?

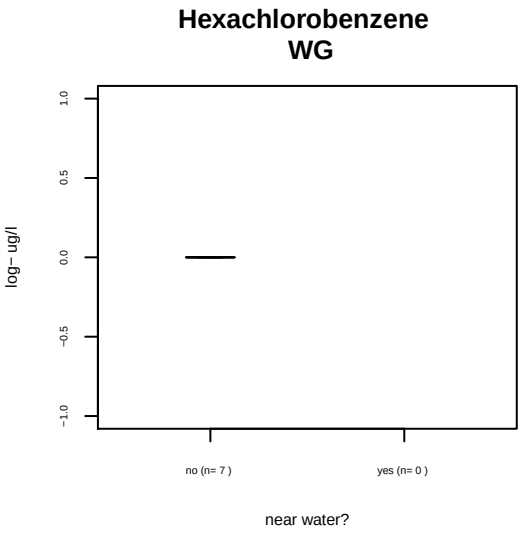

Fluoride
SO
ug/g
3
4
5
6
7
no (n= 5)
yes (n= 0)
near water?

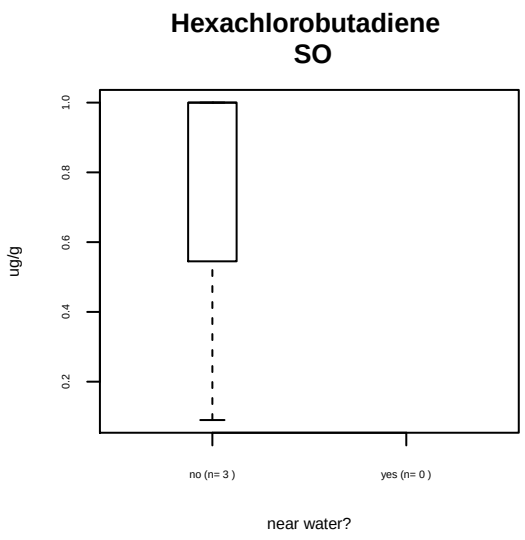

Fluoride
SO
log− ug/g
1.0
1.2
1.4
1.6
1.8
2.0
2.2
no (n= 5)
yes (n= 0)
near water?

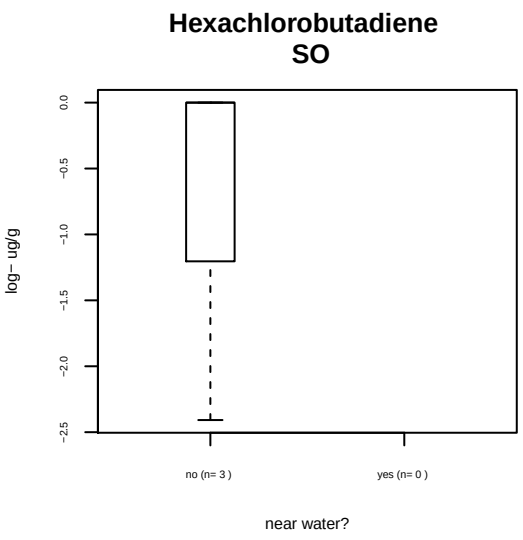

Hexachlorobenzene
SO
ug/g
0.5
1.0
1.5
2.0
no (n= 9)
yes (n= 0)
near water?

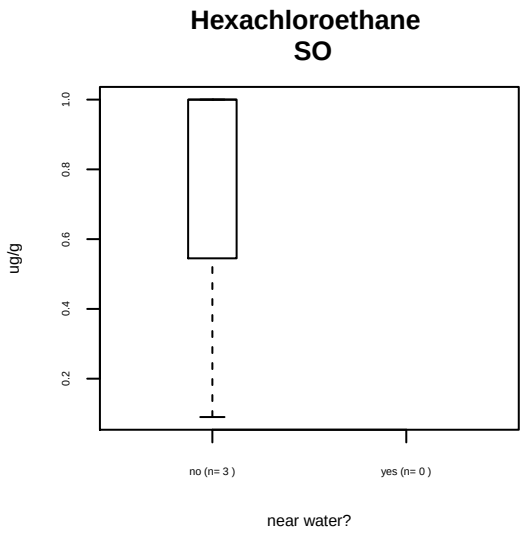

Hexachlorobenzene
SO
log− ug/g
−1.5
−1.0
−0.5
0.0
0.5
no (n= 9)
yes (n= 0)
near water?

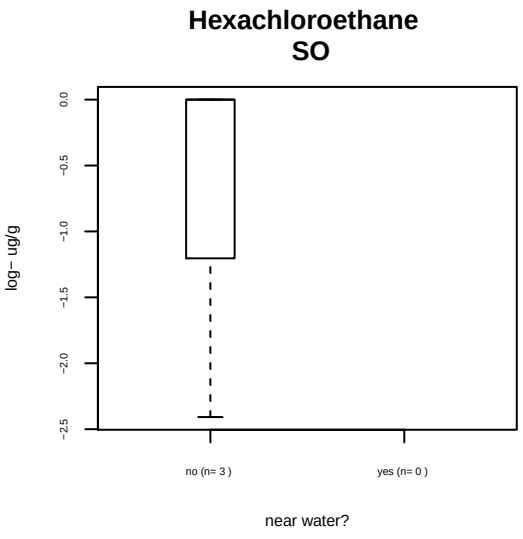

Hexachlorobenzene
WG
ug/l
0.6
0.8
1.0
1.2
1.4
no (n= 7)
yes (n= 0)
near water?

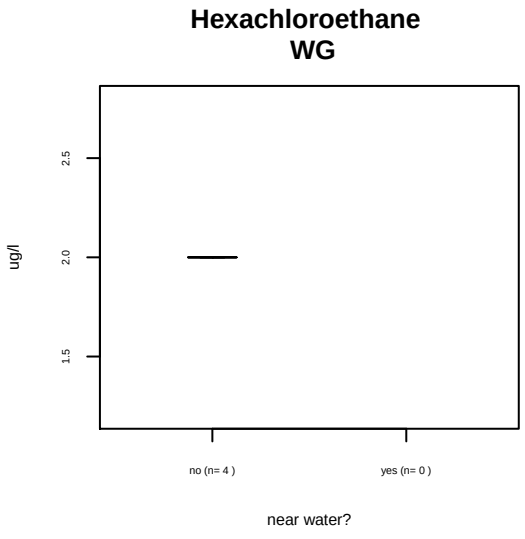

Hexachlorobenzene
WG
log− ug/l
−1.0
−0.5
0.0
0.5
1.0
no (n= 7)
yes (n= 0)
near water?

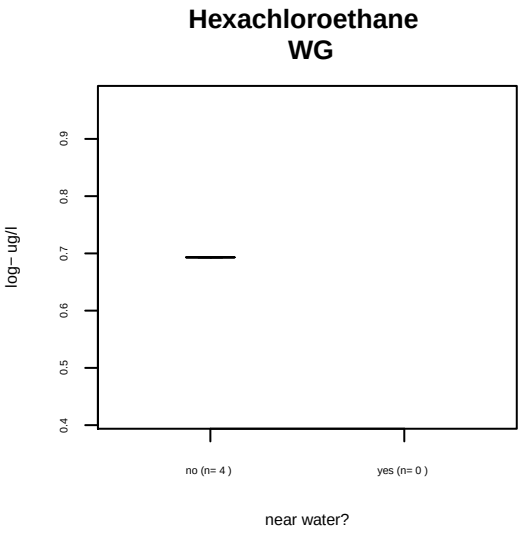

Hexachlorobutadiene
SO
ug/g
1.0
0.8
0.6
0.4
0.2
no (n= 3)
yes (n= 0)
near water?

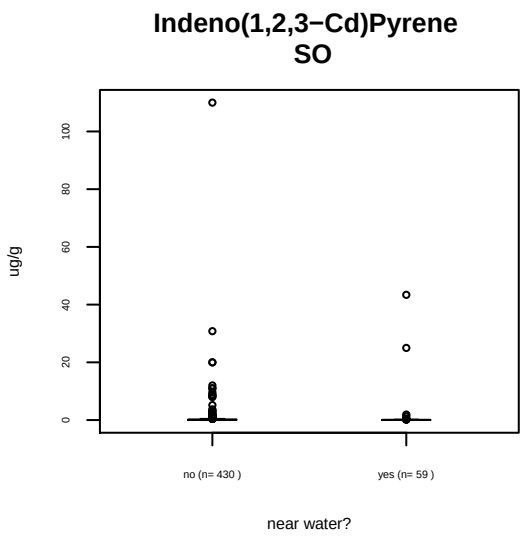

Hexachlorobutadiene
SO
log−ug/g
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
no (n= 3)
yes (n= 0)
near water?

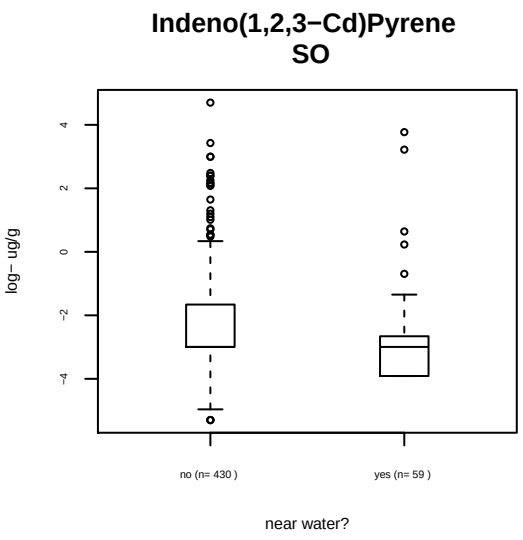

Hexachloroethane
SO
ug/g
1.0
0.8
0.6
0.4
0.2
no (n= 3)
yes (n= 0)
near water?

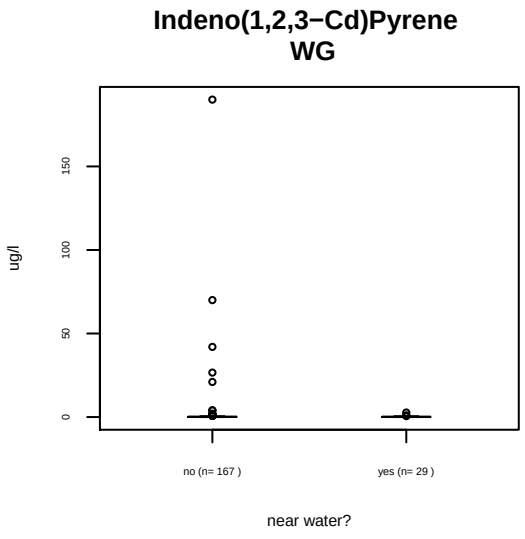

Hexachloroethane
SO
log−ug/g
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
no (n= 3)
yes (n= 0)
near water?

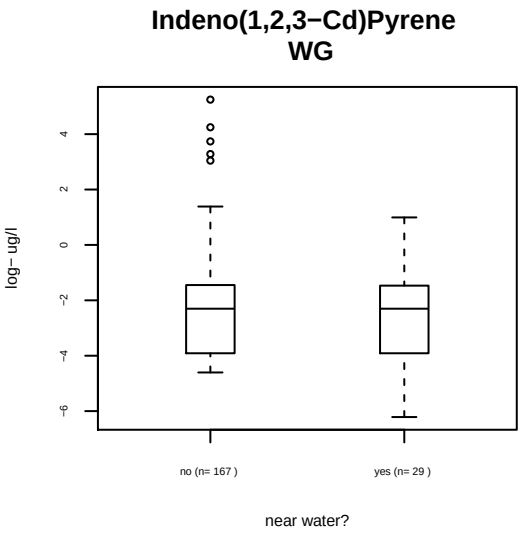

Hexachloroethane
WG
ug/l
2.5
2.0
1.5
no (n= 4)
yes (n= 0)
near water?

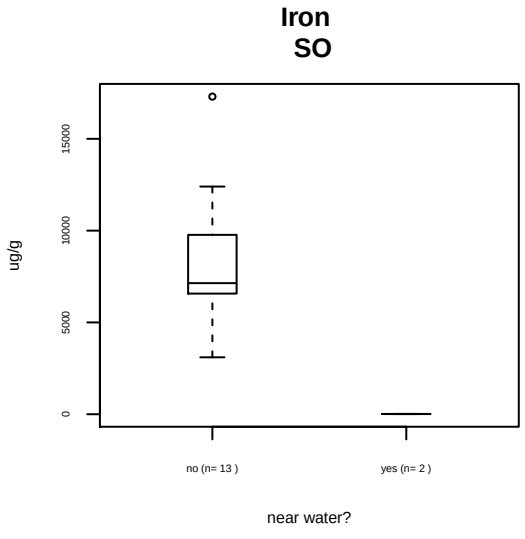

Hexachloroethane
WG
log−ug/l
0.9
0.8
0.7
0.6
0.5
0.4
no (n= 4)
yes (n= 0)
near water?

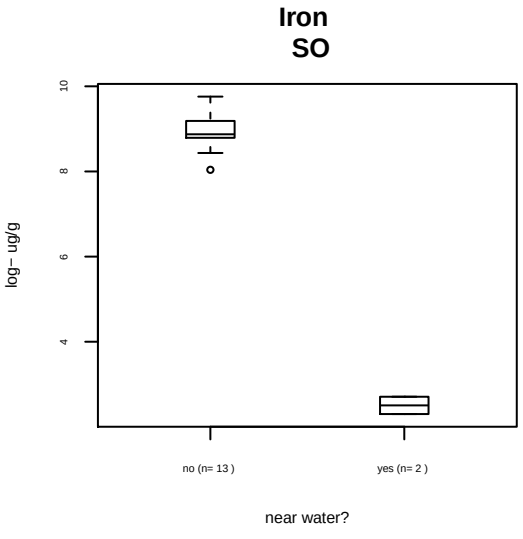

Indeno(1,2,3−Cd)Pyrene
SO
ug/g
0
20
40
60
80
100
no (n= 430)
yes (n= 59)
near water?

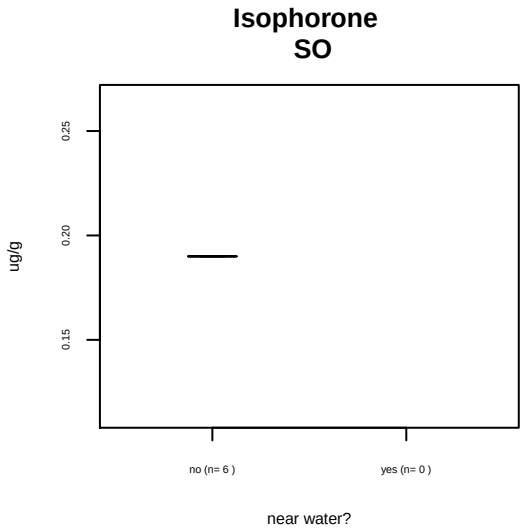

Indeno(1,2,3−Cd)Pyrene
SO
log− ug/g
−4
−2
0
2
4
no (n= 430)
yes (n= 59)
near water?

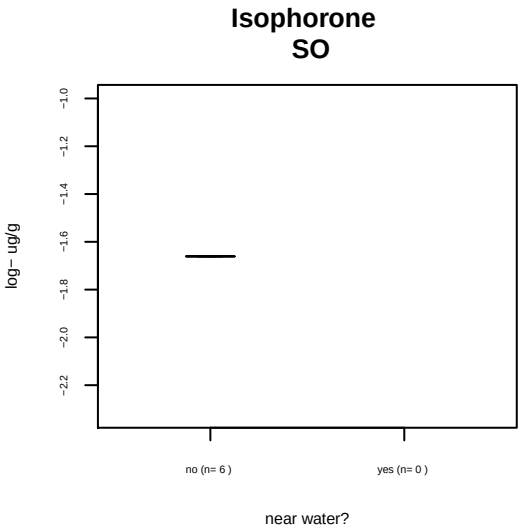

Indeno(1,2,3−Cd)Pyrene
WG
ug/l
0
50
100
150
no (n= 167)
yes (n= 29)
near water?

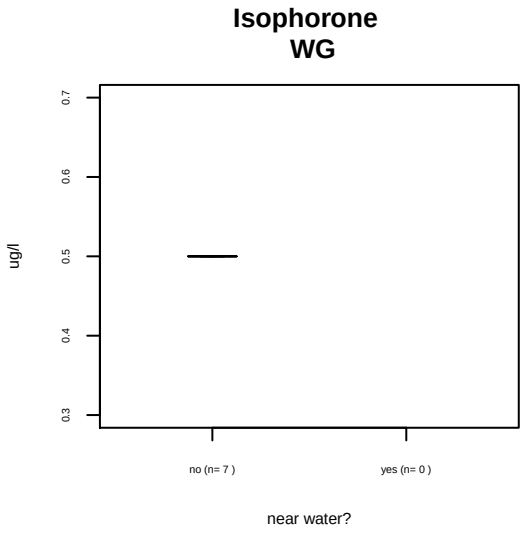

Indeno(1,2,3−Cd)Pyrene
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 167)
yes (n= 29)
near water?

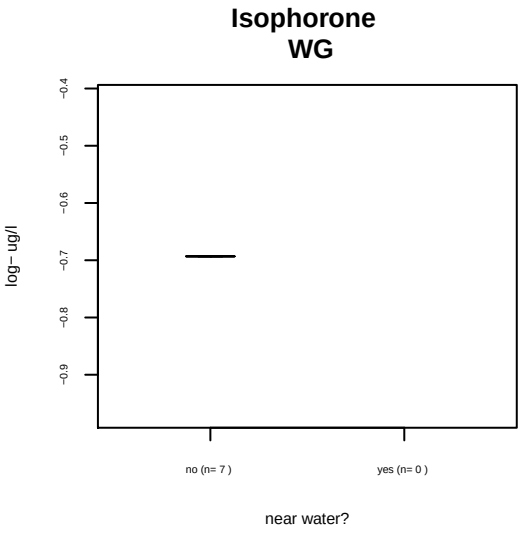

Iron
SO
ug/gn
0
5000
10000
15000
no (n= 13)
yes (n= 2)
near water?

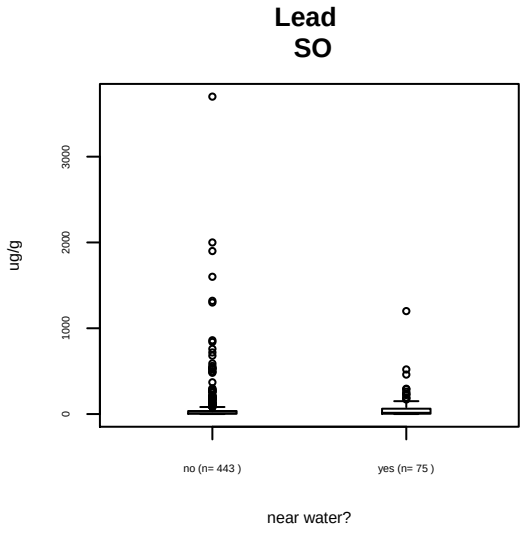

Iron
SO
log− ug/gn
4
6
8
10
no (n= 13)
yes (n= 2)
near water?

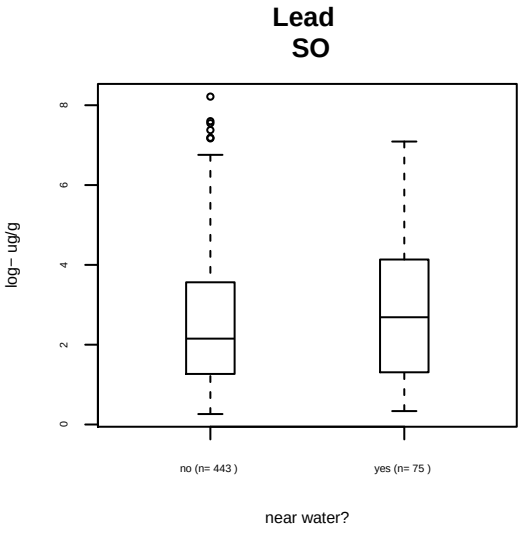

Isophorone
SO
ug/g
0.25
0.20
0.15
no (n= 6)
yes (n= 0)
near water?

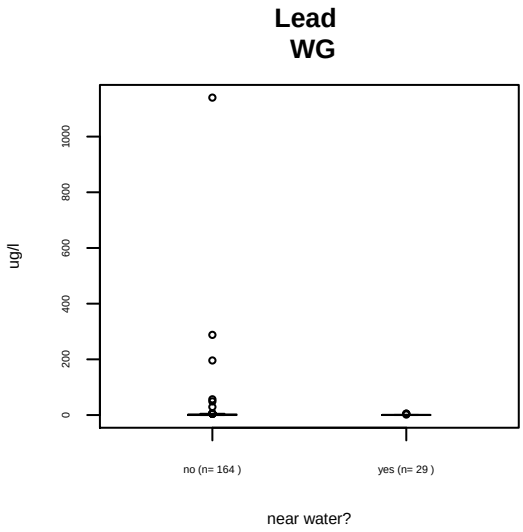

Isophorone
SO
log− ug/g
−1.0
−1.2
−1.4
−1.6
−1.8
−2.0
−2.2
no (n= 6)
yes (n= 0)
near water?

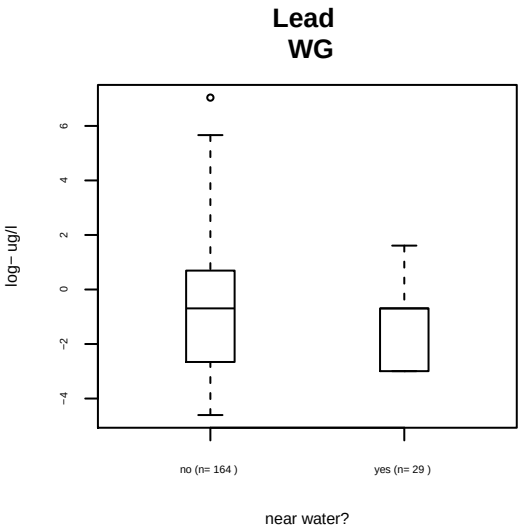

Isophorone
WG
ug/l
0.7
0.6
0.5
0.4
0.3
no (n= 7)
yes (n= 0)
near water?

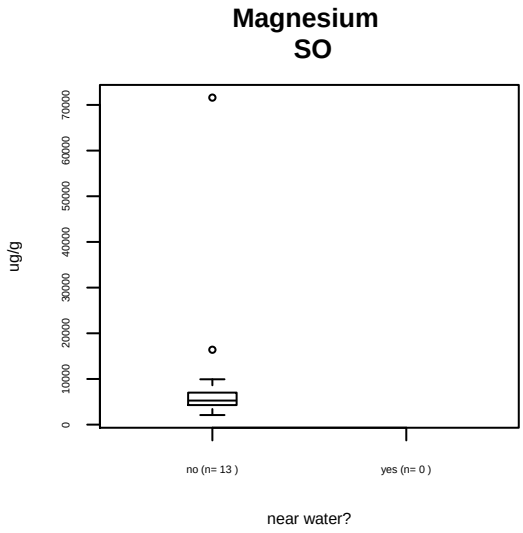

Isophorone
WG
log− ug/l
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
no (n= 7)
yes (n= 0)
near water?

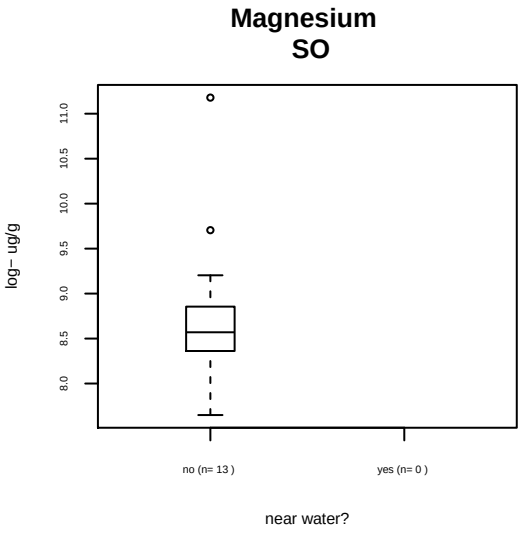

Lead
SO
ug/g
3000
2000
1000
0
no (n= 443)
yes (n= 75)
near water?

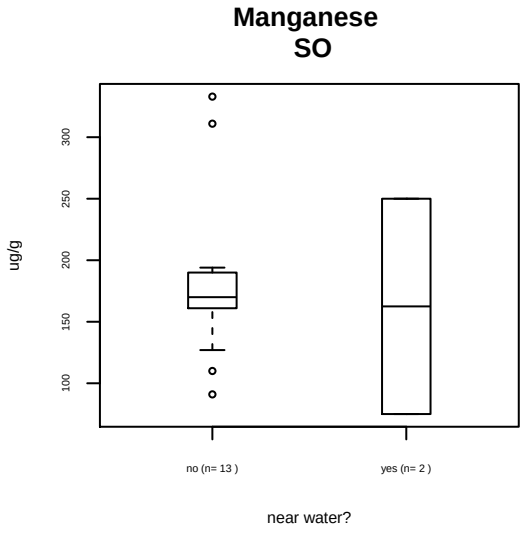

Lead
SO
log− ug/g
8
6
4
2
0
no (n= 443)
yes (n= 75)
near water?

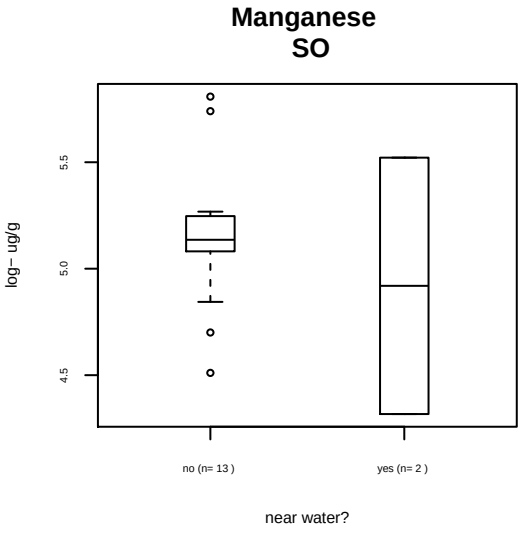

Lead
WG
ug/l
0
200
400
600
800
1000
no (n= 164)
yes (n= 29)
near water?

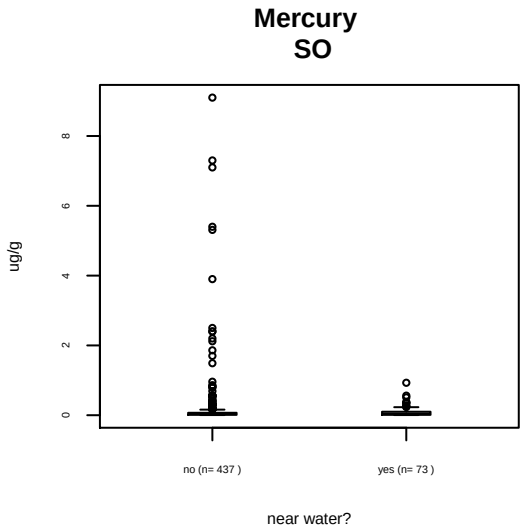

Lead
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 164)
yes (n= 29)
near water?

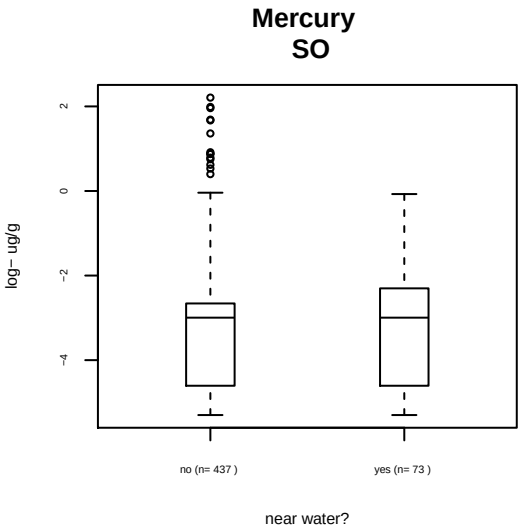

Magnesium
SO
ug/g
0
10000
20000
30000
40000
50000
60000
70000
no (n= 13)
yes (n= 0)
near water?

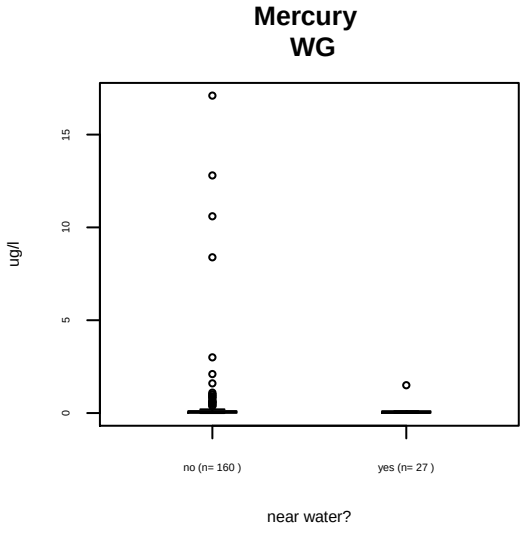

Magnesium
SO
log− ug/g
8.0
8.5
9.0
9.5
10.0
10.5
11.0
no (n= 13)
yes (n= 0)
near water?

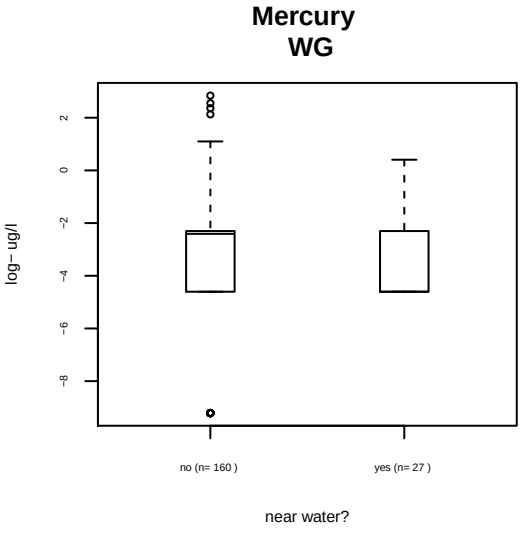

Manganese
SO
ug/g
100
150
200
250
300
no (n= 13)
yes (n= 2)
near water?

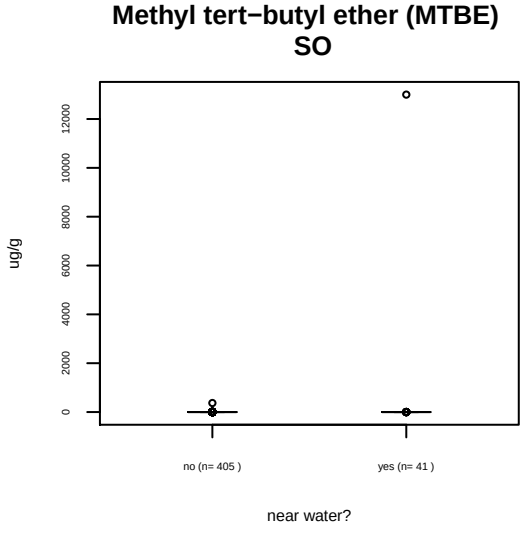

Manganese
SO
log− ug/g
4.5
5.0
5.5
no (n= 13)
yes (n= 2)
near water?

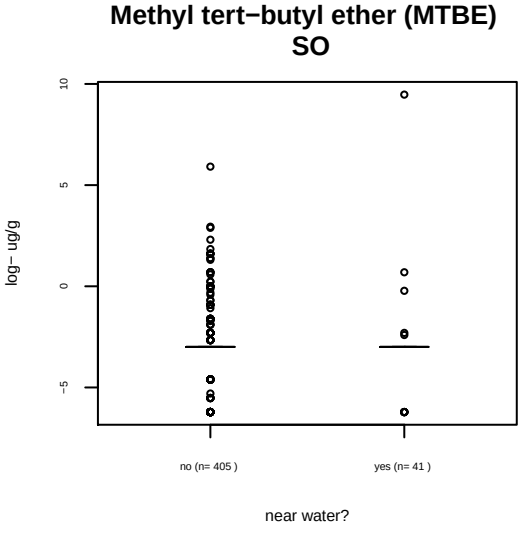

Mercury
SO
ug/g
0
2
4
6
8
no (n= 437)
yes (n= 73)
near water?

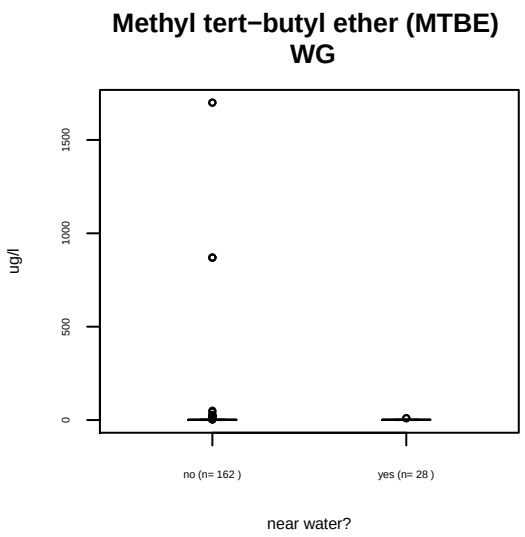

Mercury
SO
log− ug/g
−4
−2
0
2
no (n= 437)
yes (n= 73)
near water?

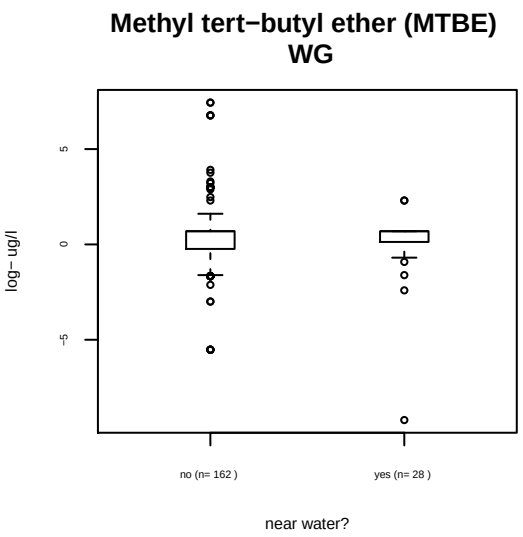

Mercury
WG
ug/l
0
5
10
15
no (n= 160)
yes (n= 27)
near water?

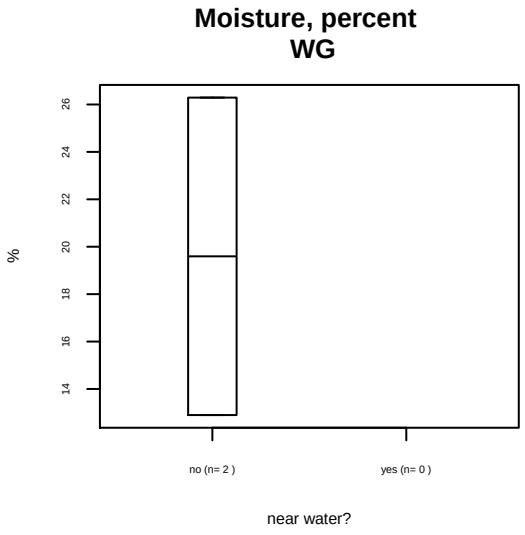

Mercury
WG
log− ug/l
−8
−6
−4
−2
0
2
no (n= 160)
yes (n= 27)
near water?

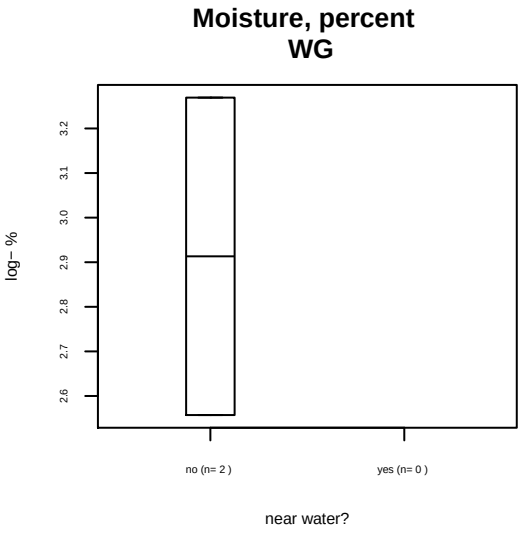

Methyl tert−butyl ether (MTBE)
SO
ug/g
0
2000
4000
6000
8000
10000
12000
no (n= 405)
yes (n= 41)
near water?

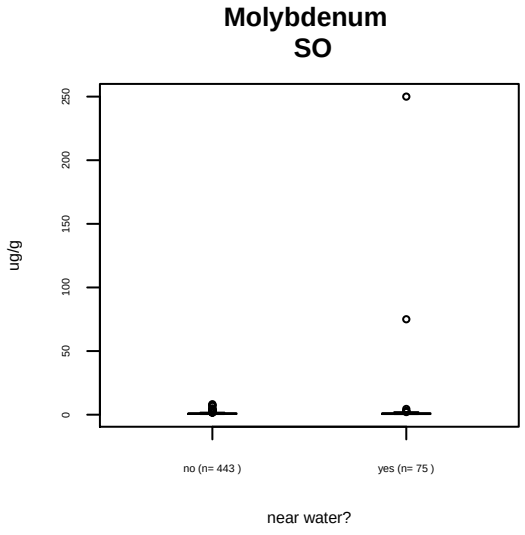

Methyl tert−butyl ether (MTBE)
SO
log− ug/g
−5
0
5
10
no (n= 405)
yes (n= 41)
near water?

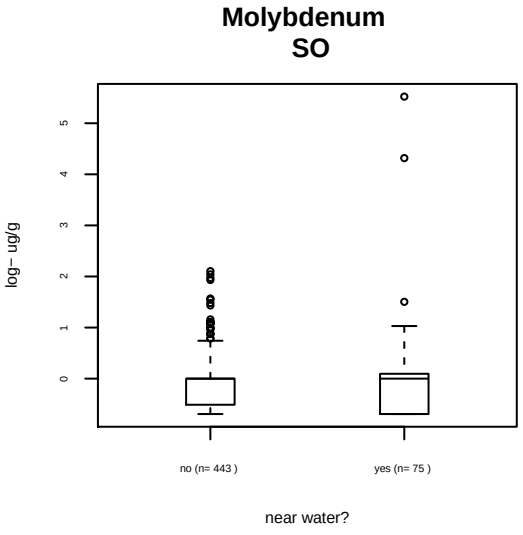

Methyl tert−butyl ether (MTBE)
WG
ug/l
0
500
1000
1500
no (n= 162)
yes (n= 28)
near water?

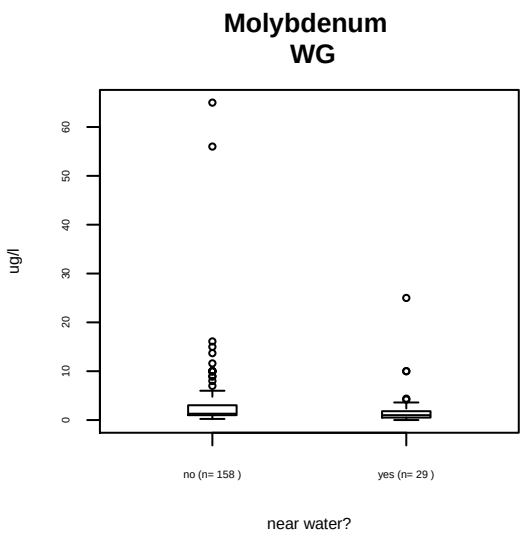

Methyl tert−butyl ether (MTBE)
WG
log− ug/l
−5
0
5
no (n= 162)
yes (n= 28)
near water?

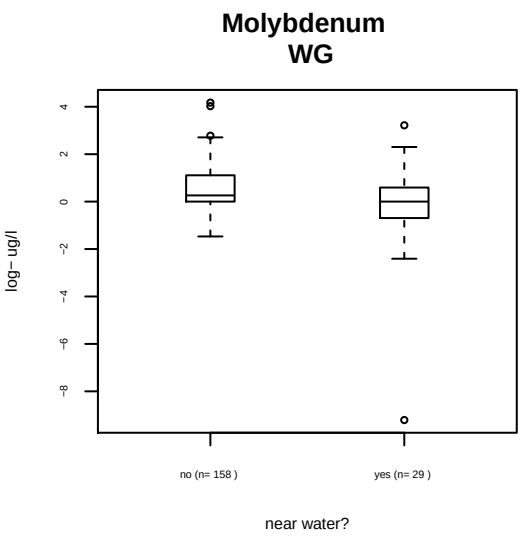

Moisture, percent
WG
%
14
16
18
20
22
24
26
no (n= 2)
yes (n= 0)
near water?

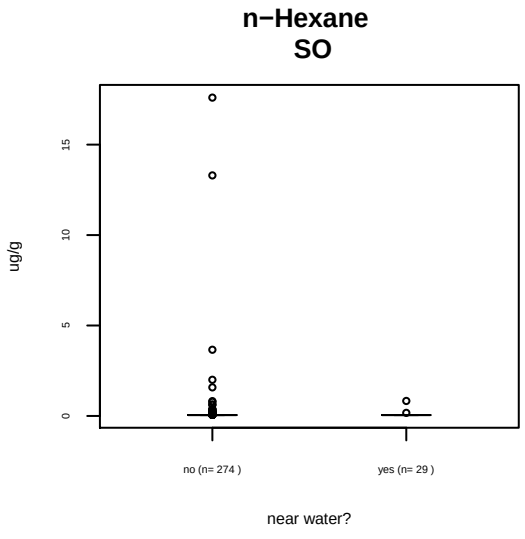

Moisture, percent
WG
log− %
2.6
2.7
2.8
2.9
3.0
3.1
3.2
no (n= 2)
yes (n= 0)
near water?

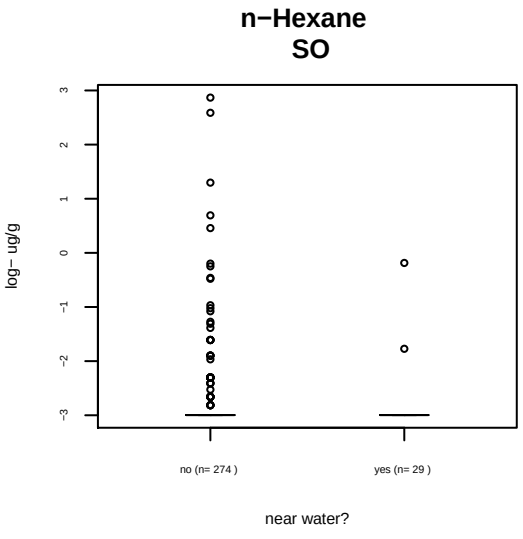

Molybdenum
SO
ug/g
0
50
100
150
200
250
no (n= 443)
yes (n= 75)
near water?

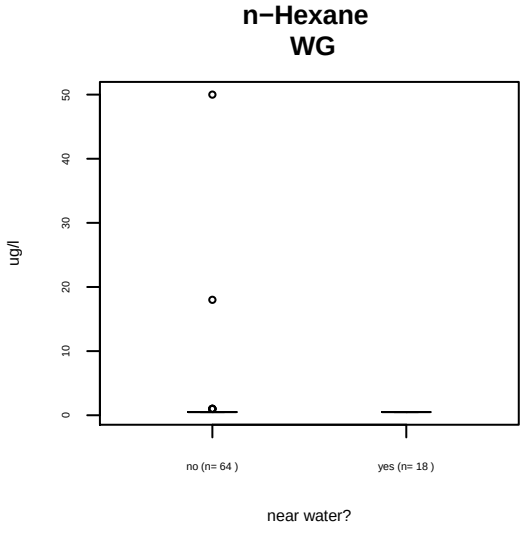

Molybdenum
SO
log− ug/g
0
1
2
3
4
5
no (n= 443)
yes (n= 75)
near water?

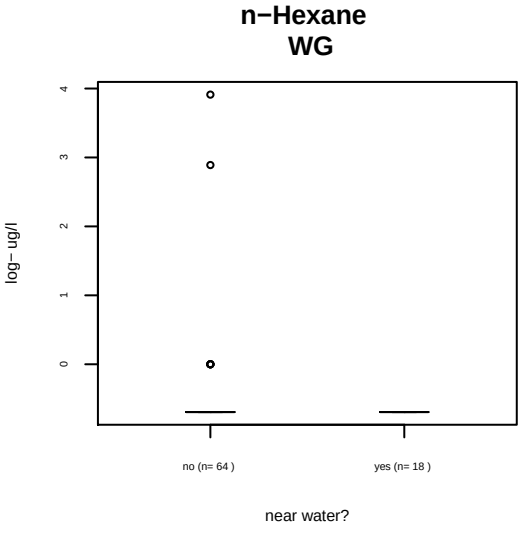

Molybdenum
WG
ug/l
0
10
20
30
40
50
60
no (n= 158)
yes (n= 29)
near water?

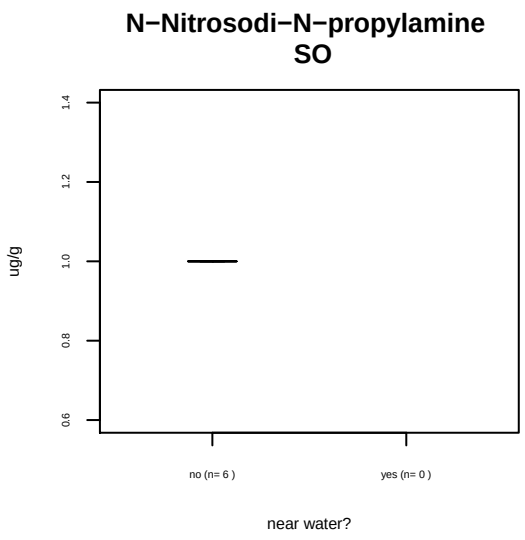

Molybdenum
WG
log− ug/l
−8
−6
−4
−2
0
2
4
no (n= 158)
yes (n= 29)
near water?

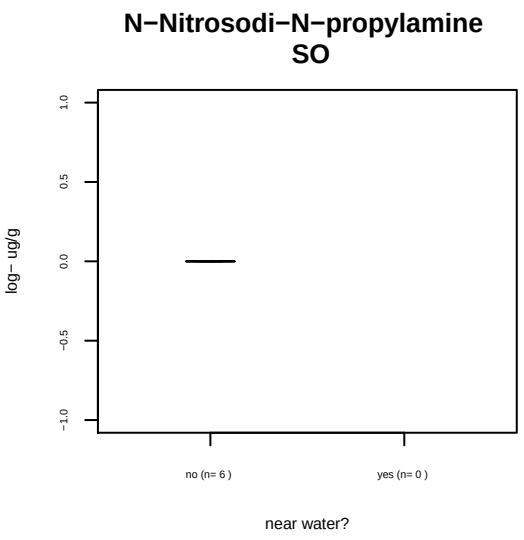

n−Hexane
SO
ug/g
0
5
10
15
no (n= 274)
yes (n= 29)
near water?

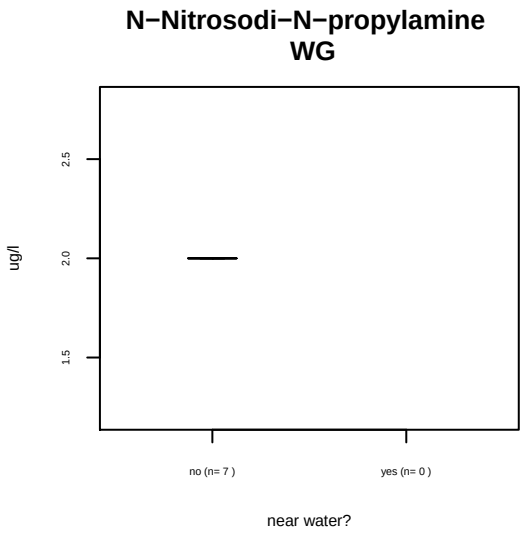

n−Hexane
SO
log− ug/g
−3
−2
−1
0
1
2
3
no (n= 274)
yes (n= 29)
near water?

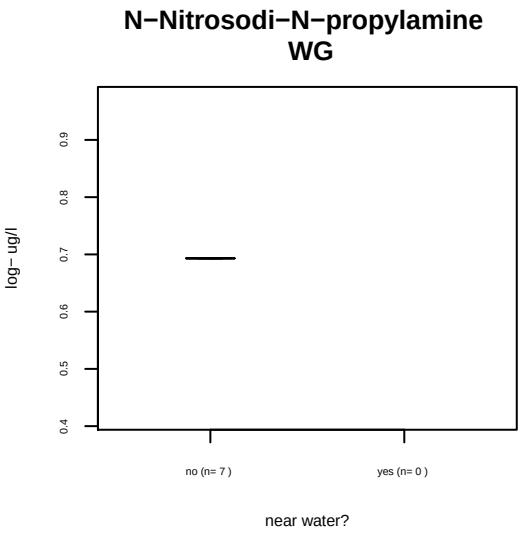

n−Hexane
WG
ug/l
0
10
20
30
40
50
no (n= 64)
yes (n= 18)
near water?

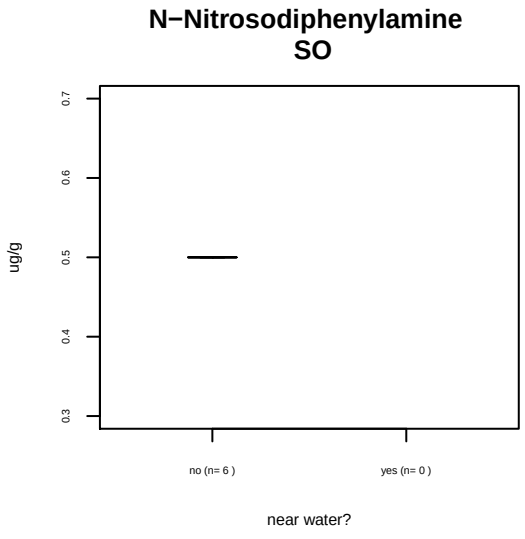

n−Hexane
WG
log− ug/l
0
1
2
3
4
no (n= 64)
yes (n= 18)
near water?

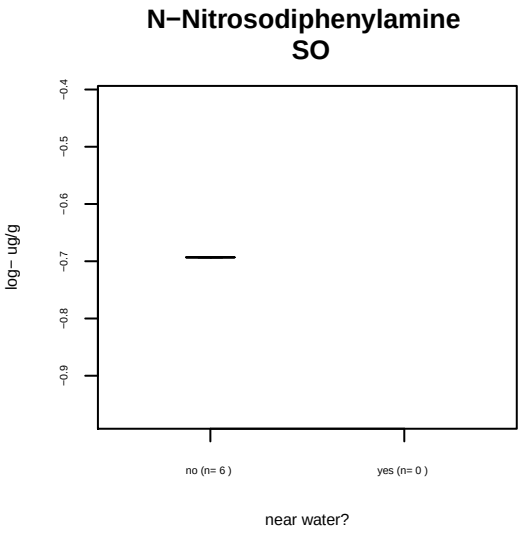

N−Nitrosodi−N−propylamine
SO
ug/g
1.4
1.2
1.0
0.8
0.6
no (n= 6)
yes (n= 0)
near water?

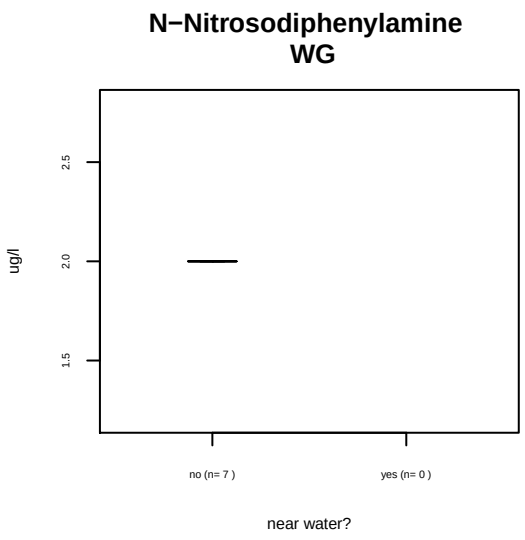

N−Nitrosodi−N−propylamine
SO
log− ug/g
1.0
0.5
0.0
−0.5
−1.0
no (n= 6)
yes (n= 0)
near water?

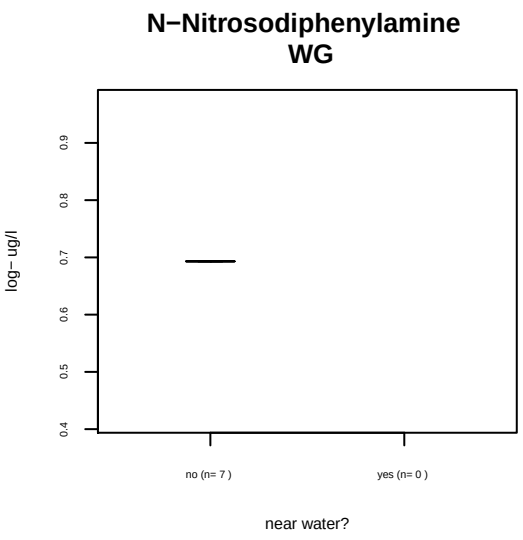

N−Nitrosodi−N−propylamine
WG
ug/l
2.5
2.0
1.5
no (n= 7)
yes (n= 0)
near water?

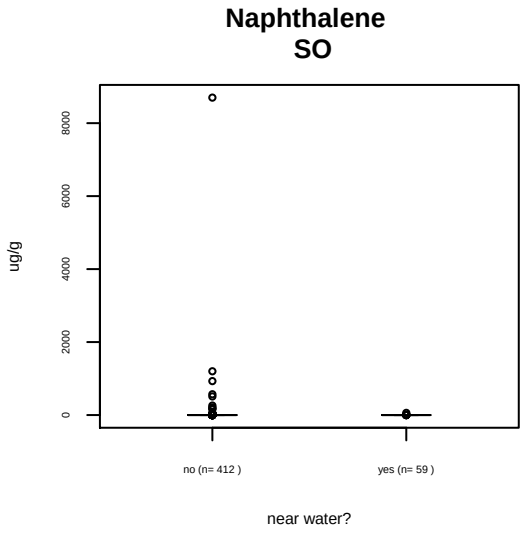

N−Nitrosodi−N−propylamine
WG
log− ug/l
0.9
0.8
0.7
0.6
0.5
0.4
no (n= 7)
yes (n= 0)
near water?

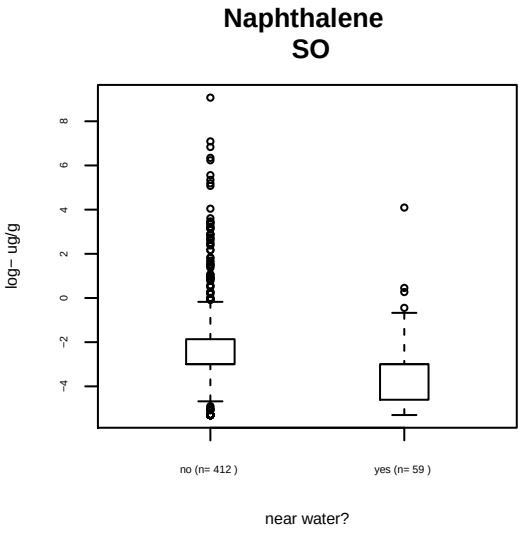

N−Nitrosodiphenylamine
SO
ug/g
0.7
0.6
0.5
0.4
0.3
no (n= 6)
yes (n= 0)
near water?

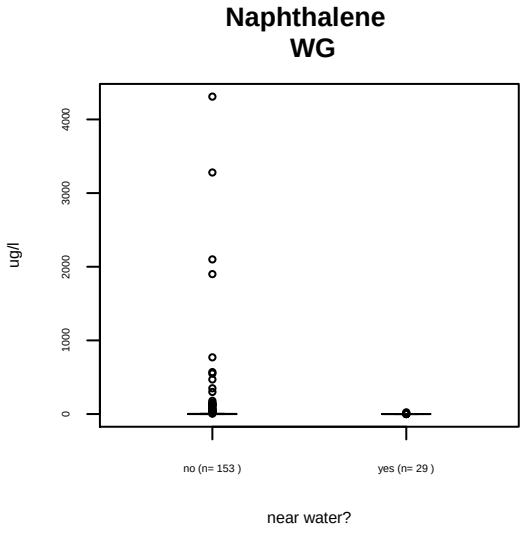

N−Nitrosodiphenylamine
SO
log− ug/g
−0.4
−0.5
−0.6
−0.7
−0.8
−0.9
no (n= 6)
yes (n= 0)
near water?

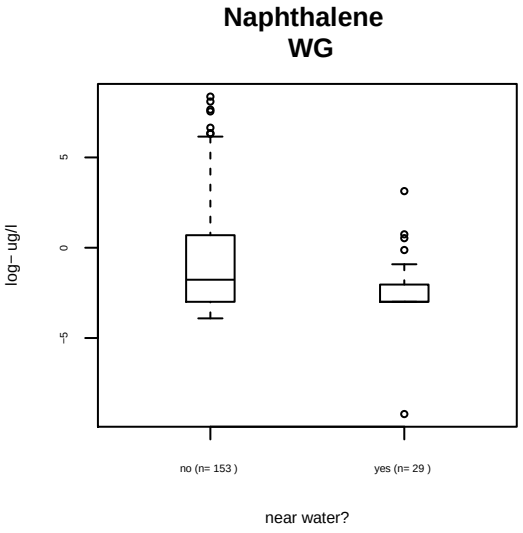

N−Nitrosodiphenylamine
WG
ug/l
2.5
2.0
1.5
no (n= 7)
yes (n= 0)
near water?

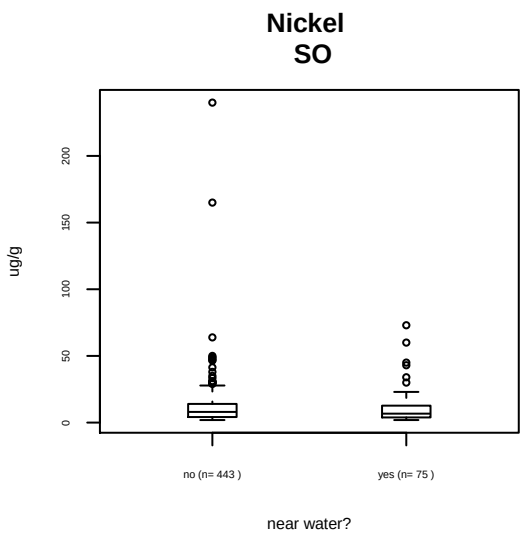

N−Nitrosodiphenylamine
WG
log− ug/l
0.9
0.8
0.7
0.6
0.5
0.4
no (n= 7)
yes (n= 0)
near water?

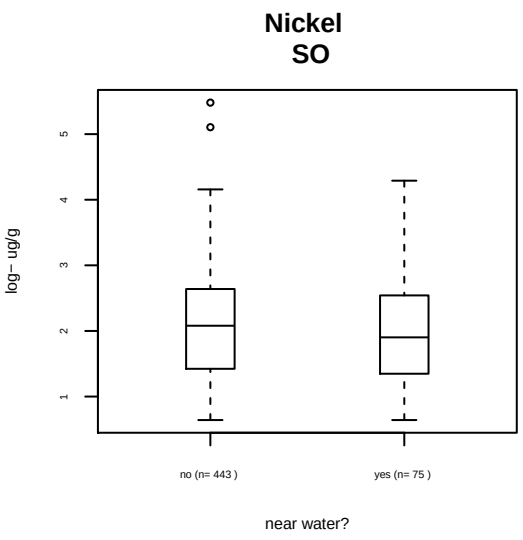

Naphthalene
SO
ug/g
8000
6000
4000
2000
0
no (n= 412)
yes (n= 59)
near water?

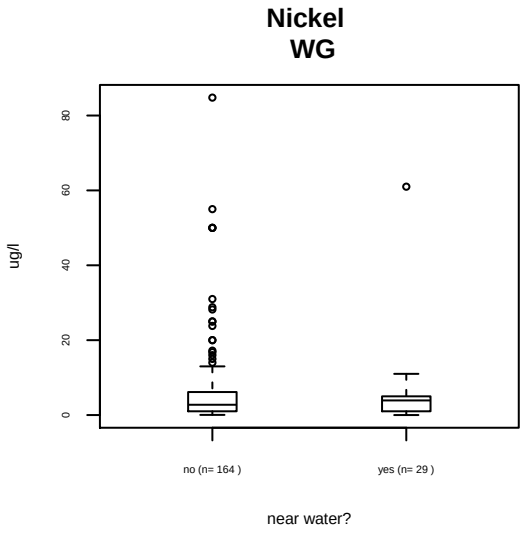

Naphthalene
SO
log− ug/g
8
6
4
2
0
−2
−4
no (n= 412)
yes (n= 59)
near water?

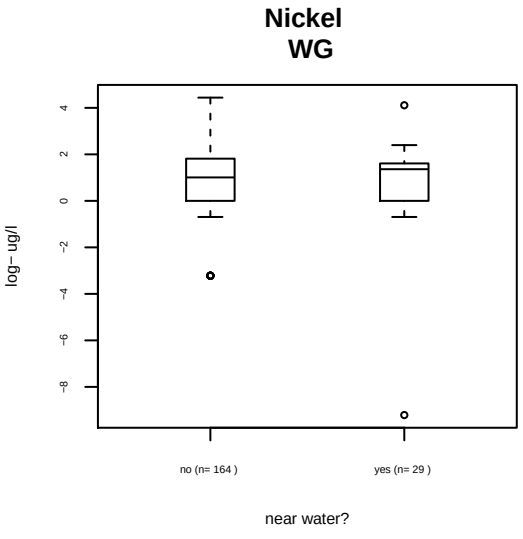

Naphthalene
WG
ug/l
4000
3000
2000
1000
0
no (n= 153)
yes (n= 29)
near water?

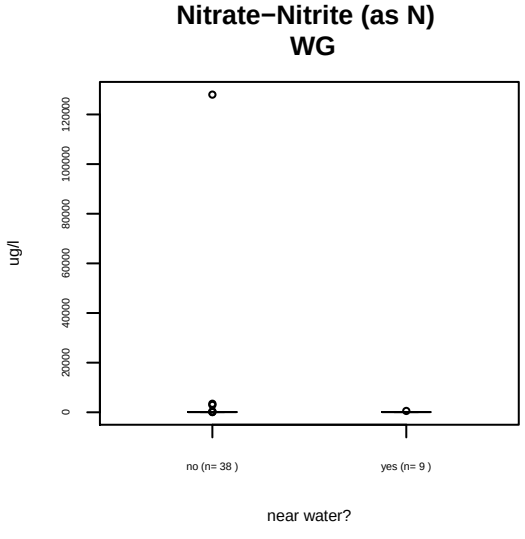

Naphthalene
WG
log− ug/l
5
0
−5
no (n= 153)
yes (n= 29)
near water?

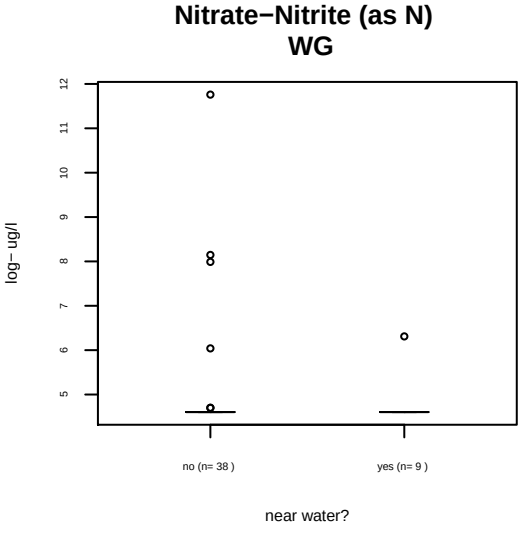

Nickel
SO
ug/g
0
50
100
150
200
no (n= 443)
yes (n= 75)
near water?

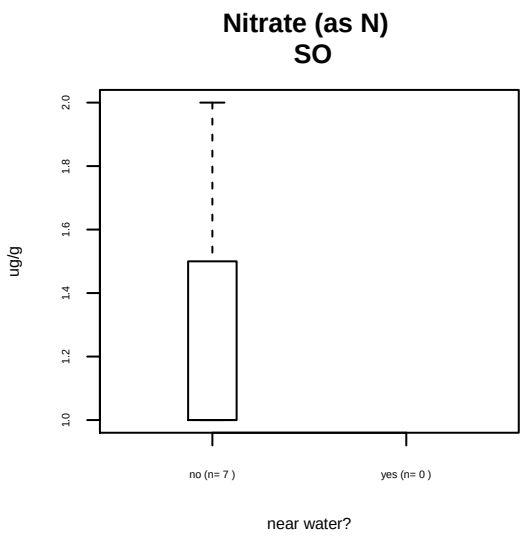

Nickel
SO
log− ug/g
1
2
3
4
5
no (n= 443)
yes (n= 75)
near water?

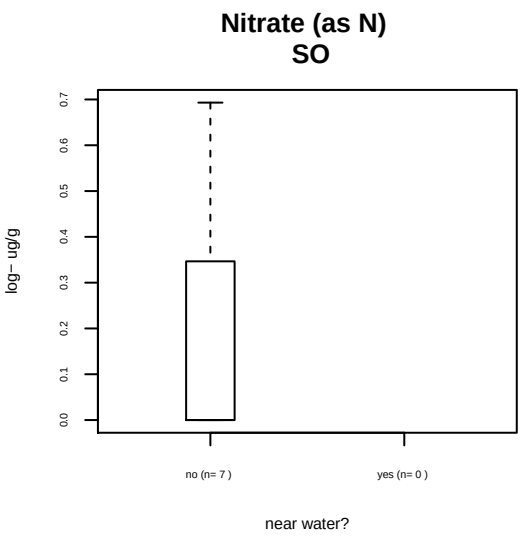

Nickel
WG
ug/l
0
20
40
60
80
no (n= 164)
yes (n= 29)
near water?

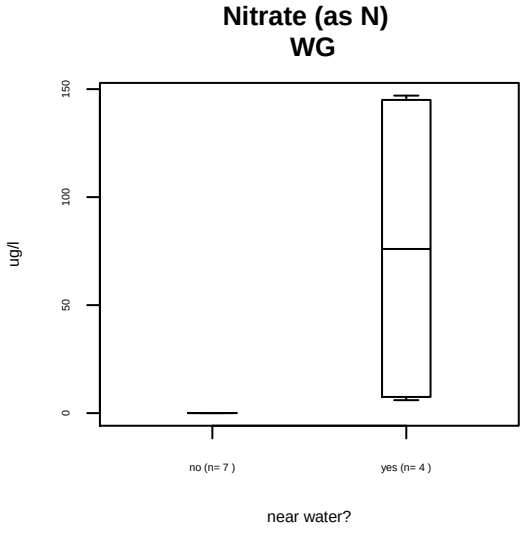

Nickel
WG
log− ug/l
−8
−6
−4
−2
0
2
4
no (n= 164)
yes (n= 29)
near water?

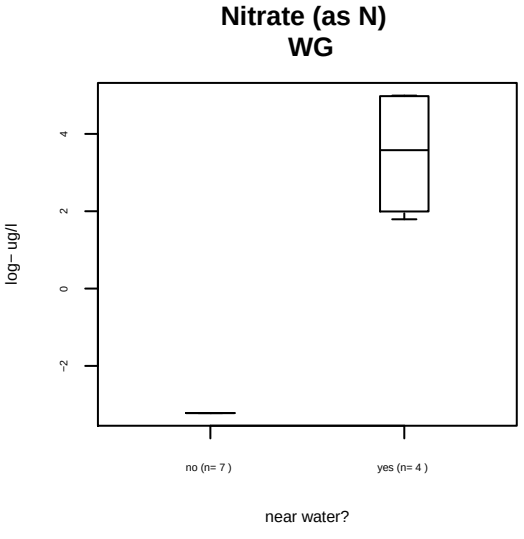

Nitrate−Nitrite (as N)
WG
ug/l
0
20000
40000
60000
80000
100000
120000
no (n= 38)
yes (n= 9)
near water?

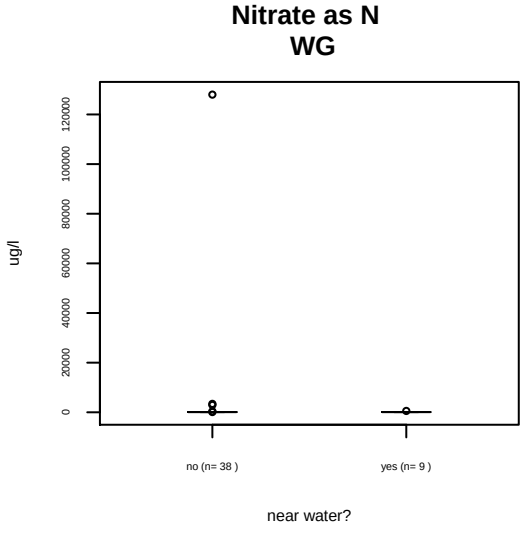

Nitrate−Nitrite (as N)
WG
log− ug/l
5
6
7
8
9
10
11
12
no (n= 38)
yes (n= 9)
near water?

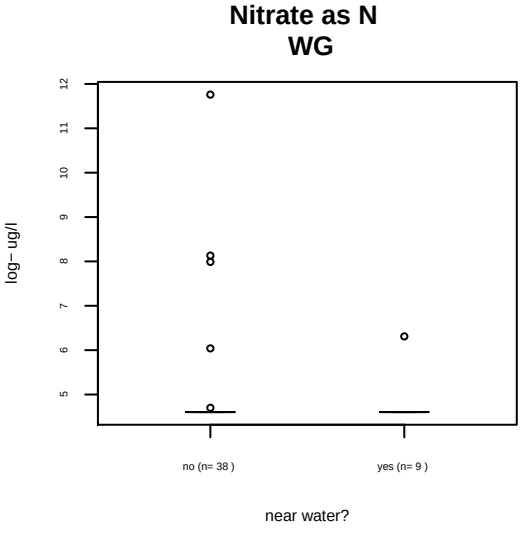

Nitrate (as N)
SO
ug/g
1.0
1.2
1.4
1.6
1.8
2.0
no (n= 7)
yes (n= 0)
near water?

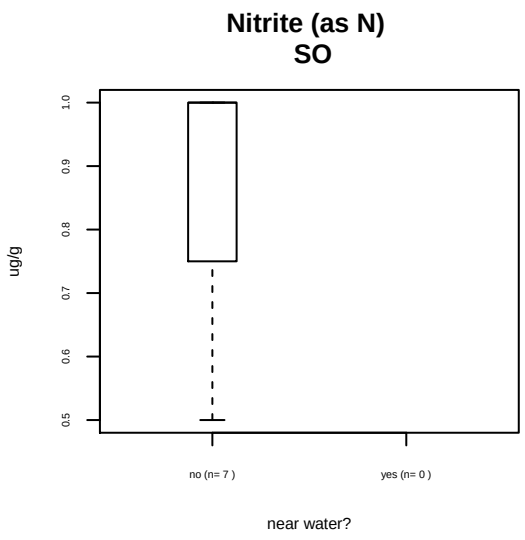

Nitrate (as N)
SO
log− ug/g
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
no (n= 7)
yes (n= 0)
near water?

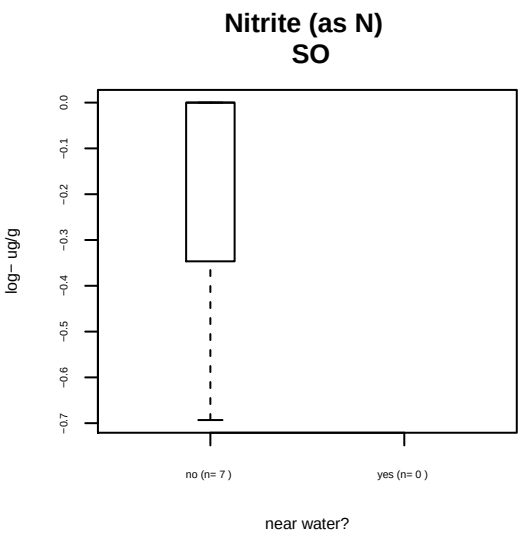

Nitrate (as N)
WG
ug/l
0
50
100
150
no (n= 7)
yes (n= 4)
near water?

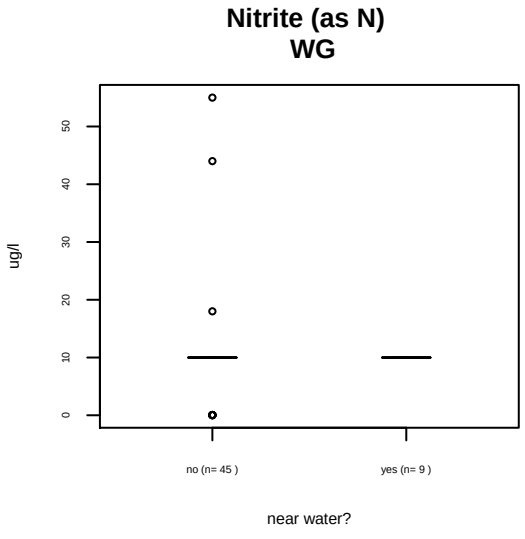

Nitrate (as N)
WG
log− ug/l
−2
0
2
4
no (n= 7)
yes (n= 4)
near water?

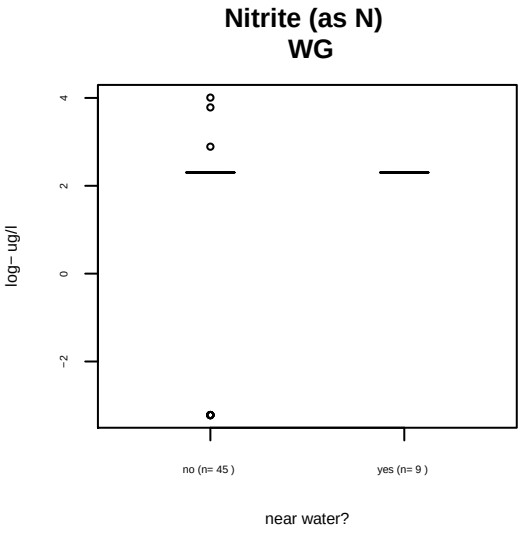

Nitrate as N
WG
ug/l
0
20000
40000
60000
80000
100000
120000
no (n= 38)
yes (n= 9)
near water?

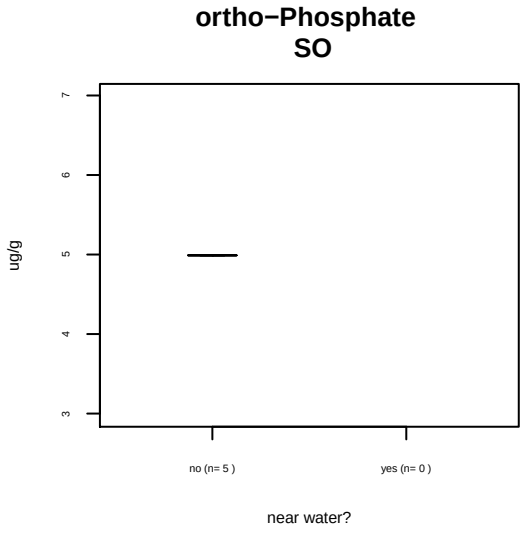

Nitrate as N
WG
log− ug/l
5
6
7
8
9
10
11
12
no (n= 38)
yes (n= 9)
near water?

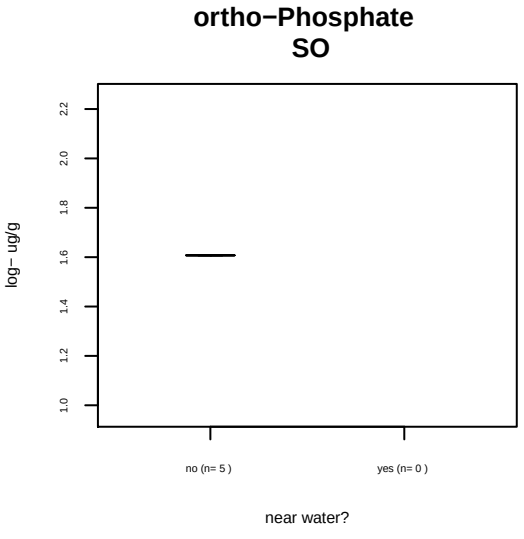

Nitrite (as N)
SO
ug/g
1.0
0.9
0.8
0.7
0.6
0.5
no (n= 7)
yes (n= 0)
near water?

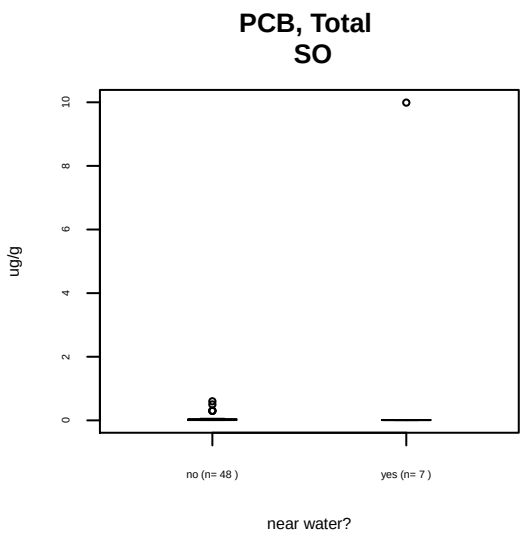

Nitrite (as N)
SO
log− ug/g
0.0
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
−0.7
no (n= 7)
yes (n= 0)
near water?

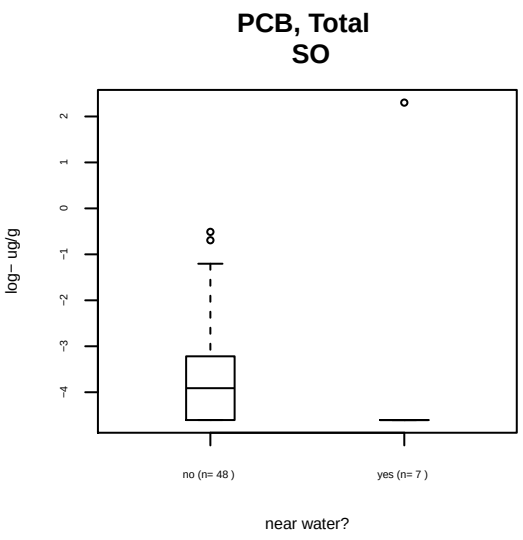

Nitrite (as N)
WG
ug/l
50
40
30
20
10
0
no (n= 45)
yes (n= 9)
near water?

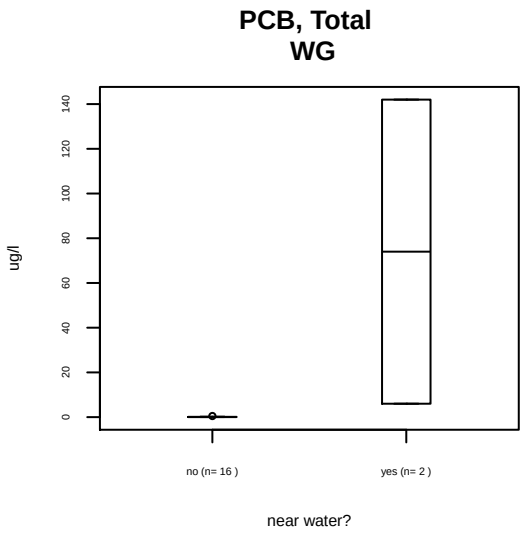

Nitrite (as N)
WG
log− ug/l
4
2
0
−2
no (n= 45)
yes (n= 9)
near water?

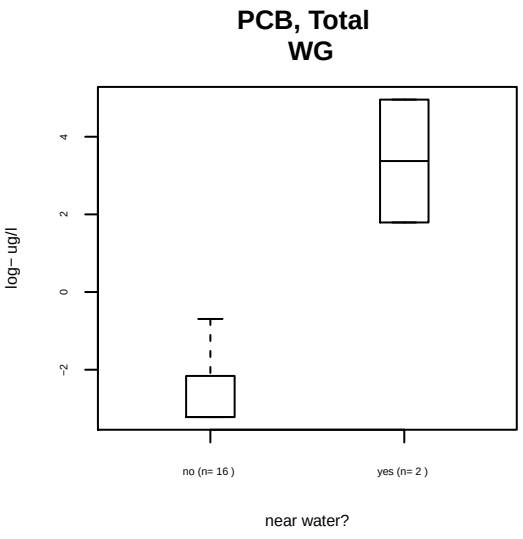

ortho−Phosphate
SO
ug/g
7
6
5
4
3
no (n= 5)
yes (n= 0)
near water?

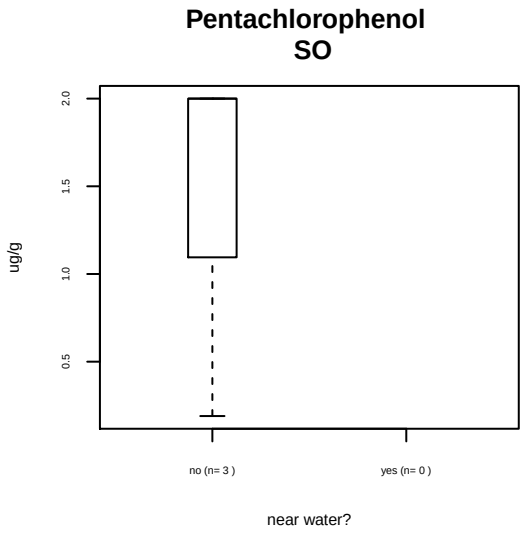

ortho−Phosphate
SO
log− ug/g/g
2.2
2.0
1.8
1.6
1.4
1.2
1.0
no (n= 5)
yes (n= 0)
near water?

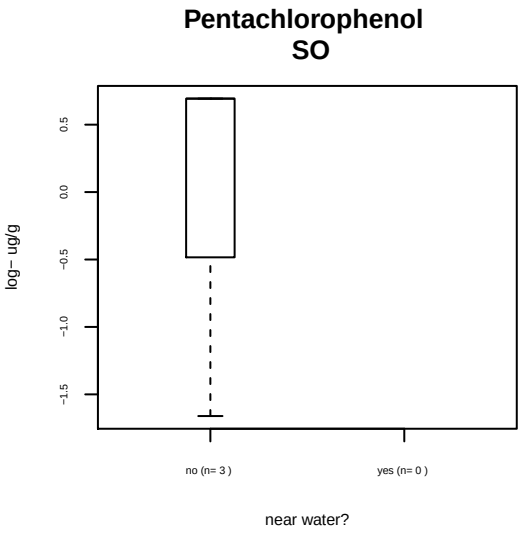

PCB, Total
SO
ug/g
0
2
4
6
8
10
no (n= 48)
yes (n= 7)
near water?

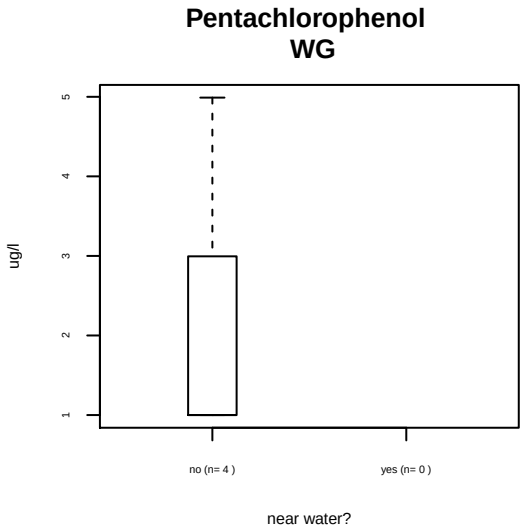

PCB, Total
SO
log− ug/g
−4
−3
−2
−1
0
1
2
no (n= 48)
yes (n= 7)
near water?

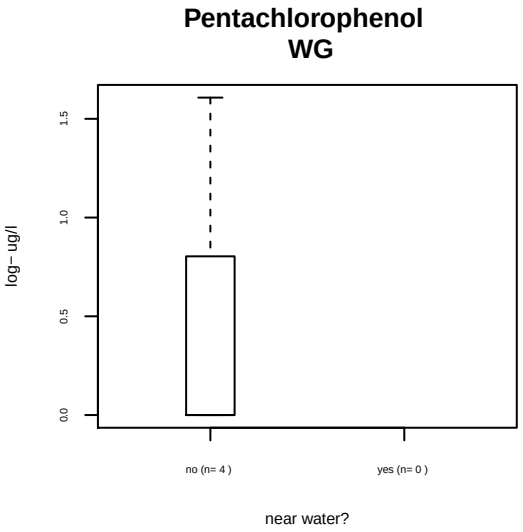

PCB, Total
WG
ug/l
0
20
40
60
80
100
120
140
no (n= 16)
yes (n= 2)
near water?

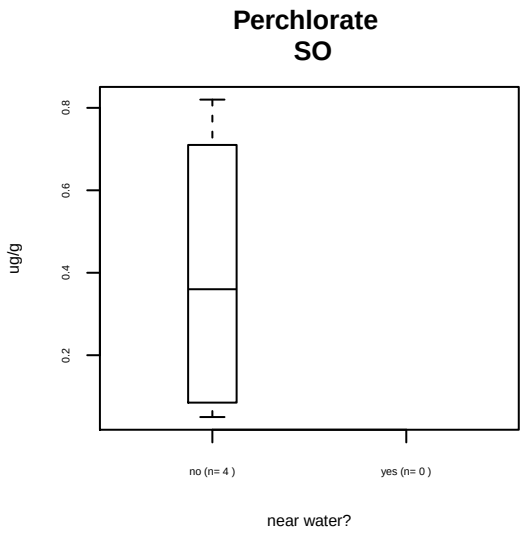

PCB, Total
WG
log− ug/l
−2
0
2
4
no (n= 16)
yes (n= 2)
near water?

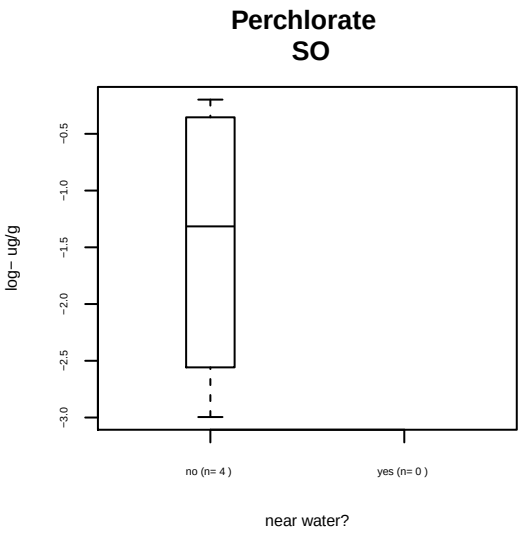

Pentachlorophenol
SO
un/g
0.5
1.0
1.5
2.0
no (n= 3)
yes (n= 0)
near water?

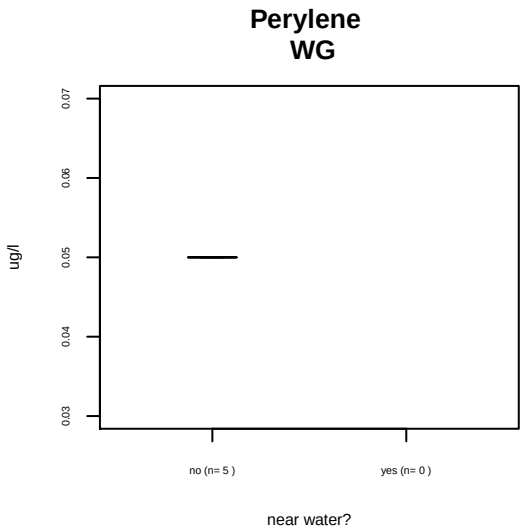

Pentachlorophenol
SO
log− un/g/g
−1.5
−1.0
−0.5
0.0
0.5
no (n= 3)
yes (n= 0)
near water?

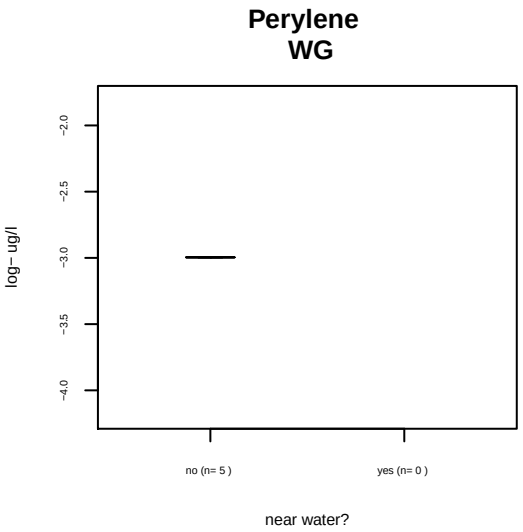

Pentachlorophenol
WG
ug/l
1
2
3
4
5
no (n= 4)
yes (n= 0)
near water?

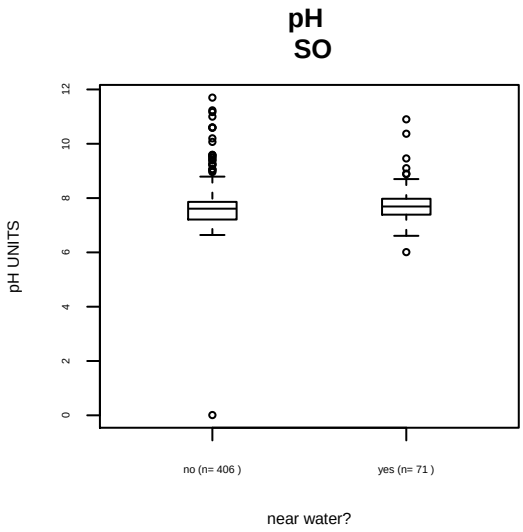

Pentachlorophenol
WG
log− ug/l
0.0
0.5
1.0
1.5
no (n= 4)
yes (n= 0)
near water?

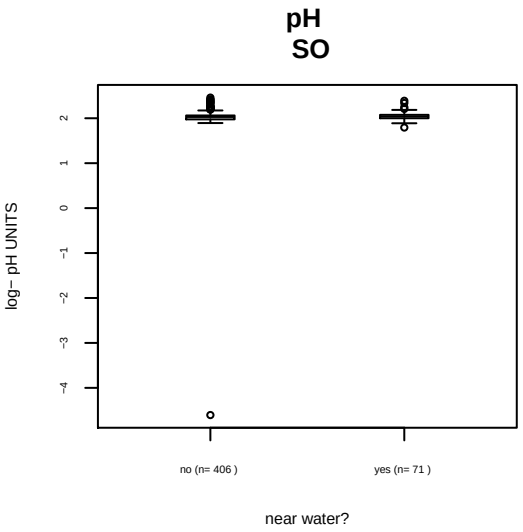

Perchlorate
SO
ug/g
0.2
0.4
0.6
0.8
no (n= 4)
yes (n= 0)
near water?

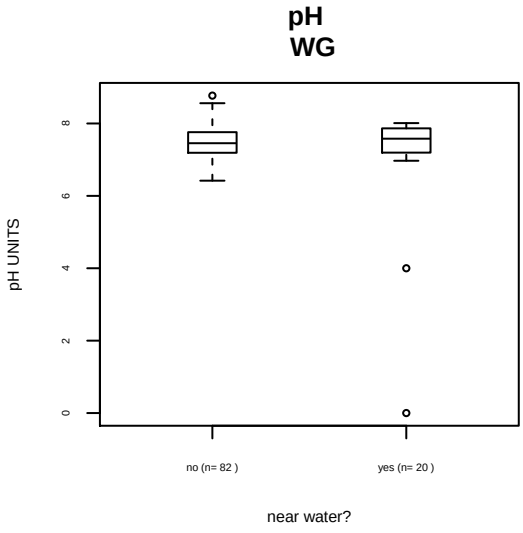

Perchlorate
SO
log− ug/g
−3.0
−2.5
−2.0
−1.5
−1.0
−0.5
no (n= 4)
yes (n= 0)
near water?

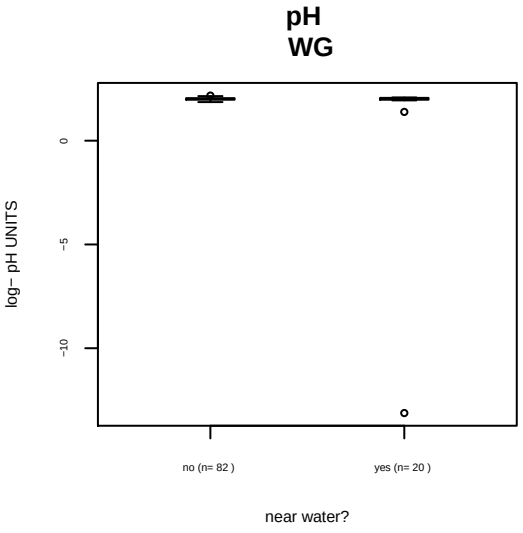

Perylene
WG
ug/l
0.03
0.04
0.05
0.06
0.07
no (n= 5)
yes (n= 0)
near water?

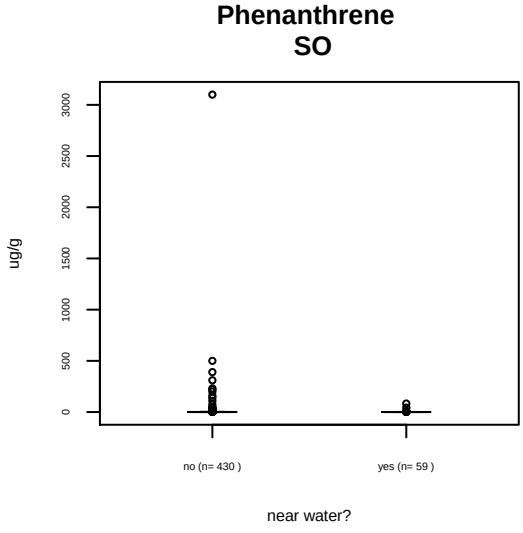

Perylene
WG
log− ug/l
−4.0
−3.5
−3.0
−2.5
−2.0
no (n= 5)
yes (n= 0)
near water?

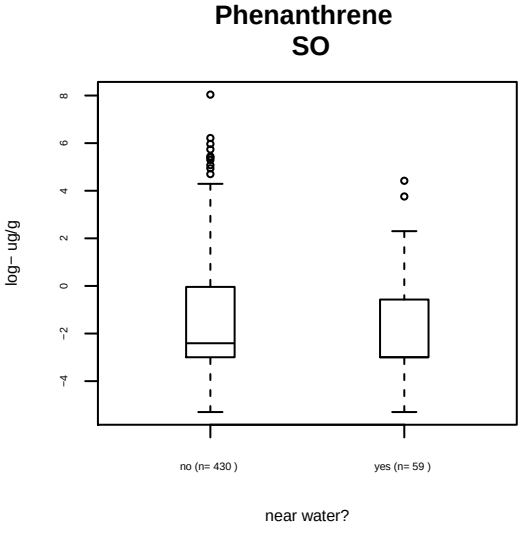

pH
SO
pH UNITS
0
2
4
6
8
10
12
no (n= 406)
yes (n= 71)
near water?

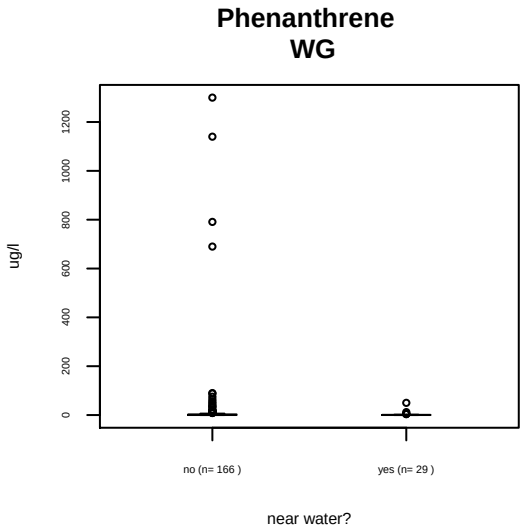

pH
SO
log− pH UNITS
−4
−3
−2
−1
0
1
2
no (n= 406)
yes (n= 71)
near water?

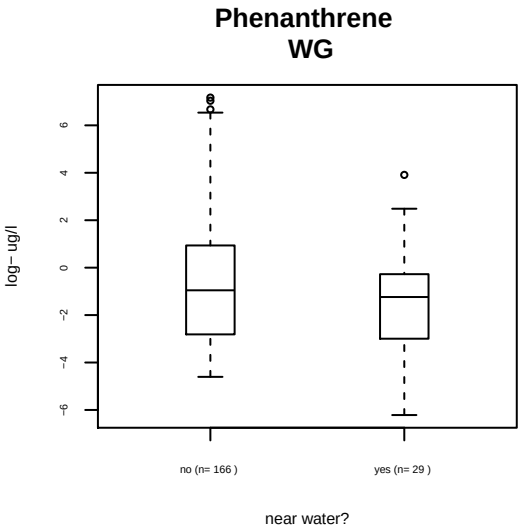

pH
WG
pH UNITS
0
2
4
6
8
no (n= 82)
yes (n= 20)
near water?

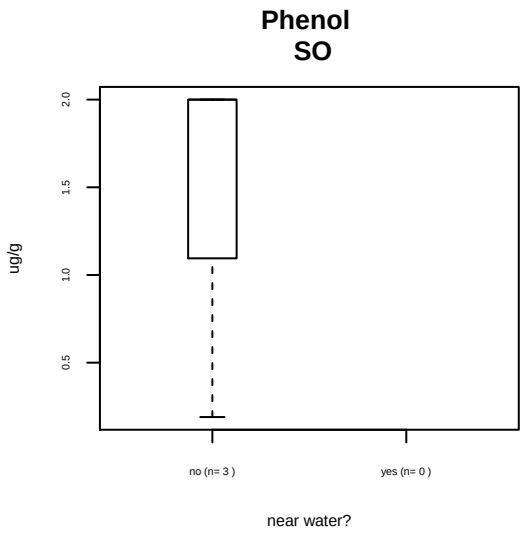

pH
WG
log− pH UNITS
−10
−5
0
no (n= 82)
yes (n= 20)
near water?

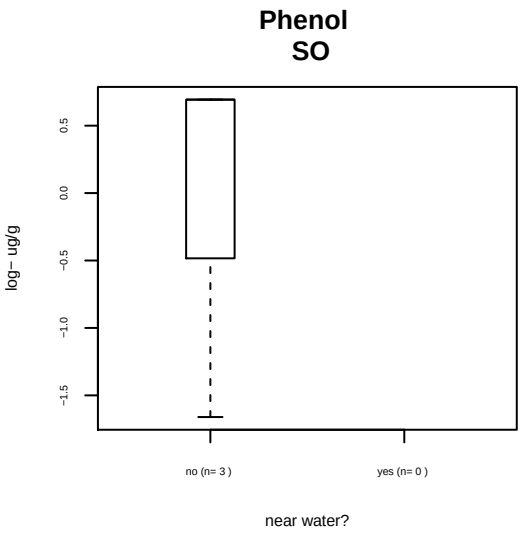

Phenanthrene
SO
ug/g
0
500
1000
1500
2000
2500
3000
no (n= 430)
yes (n= 59)
near water?

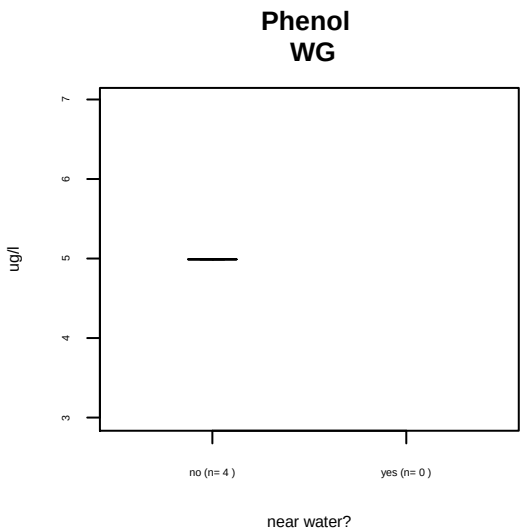

Phenanthrene
SO
log− ug/g
−4
−2
0
2
4
6
8
no (n= 430)
yes (n= 59)
near water?

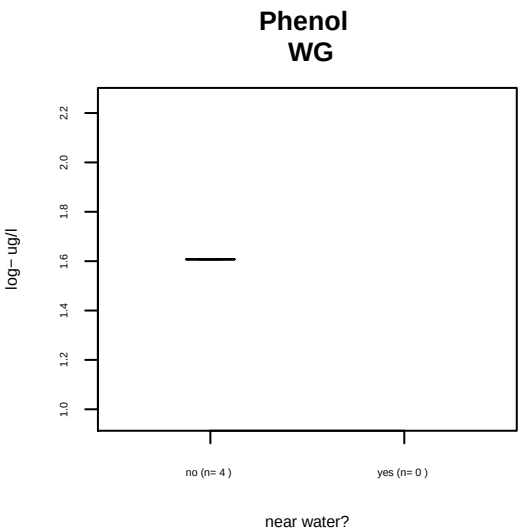

Phenanthrene
WG
ug/l
0
200
400
600
800
1000
1200
no (n= 166)
yes (n= 29)
near water?

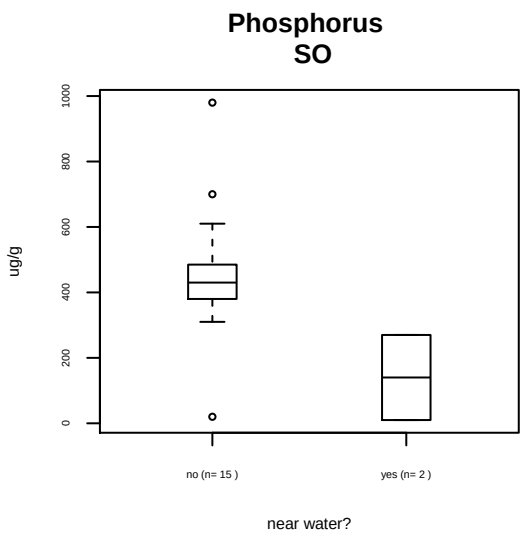

Phenanthrene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 166)
yes (n= 29)
near water?

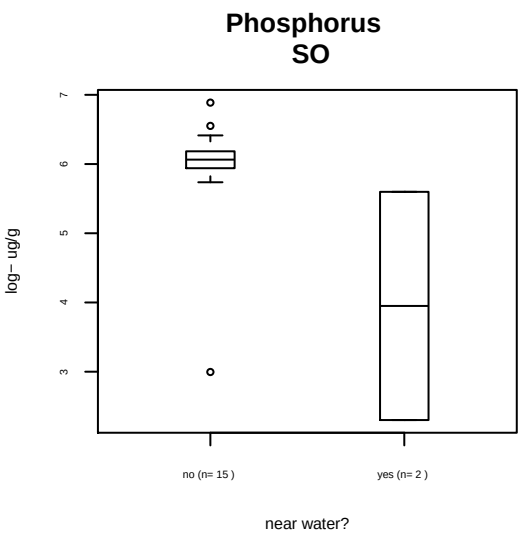

Phenol
SO
ug/g
0.5
1.0
1.5
2.0
no (n= 3)
yes (n= 0)
near water?

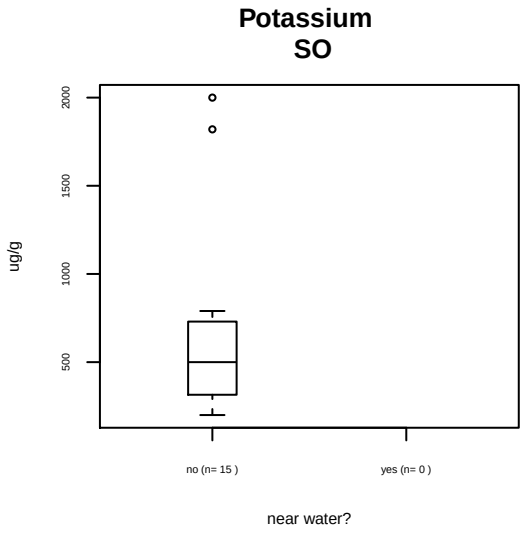

Phenol
SO
log− ug/g
−1.5
−1.0
−0.5
0.0
0.5
no (n= 3)
yes (n= 0)
near water?

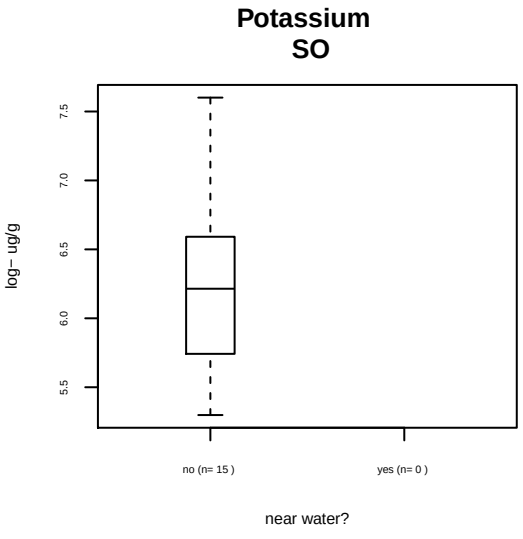

Phenol
WG
ug/l
3
4
5
6
7
no (n= 4)
yes (n= 0)
near water?

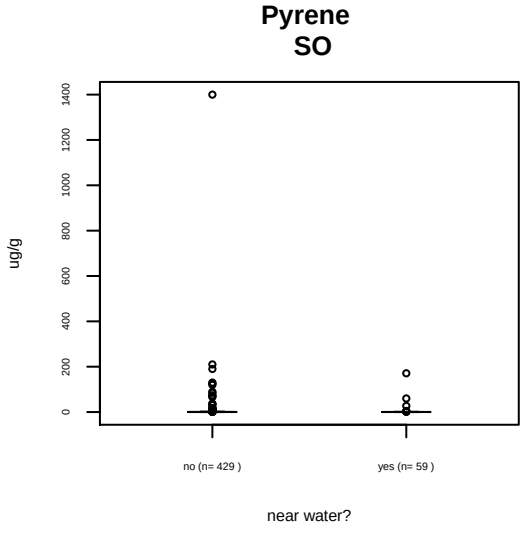

Phenol
WG
log− ug/l
1.0
1.2
1.4
1.6
1.8
2.0
2.2
no (n= 4)
yes (n= 0)
near water?

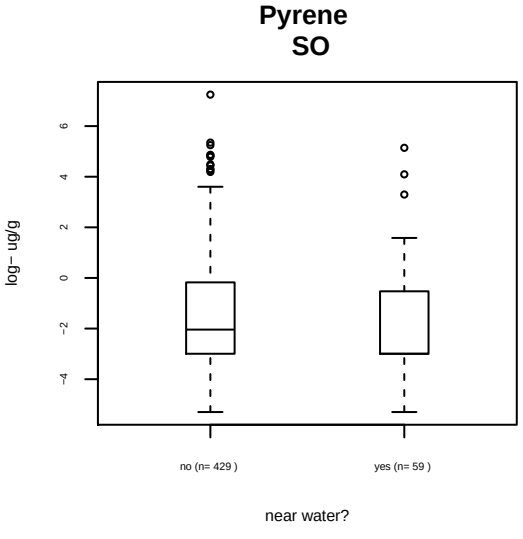

Phosphorus
SO
ug/g
0
200
400
600
800
1000
no (n= 15)
yes (n= 2)
near water?

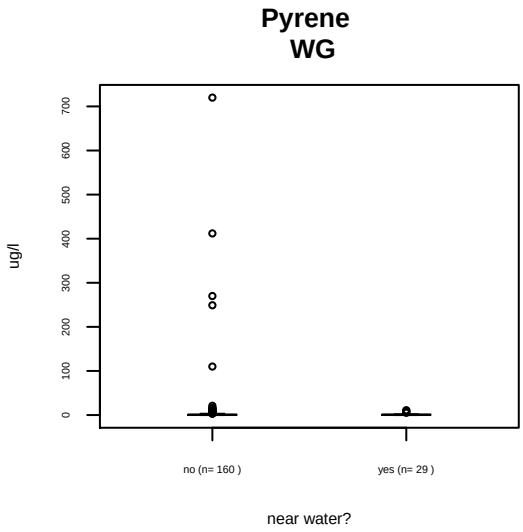

Phosphorus
SO
log− ug/g
3
4
5
6
7
no (n= 15)
yes (n= 2)
near water?

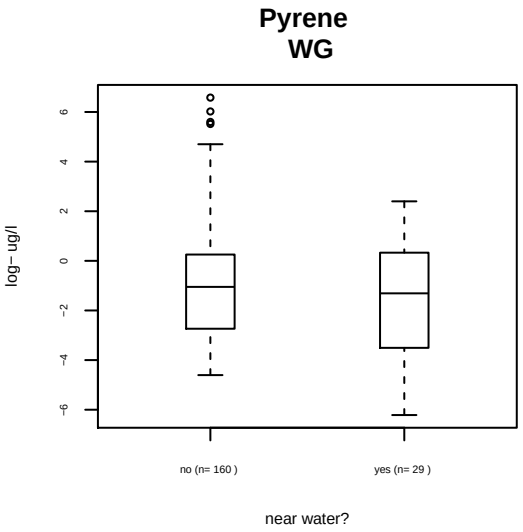

Potassium
SO
ug/g
500
1000
1500
2000
no (n= 15)
yes (n= 0)
near water?

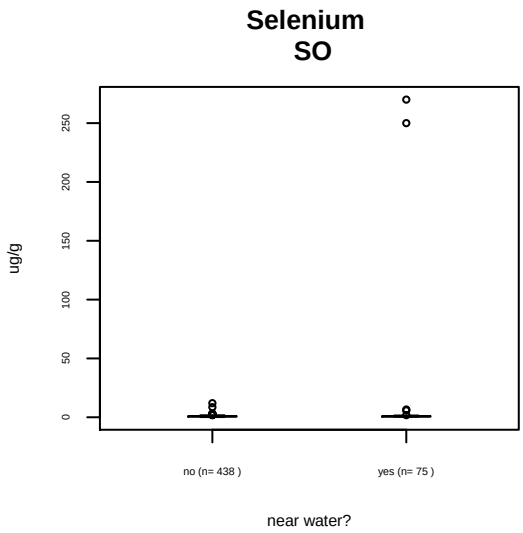

Potassium
SO
log− ug/g
5.5
6.0
6.5
7.0
7.5
no (n= 15)
yes (n= 0)
near water?

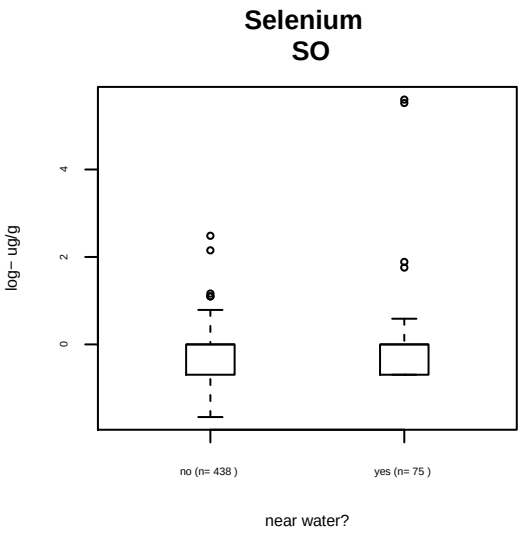

Pyrene
SO
ug/g
0
200
400
600
800
1000
1200
1400
no (n= 429)
yes (n= 59)
near water?

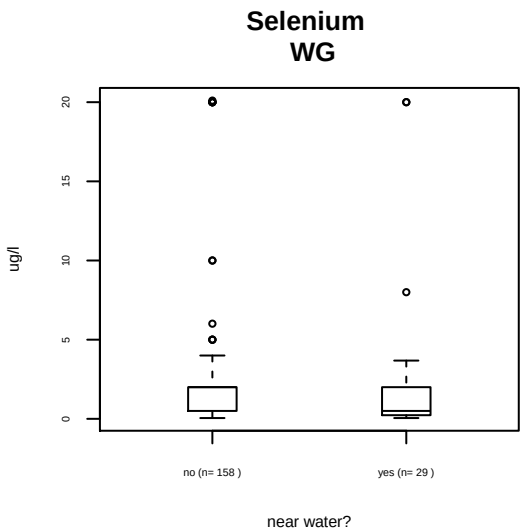

Pyrene
SO
log− ug/g
−4
−2
0
2
4
6
no (n= 429)
yes (n= 59)
near water?

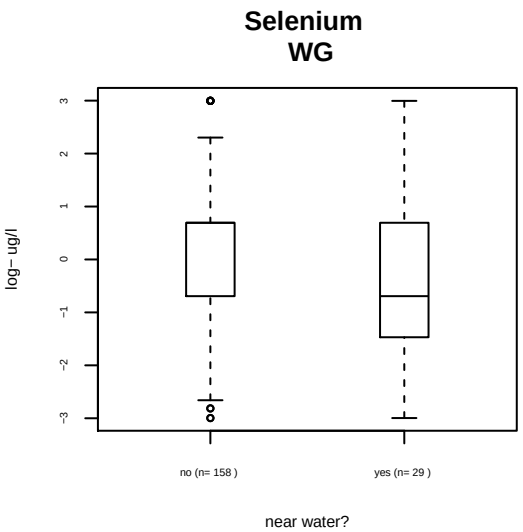

Pyrene
WG
ug/l
0
100
200
300
400
500
600
700
no (n= 160)
yes (n= 29)
near water?

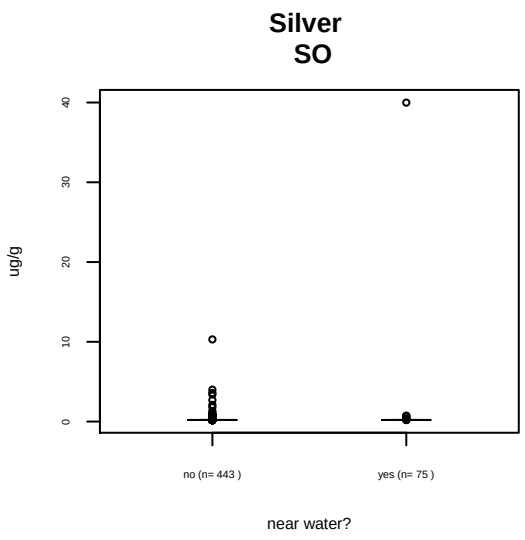

Pyrene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 160)
yes (n= 29)
near water?

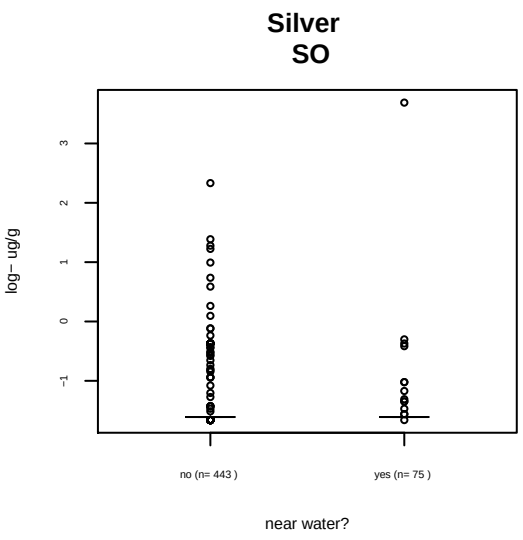

Selenium
SO
ug/g
0
50
100
150
200
250
no (n= 438)
yes (n= 75)
near water?

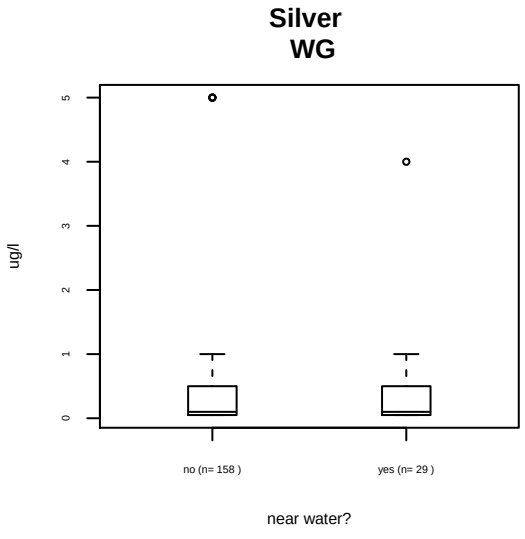

Selenium
SO
log− ug/g
0
2
4
no (n= 438)
yes (n= 75)
near water?

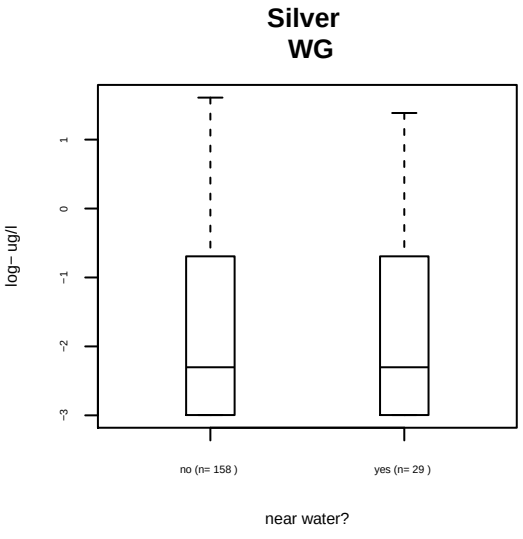

Selenium
WG
ug/l
0
5
10
15
20
no (n= 158)
yes (n= 29)
near water?

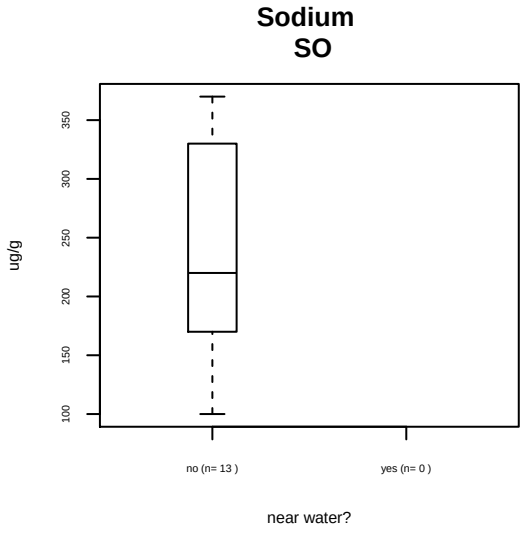

Selenium
WG
log− ug/l
−3
−2
−1
0
1
2
3
no (n= 158)
yes (n= 29)
near water?

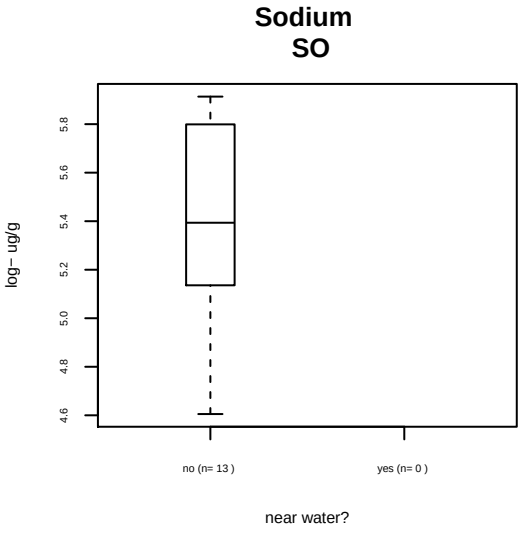

Silver
SO
ug/g
0
10
20
30
40
no (n= 443)
yes (n= 75)
near water?

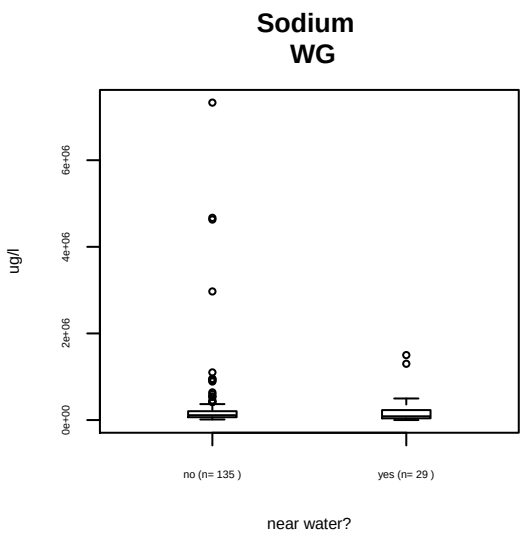

Silver
SO
log− ug/g
−1
0
1
2
3
no (n= 443)
yes (n= 75)
near water?

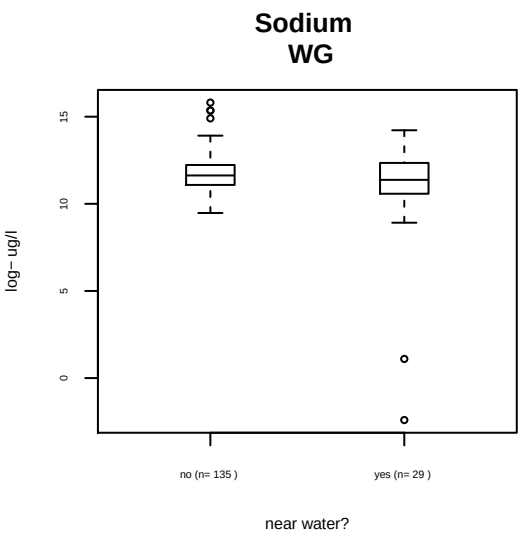

Silver
WG
ug/l
0
1
2
3
4
5
no (n= 158)
yes (n= 29)
near water?

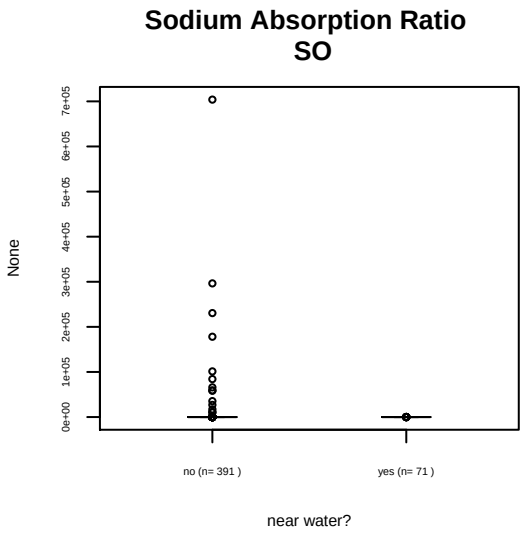

Silver
WG
log− ug/l
−3
−2
−1
0
1
no (n= 158)
yes (n= 29)
near water?

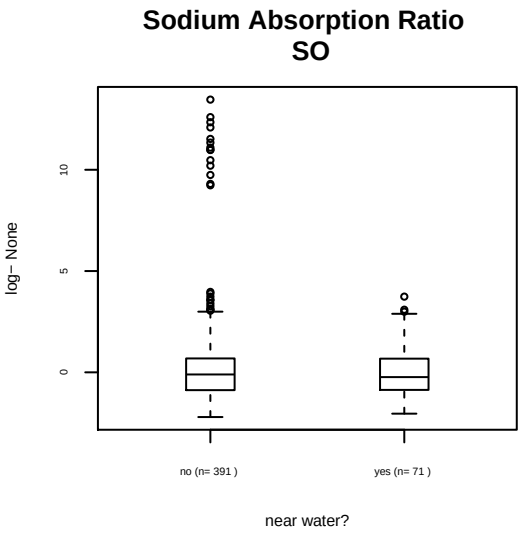

Sodium
SO
ug/g
100
150
200
250
300
350
no (n= 13)
yes (n= 0)
near water?

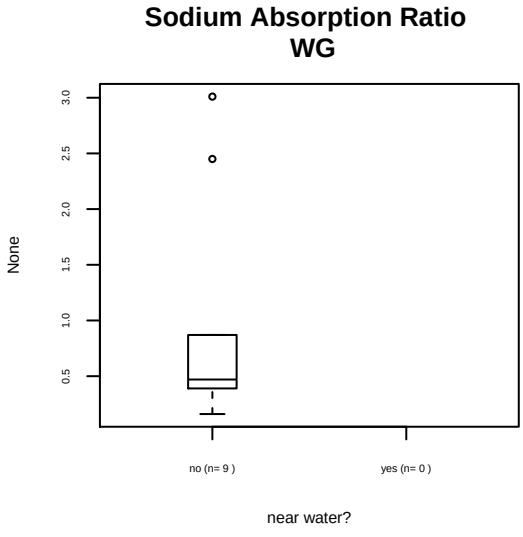

Sodium
SO
log− ug/g
4.6
4.8
5.0
5.2
5.4
5.6
5.8
no (n= 13)
yes (n= 0)
near water?

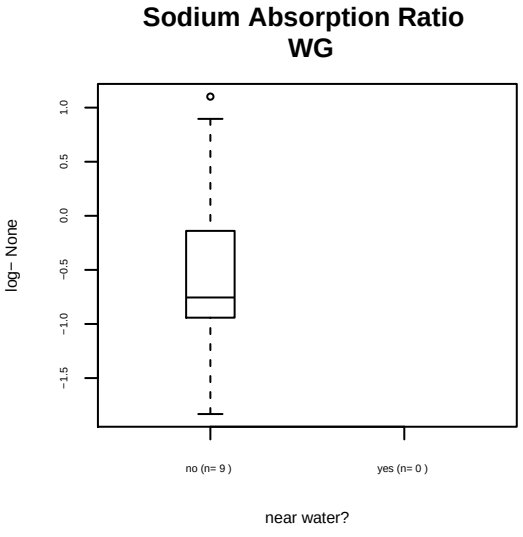

Sodium
WG
ug/l
0e+00
2e+06
4e+06
6e+06
no (n= 135)
yes (n= 29)
near water?

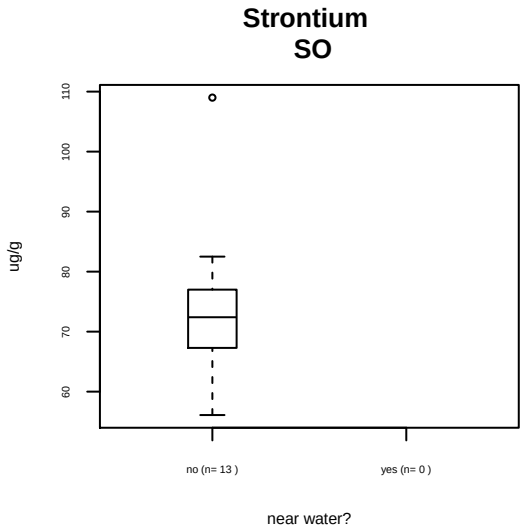

Sodium
WG
log− ug/l
0
5
10
15
no (n= 135)
yes (n= 29)
near water?

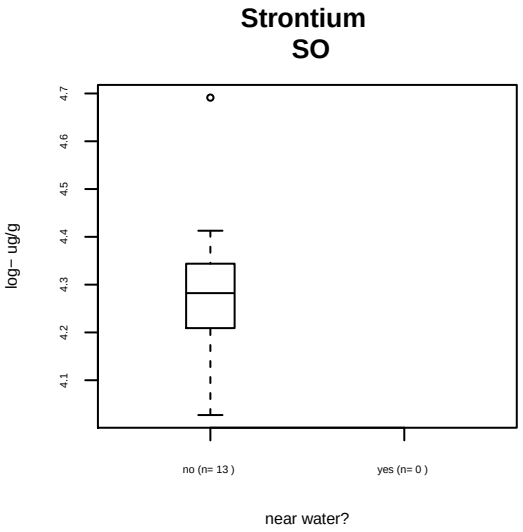

Sodium Absorption Ratio
SO
None
0e+00
1e+05
2e+05
3e+05
4e+05
5e+05
6e+05
7e+05
no (n= 391)
yes (n= 71)
near water?

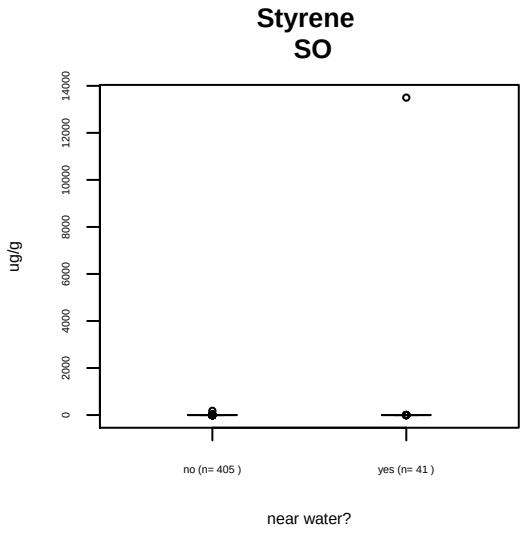

Sodium Absorption Ratio
SO
log− None
0
5
10
no (n= 391)
yes (n= 71)
near water?

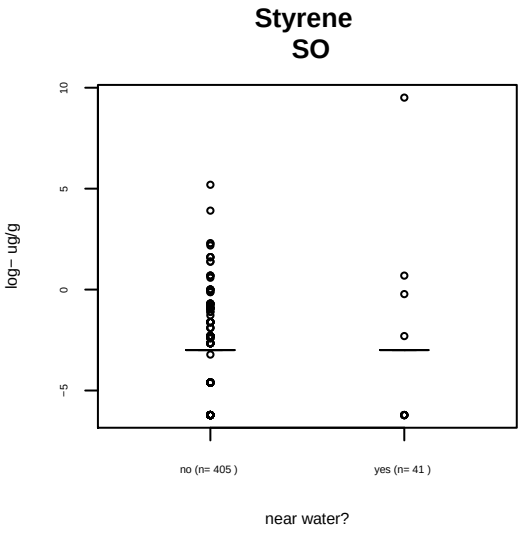

Sodium Absorption Ratio
WG
None
0.5
1.0
1.5
2.0
2.5
3.0
no (n= 9)
yes (n= 0)
near water?

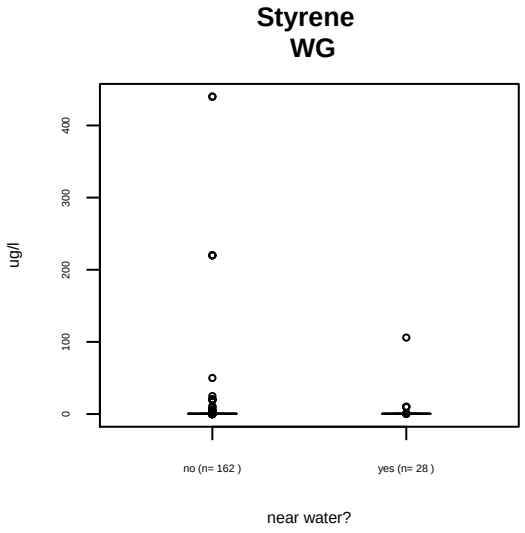

Sodium Absorption Ratio
WG
log− None
−1.5
−1.0
−0.5
0.0
0.5
1.0
no (n= 9)
yes (n= 0)
near water?

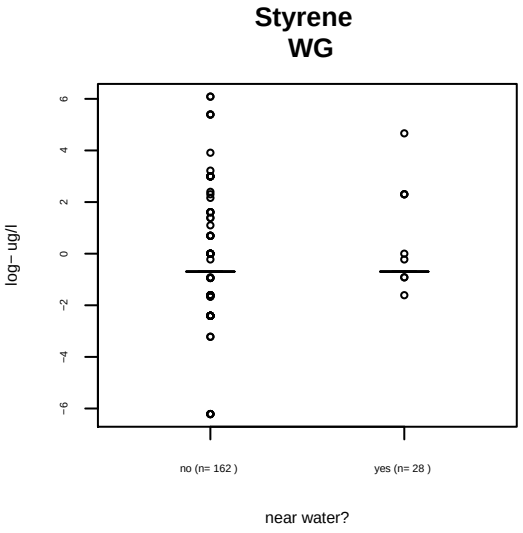

Strontium
SO
ug/g
60
70
80
90
100
110
no (n= 13)
yes (n= 0)
near water?

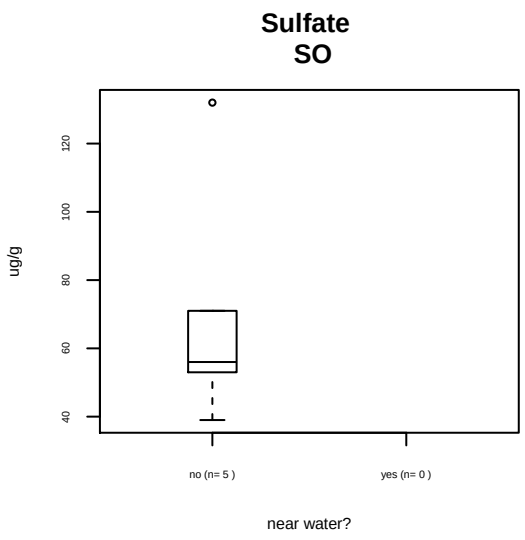

Strontium
SO
log− ug/g
4.1
4.2
4.3
4.4
4.5
4.6
4.7
no (n= 13)
yes (n= 0)
near water?

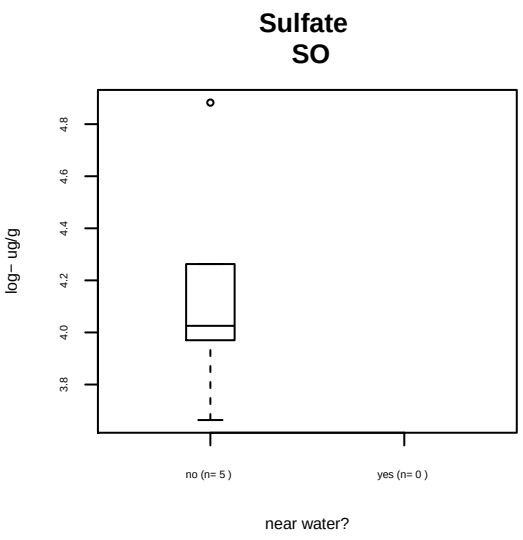

Styrene
SO
ug/g
0
2000
4000
6000
8000
10000
12000
14000
no (n= 405)
yes (n= 41)
near water?

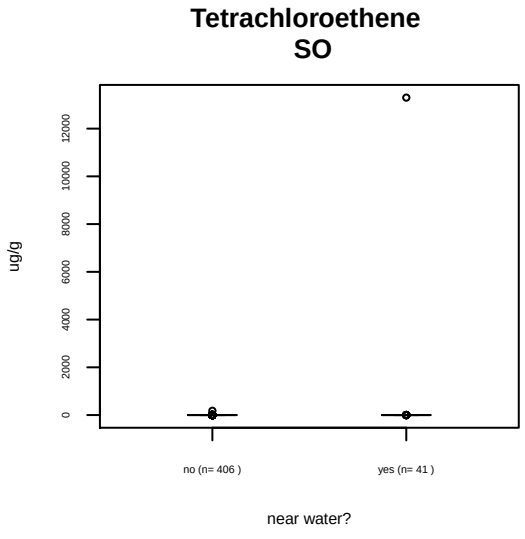

Styrene
SO
log− ug/g
−5
0
5
10
no (n= 405)
yes (n= 41)
near water?

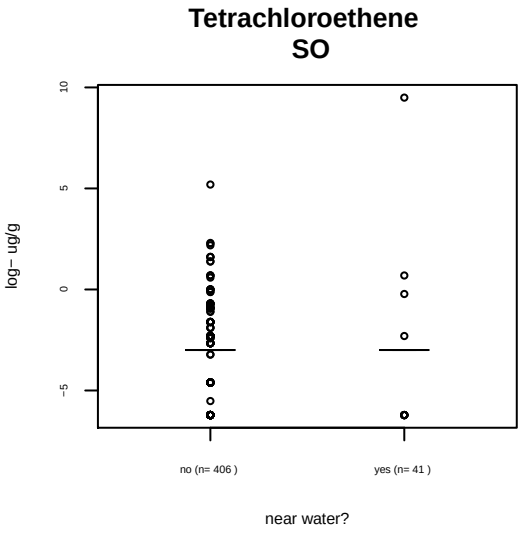

Styrene
WG
ug/l
0
100
200
300
400
no (n= 162)
yes (n= 28)
near water?

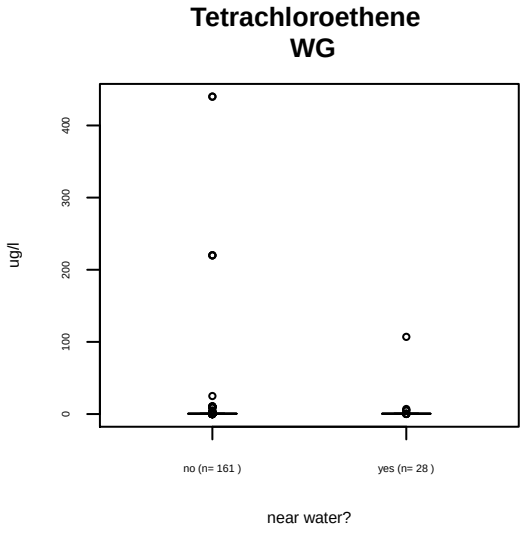

Styrene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 162)
yes (n= 28)
near water?

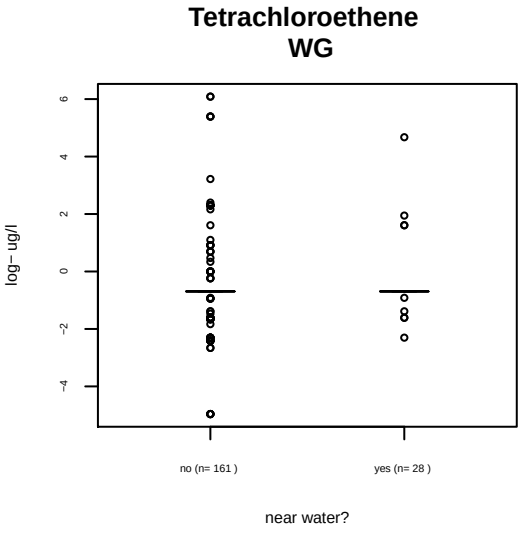

Sulfate
SO
ug/g
40
60
80
100
120
no (n= 5)
yes (n= 0)
near water?

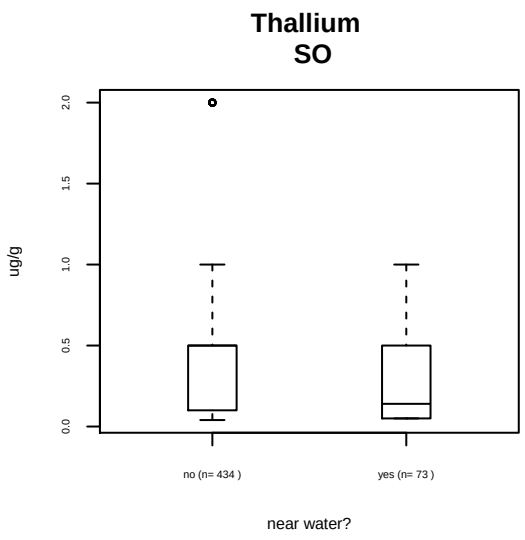

Sulfate
SO
log− ug/g
3.8
4.0
4.2
4.4
4.6
4.8
no (n= 5)
yes (n= 0)
near water?

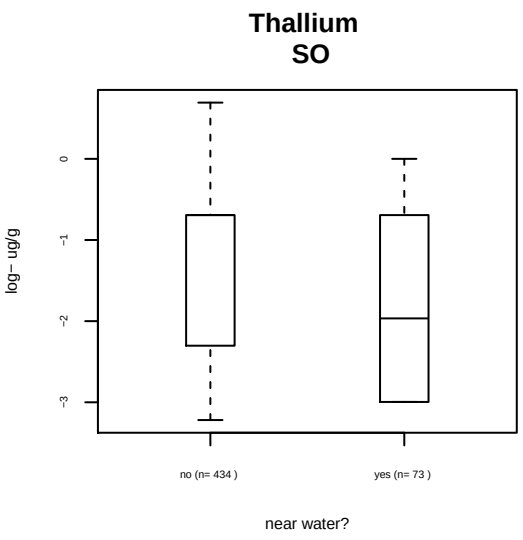

Tetrachloroethene
SO
ug/g
0
2000
4000
6000
8000
10000
12000
no (n= 406)
yes (n= 41)
near water?

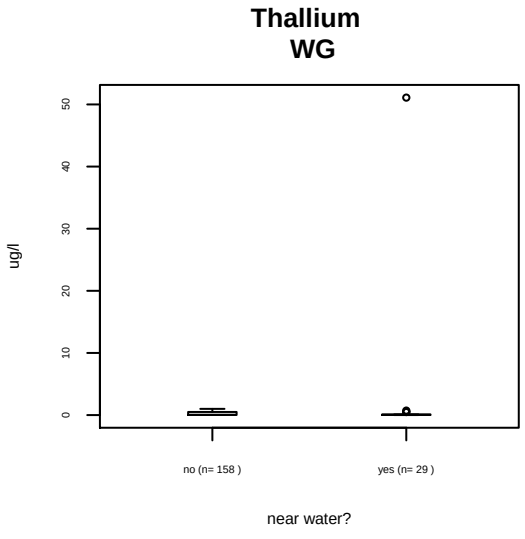

Tetrachloroethene
SO
log− ug/g
−5
0
5
10
no (n= 406)
yes (n= 41)
near water?

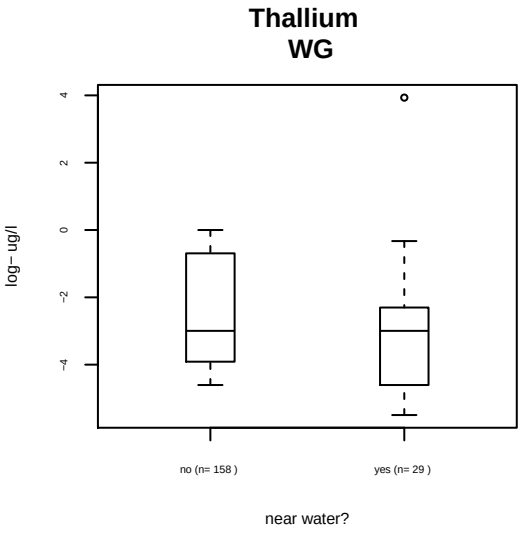

Tetrachloroethene
WG
ug/l
0
100
200
300
400
no (n= 161)
yes (n= 28)
near water?

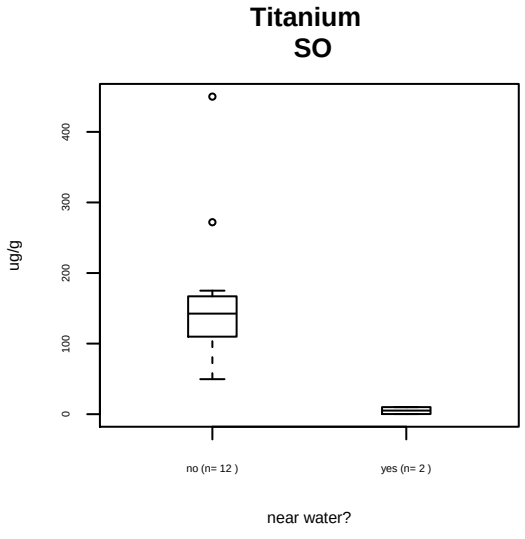

Tetrachloroethene
WG
log− ug/l
−4
−2
0
2
4
6
no (n= 161)
yes (n= 28)
near water?

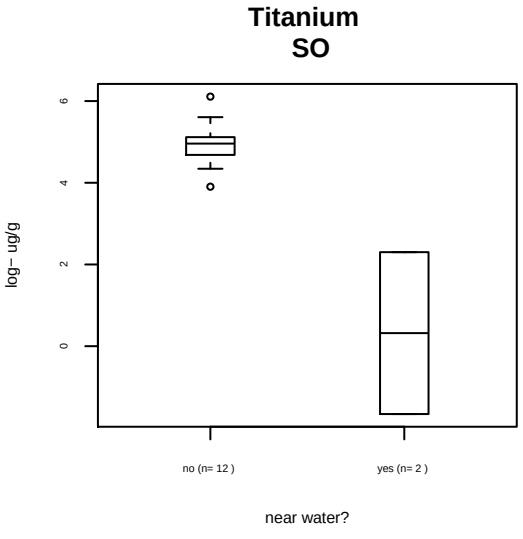

Thallium
SO
ug/g
0.0
0.5
1.0
1.5
2.0
no (n= 434)
yes (n= 73)
near water?

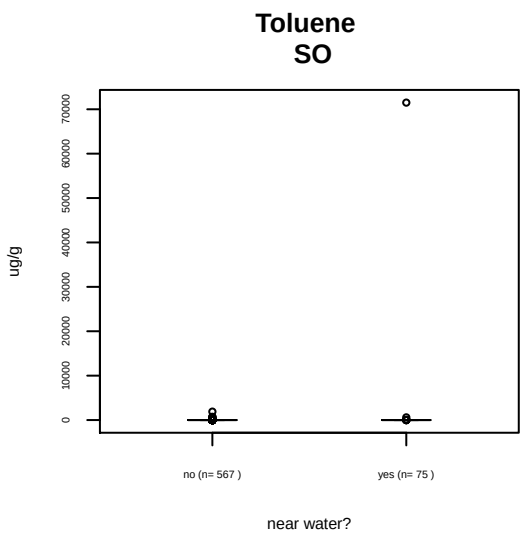

Thallium
SO
log− ug/g
−3
−2
−1
0
no (n= 434)
yes (n= 73)
near water?

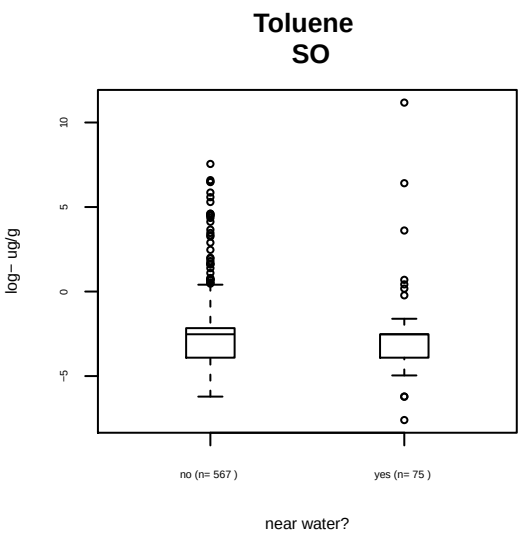

Thallium
WG
ug/l
0
10
20
30
40
50
no (n= 158)
yes (n= 29)
near water?

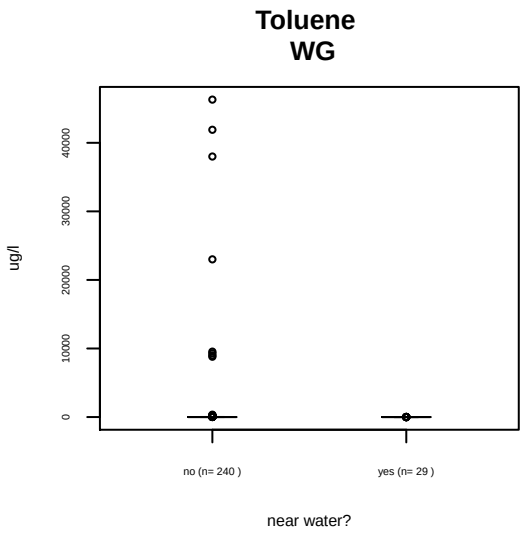

Thallium
WG
log− ug/l
−4
−2
0
2
4
no (n= 158)
yes (n= 29)
near water?

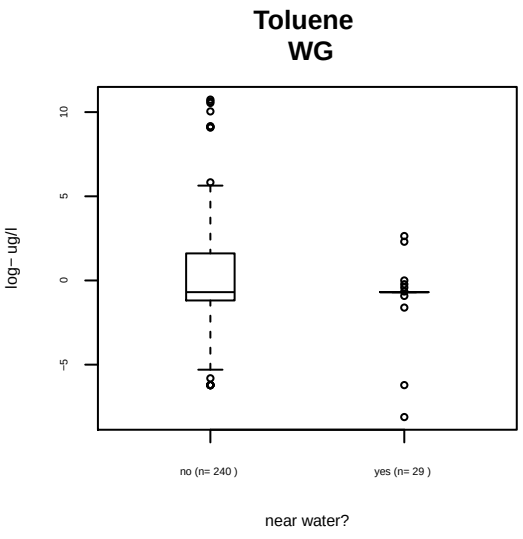

Titanium
SO
ug/g
0
100
200
300
400
no (n= 12)
yes (n= 2)
near water?

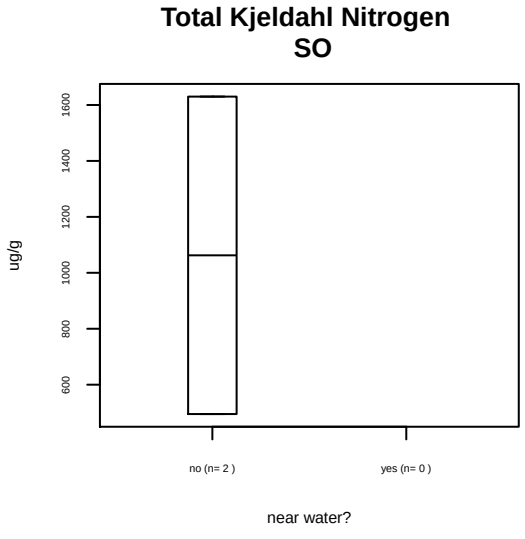

Titanium
SO
log− ug/g
0
2
4
6
no (n= 12)
yes (n= 2)
near water?

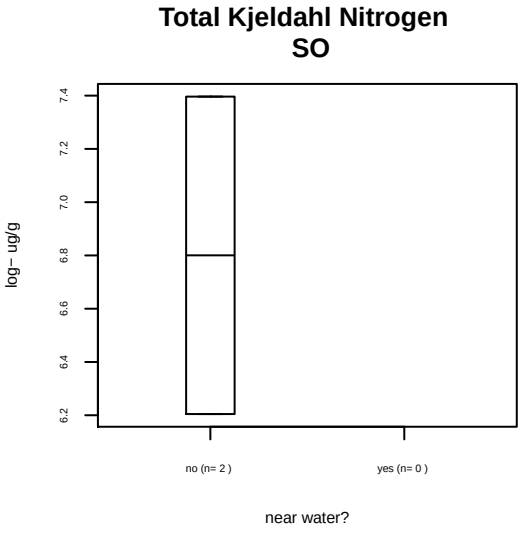

Toluene
SO
ug/g
0
10000
20000
30000
40000
50000
60000
70000
no (n= 567)
yes (n= 75)
near water?


Toluene
SO
log− ug/g
−5
0
5
10
no (n= 567)
yes (n= 75)
near water?

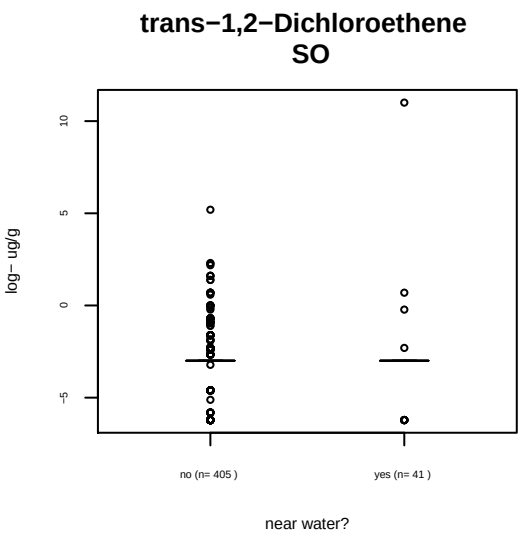

Toluene
WG
ug/l
0
10000
20000
30000
40000
no (n= 240)
yes (n= 29)
near water?

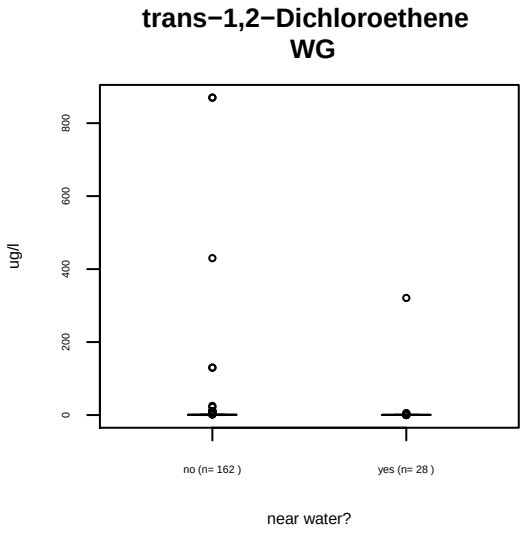

Toluene
WG
log− ug/l
−5
0
5
10
no (n= 240)
yes (n= 29)
near water?

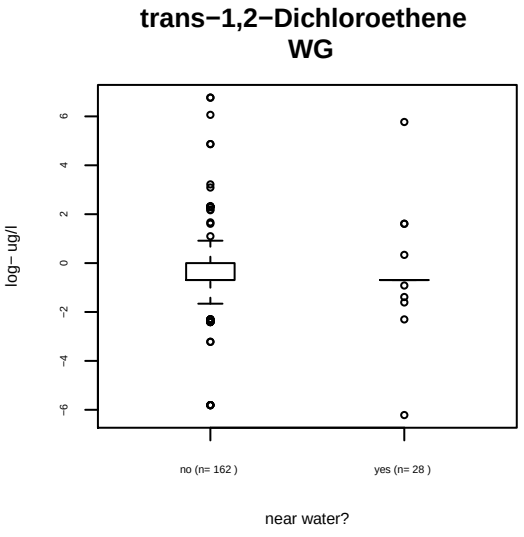

Total Kjeldahl Nitrogen
SO
ug/g
600
800
1000
1200
1400
1600
no (n= 2)
yes (n= 0)
near water?

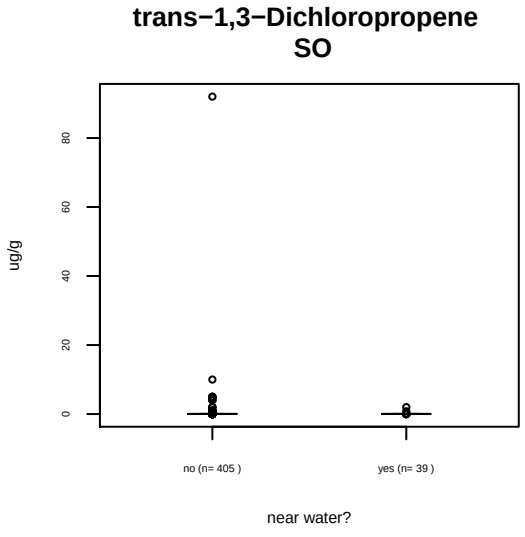

Total Kjeldahl Nitrogen
SO
log− ug/g/g
6.2
6.4
6.6
6.8
7.0
7.2
7.4
no (n= 2)
yes (n= 0)
near water?

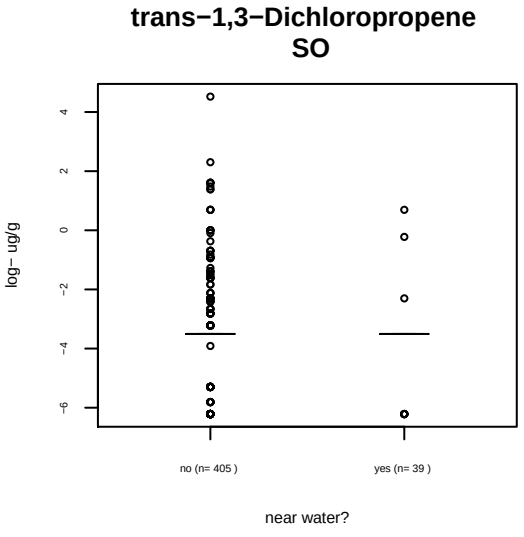

trans−1,2−Dichloroethene
SO
ug/g
0
10000
20000
30000
40000
50000
60000
no (n= 405)
yes (n= 41)
near water?

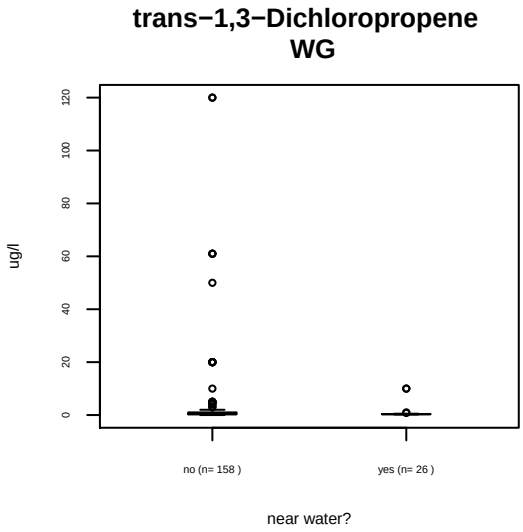

trans−1,2−Dichloroethene
SO
log− ug/g
−5
0
5
10
no (n= 405)
yes (n= 41)
near water?

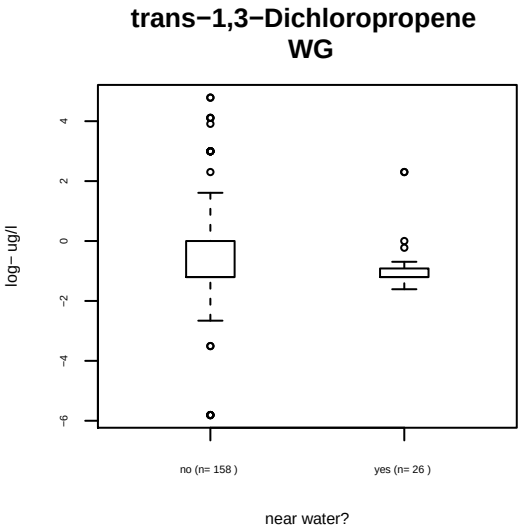

trans−1,2−Dichloroethene
WG
ug/l
0
200
400
600
800
no (n= 162)
yes (n= 28)
near water?

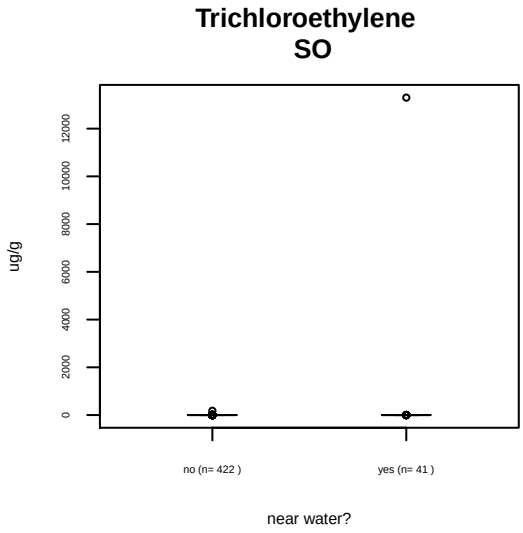

trans−1,2−Dichloroethene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 162)
yes (n= 28)
near water?

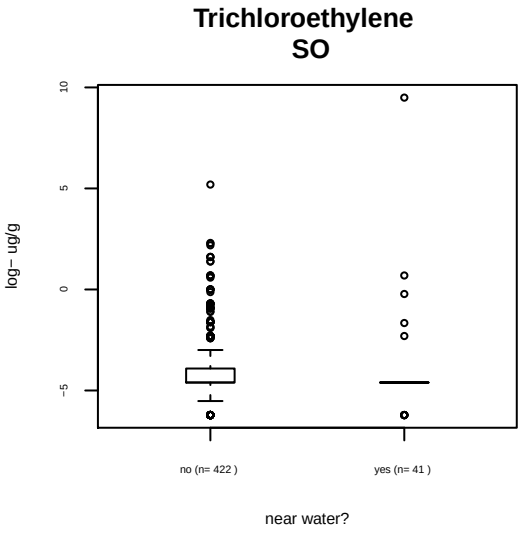

trans−1,3−Dichloropropene
SO
ug/g
0
20
40
60
80
no (n= 405)
yes (n= 39)
near water?

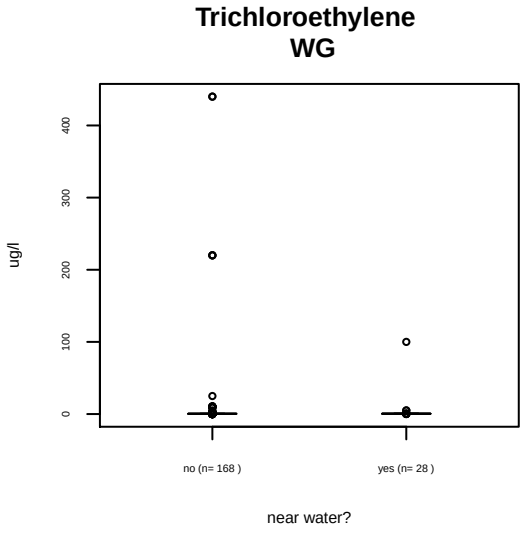

trans−1,3−Dichloropropene
SO
log− ug/g
−6
−4
−2
0
2
4
no (n= 405)
yes (n= 39)
near water?

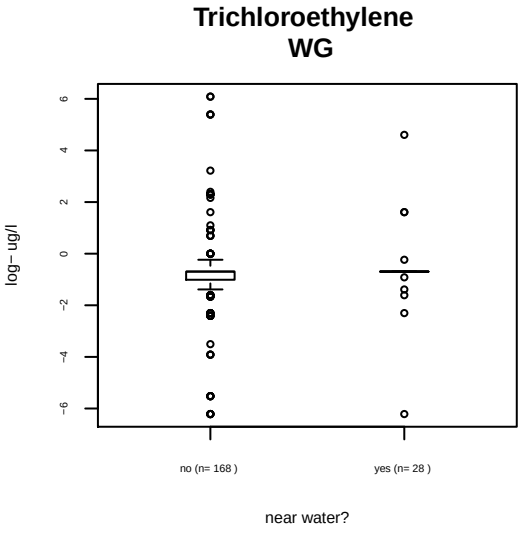

trans−1,3−Dichloropropene
WG
ug/l
0
20
40
60
80
100
120
no (n= 158)
yes (n= 26)
near water?

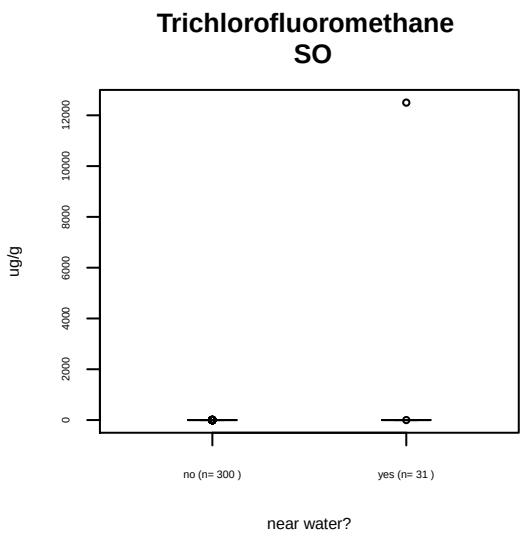

trans−1,3−Dichloropropene
WG
log− ug/l
−6
−4
−2
0
2
4
no (n= 158)
yes (n= 26)
near water?

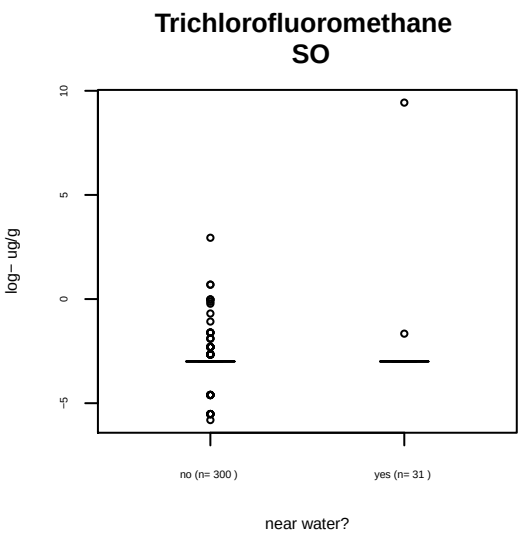

Trichloroethylene
SO
ug/g
0
2000
4000
6000
8000
10000
12000
no (n= 422)
yes (n= 41)
near water?

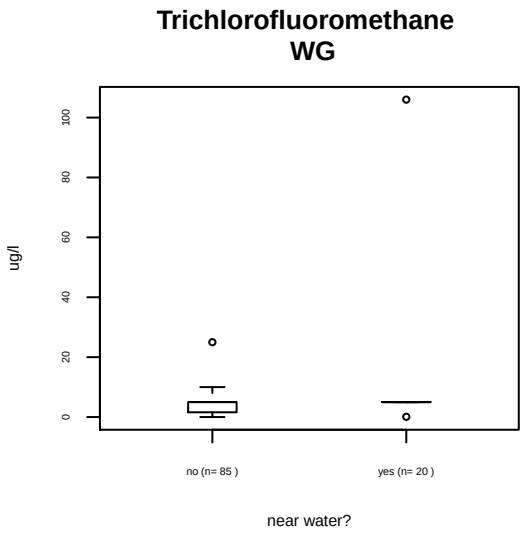

Trichloroethylene
SO
log− ug/g
−5
0
5
10
no (n= 422)
yes (n= 41)
near water?

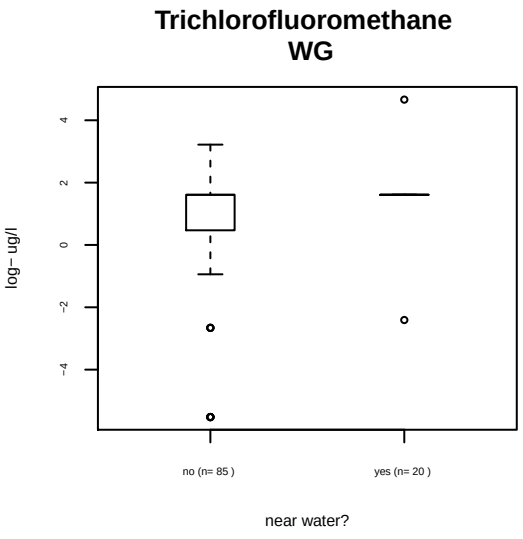

Trichloroethylene
WG
ug/l
0
100
200
300
400
no (n= 168)
yes (n= 28)
near water?

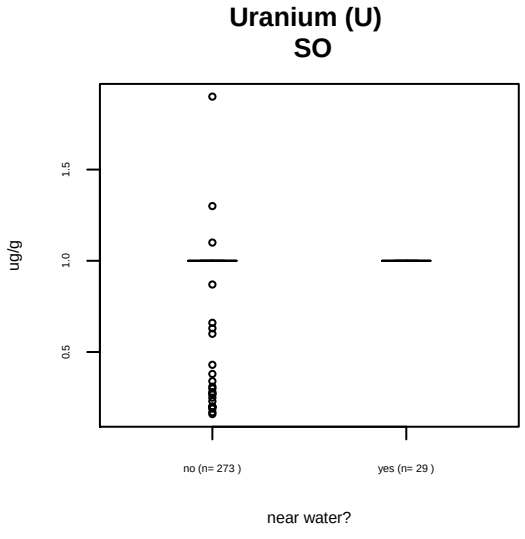

Trichloroethylene
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 168)
yes (n= 28)
near water?

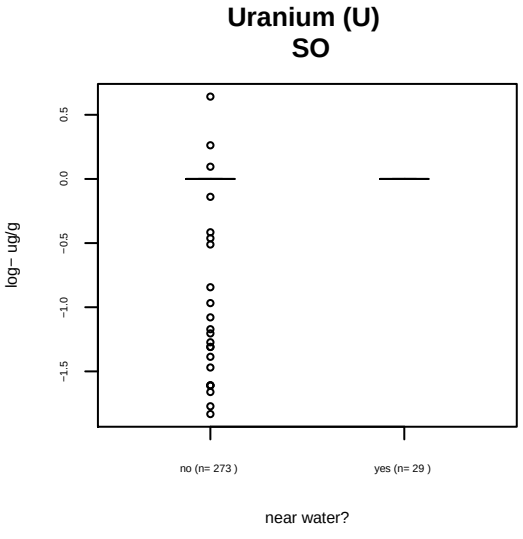

Trichlorofluoromethane
SO
ug/g
0
2000
4000
6000
8000
10000
12000
no (n= 300)
yes (n= 31)
near water?

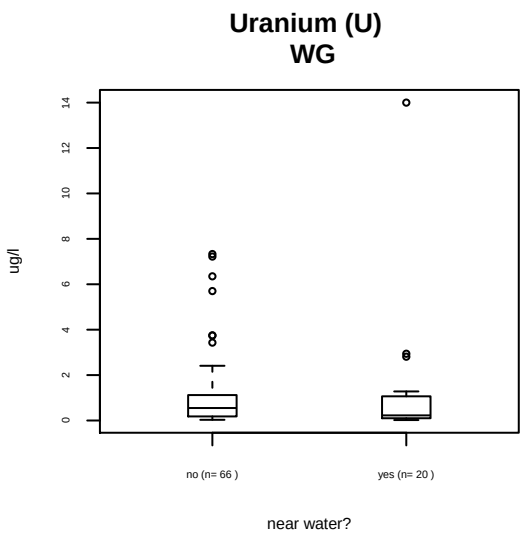

Trichlorofluoromethane
SO
log− ug/g
−5
0
5
10
no (n= 300)
yes (n= 31)
near water?

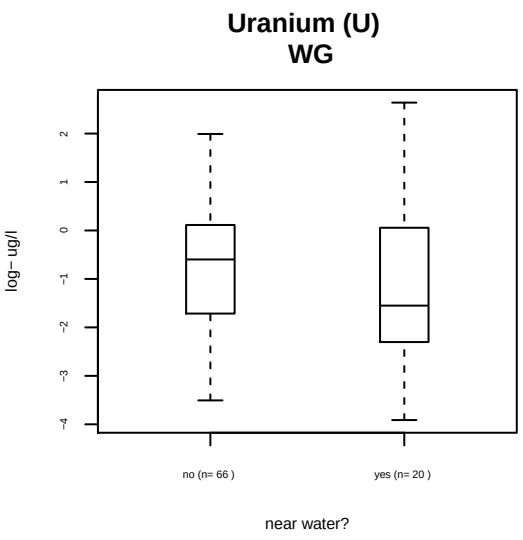

Trichlorofluoromethane
WG
ug/l
0
20
40
60
80
100
no (n= 85)
yes (n= 20)
near water?

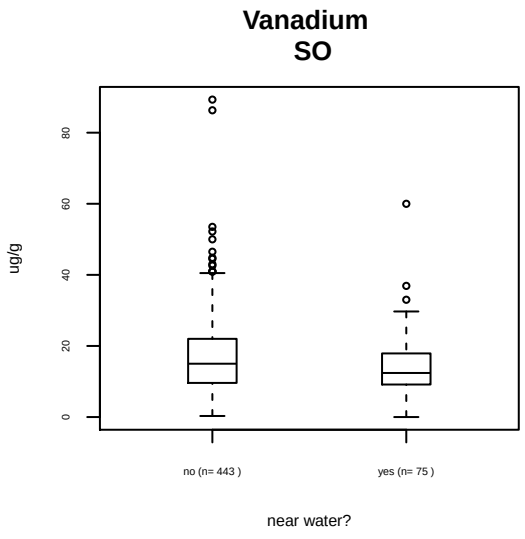

Trichlorofluoromethane
WG
log− ug/l
−4
−2
0
2
4
no (n= 85)
yes (n= 20)
near water?

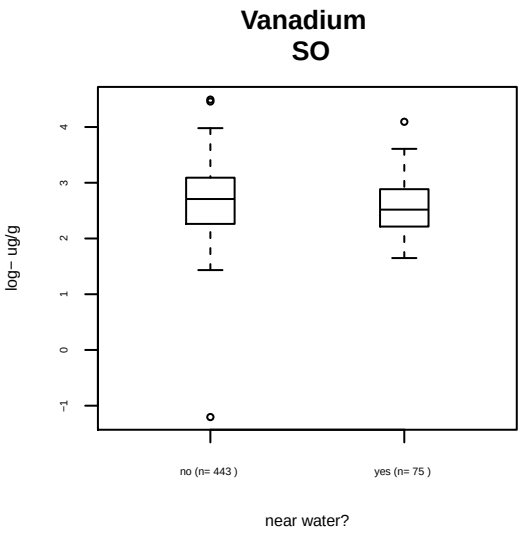

Uranium (U)
SO
ug/g
0.5
1.0
1.5
no (n= 273)
yes (n= 29)
near water?

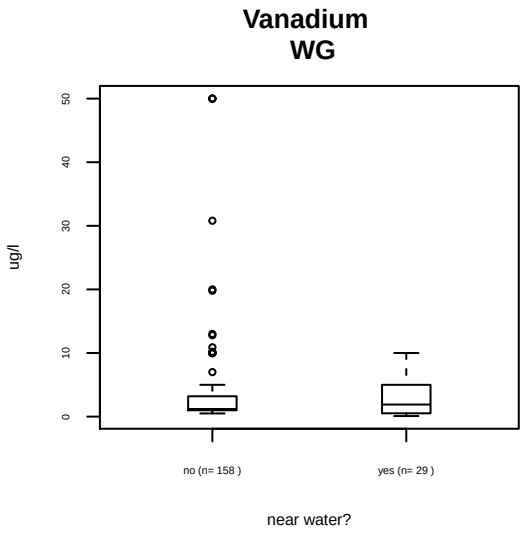

Uranium (U)
SO
log− ug/g
−1.5
−1.0
−0.5
0.0
0.5
no (n= 273)
yes (n= 29)
near water?

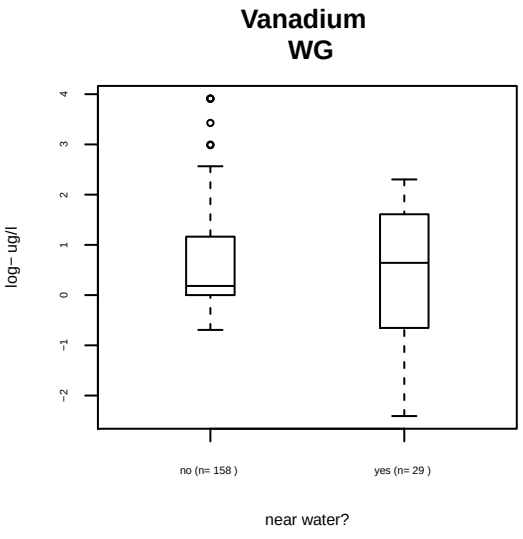

Uranium (U)
WG
ug/l
0
2
4
6
8
10
12
14
no (n= 66)
yes (n= 20)
near water?

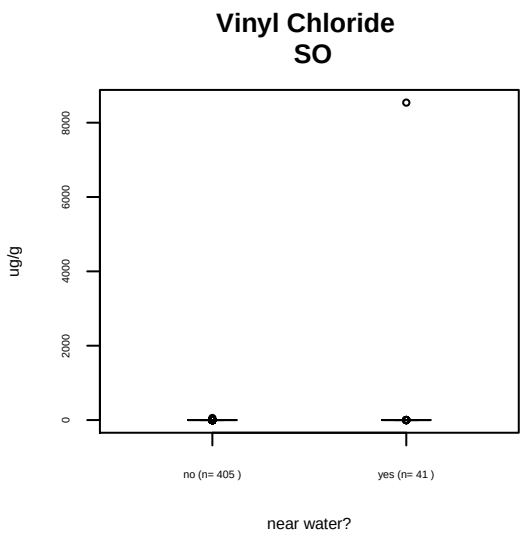

Uranium (U)
WG
log− ug/l
−4
−3
−2
−1
0
1
2
no (n= 66)
yes (n= 20)
near water?

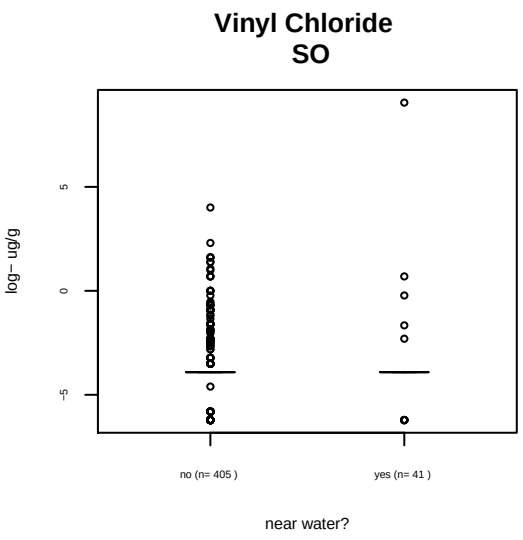

Vanadium
SO
ug/g
0
20
40
60
80
no (n= 443)
yes (n= 75)
near water?

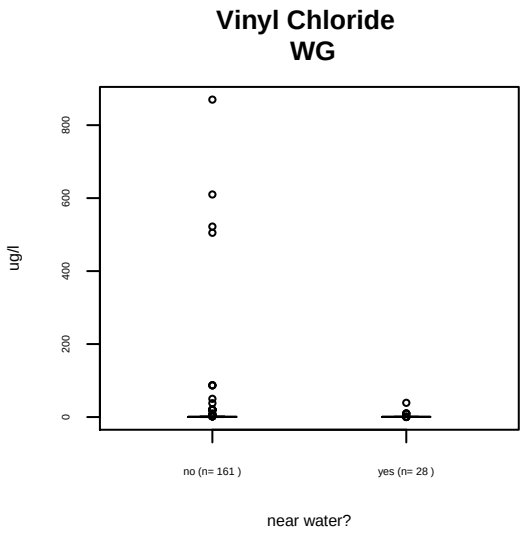

Vanadium
SO
log− ug/g
−1
0
1
2
3
4
no (n= 443)
yes (n= 75)
near water?

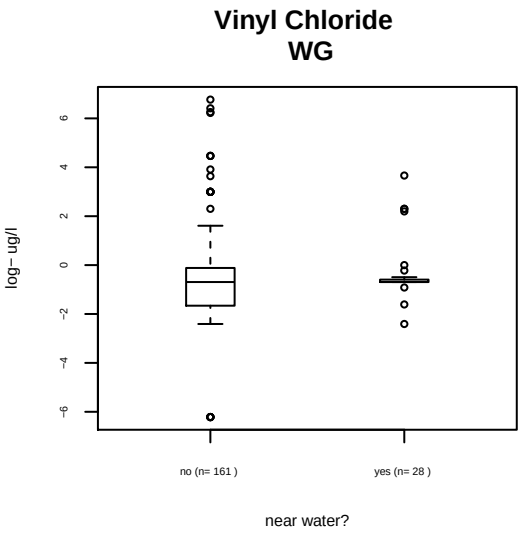

Vanadium
WG
ug/l
0
10
20
30
40
50
no (n= 158)
yes (n= 29)
near water?

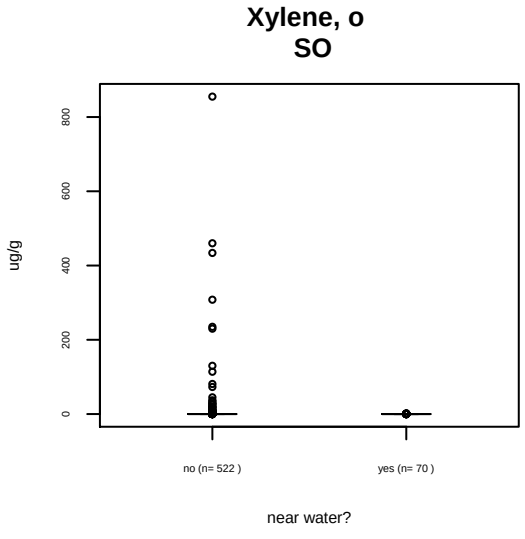

Vanadium
WG
log− ug/l
−2
−1
0
1
2
3
4
no (n= 158)
yes (n= 29)
near water?

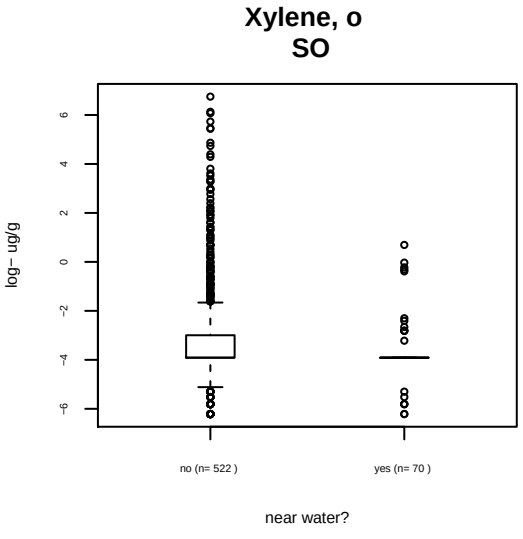

Vinyl Chloride
SO
ug/gn
0
2000
4000
6000
8000
no (n= 405)
yes (n= 41)
near water?

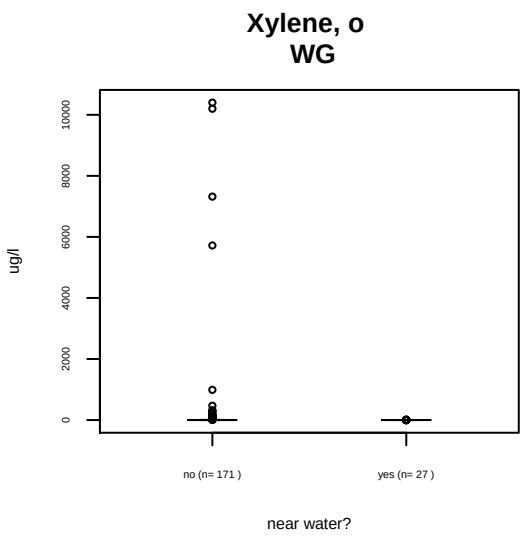

Vinyl Chloride
SO
log− ug/gn
−5
0
5
no (n= 405)
yes (n= 41)
near water?

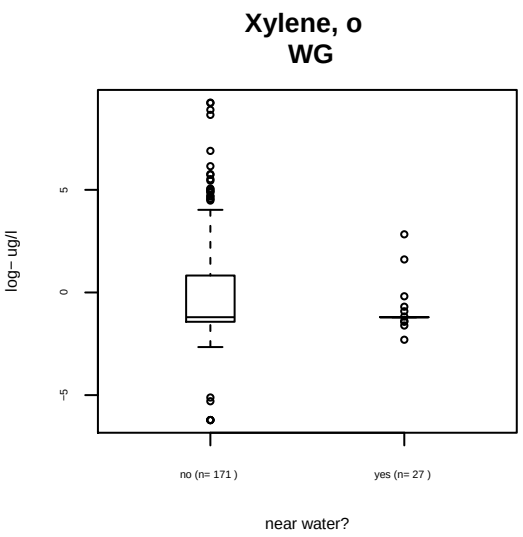

Vinyl Chloride
WG
ug/l
0
200
400
600
800
no (n= 161)
yes (n= 28)
near water?

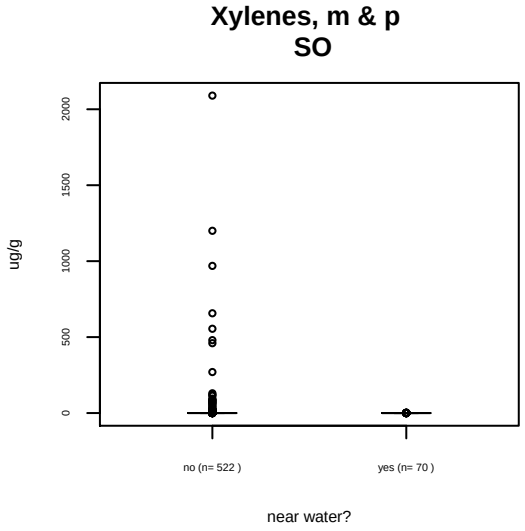

Vinyl Chloride
WG
log− ug/l
−6
−4
−2
0
2
4
6
no (n= 161)
yes (n= 28)
near water?

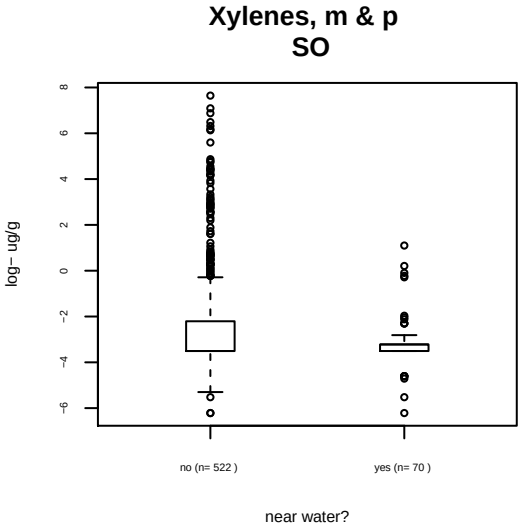

Xylene, o
SO
ug/gn
0
200
400
600
800
no (n= 522)
yes (n= 70)
near water?

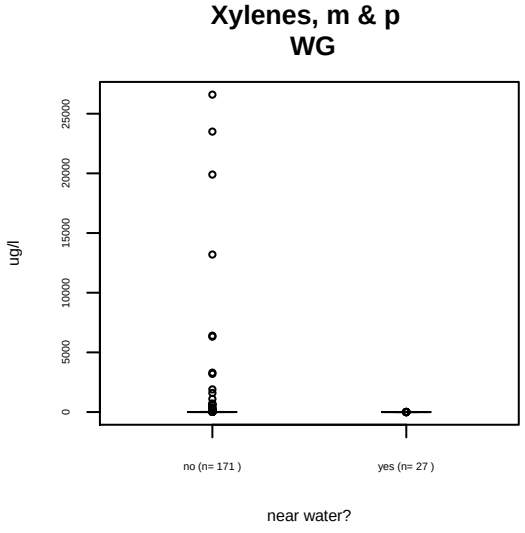

Xylene, o
SO
log− ug/g/g
−6
−4
−2
0
2
4
6
no (n= 522)
yes (n= 70)
near water?

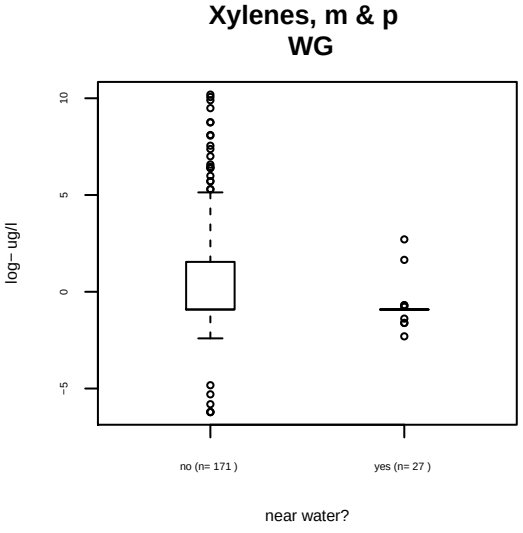

Xylene, o
WG
ug/l
0
2000
4000
6000
8000
10000
no (n= 171)
yes (n= 27)
near water?

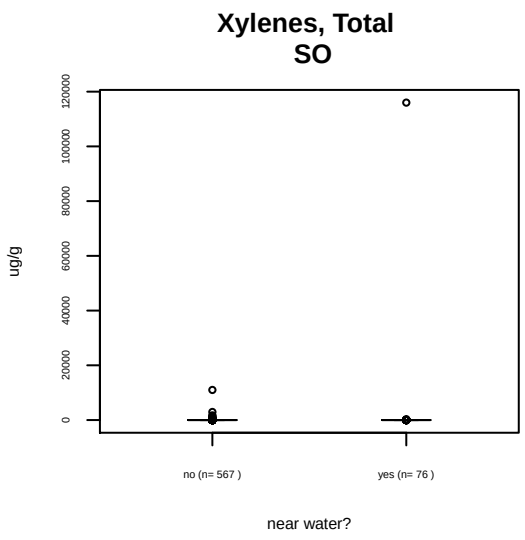

Xylene, o
WG
log− ug/l
−5
0
5
no (n= 171)
yes (n= 27)
near water?

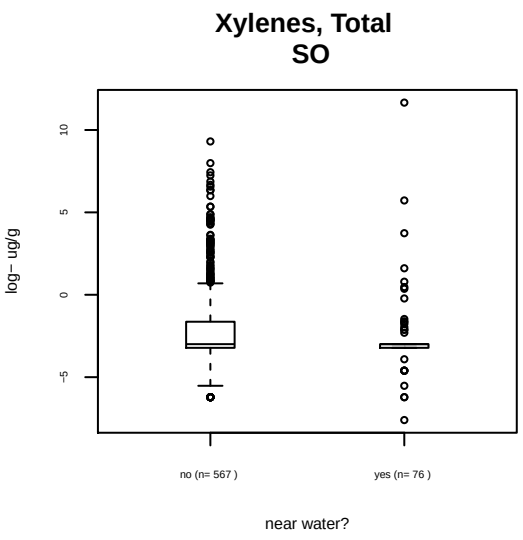

Xylenes, m & p
SO
ug/g
0
500
1000
1500
2000
no (n= 522)
yes (n= 70)
near water?

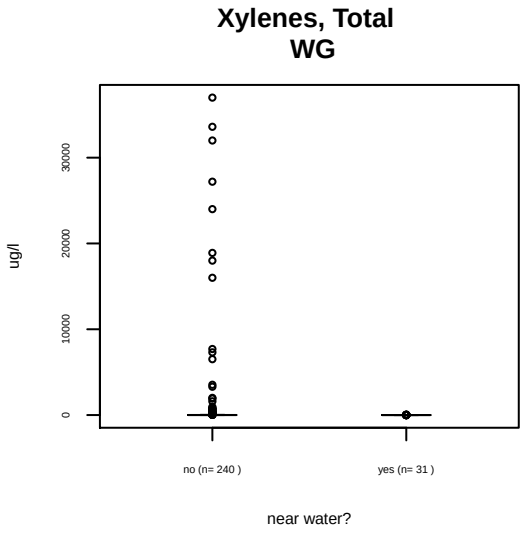

Xylenes, m & p
SO
log− ug/g
−6
−4
−2
0
2
4
6
8
no (n= 522)
yes (n= 70)
near water?

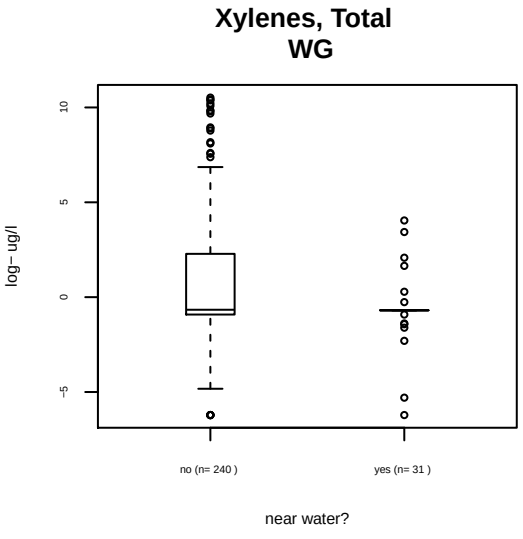

Xylenes, m & p
WG
ug/l
0
5000
10000
15000
20000
25000
no (n= 171)
yes (n= 27)
near water?

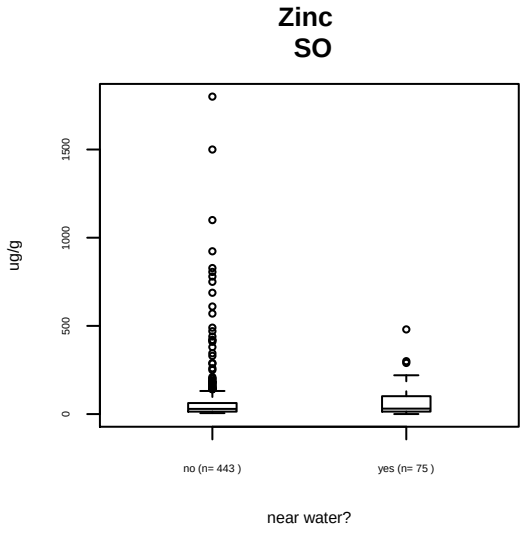

Xylenes, m & p
WG
log− ug/l
−5
0
5
10
no (n= 171)
yes (n= 27)
near water?

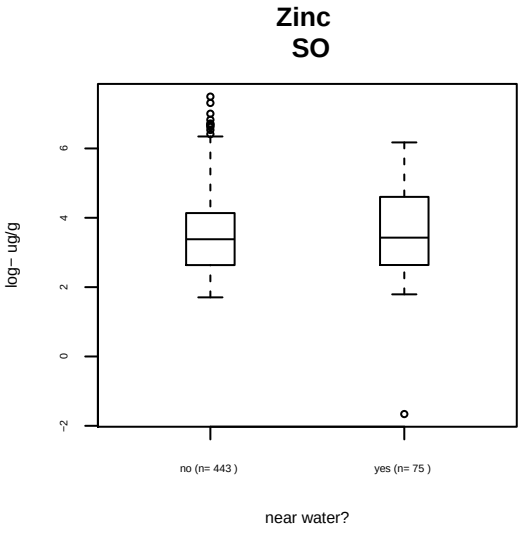

Xylenes, Total
SO
ug/g
0
20000
40000
60000
80000
100000
120000
no (n= 567)
yes (n= 76)
near water?

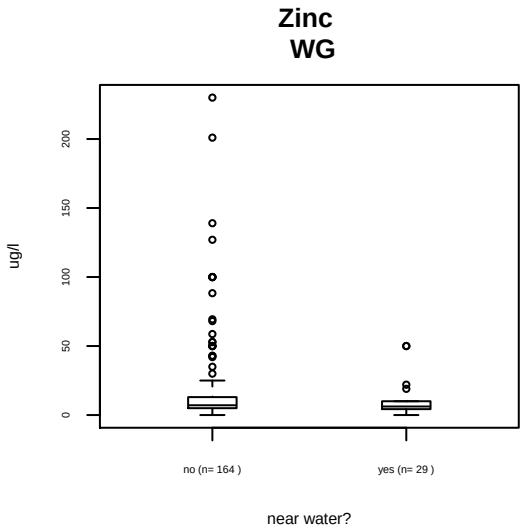

Xylenes, Total
SO
log− ug/g
−5
0
5
10
no (n= 567)
yes (n= 76)
near water?

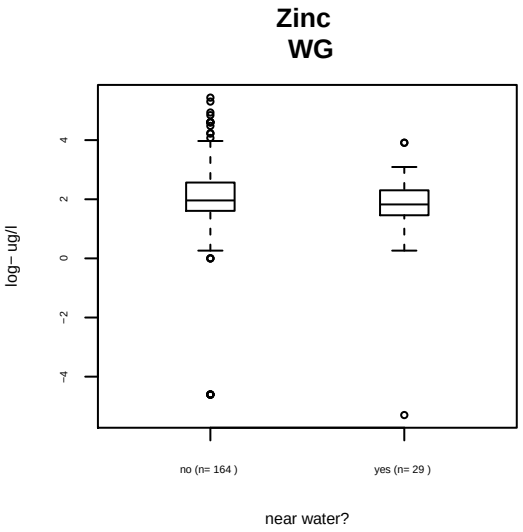

Xylenes, Total
WG
ug/l
0
10000
20000
30000
no (n= 240)
yes (n= 31)
near water?

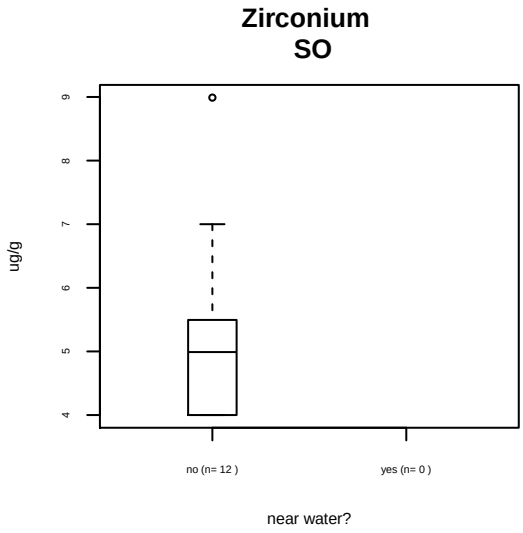

Xylenes, Total
WG
log− ug/l
−5
0
5
10
no (n= 240)
yes (n= 31)
near water?


Zinc
SO
ug/g
0
500
1000
1500
no (n= 443)
yes (n= 75)
near water?


Zinc
SO
log− ug/g
−2
0
2
4
6
no (n= 443)
yes (n= 75)
near water?


Zinc
WG
ug/l
0
50
100
150
200
no (n= 164)
yes (n= 29)
near water?


Zinc
WG
log− ug/l
−4
−2
0
2
4
no (n= 164)
yes (n= 29)
near water?


Zirconium
SO
ug/g
4
5
6
7
8
9
no (n= 12)
yes (n= 0)
near water?


Zirconium
SO
log− ug/g
1.4
1.6
1.8
2.0
2.2
no (n= 12)
yes (n= 0)
near water?

Appendix B2
Groundwater to Surface Water Interaction

APPENDIX B

Groundwater to Surface Water Interaction

B.1 Background

The Port Lands comprise 356 hectares of land. They are located on Lake Ontario and bound by the Keating Channel/Don River and Lake Shore Boulevard to the north, Toronto Inner Harbour in the west, Ashbridges Bay to the east, and Lake Ontario and Tommy Thompson Park to the south. At the time of the report preparation, the Port Lands were zoned industrial with portions being used as industrial and commercial properties that were vacant, or being used (formally and informally) as recreational space. The proposed redevelopment for the Port Lands aims to rezone the former industrial lands to parkland, residential, institutional, community, and commercial land uses. The redevelopment is also proposed to include naturalization of the mouth of the Don River, as well as construction of a Flood Protection Landform. Given the proposed changes in site conditions during redevelopment, both current and potential future land use scenarios are considered. The following evaluation of the potential for impacts to aquatic receptors is based on groundwater to surface water interaction. Potential impacts in Lake Ontario and in the future naturalized Don River are evaluated separately, as detailed in the following sections.

B.1.1 Screening Against Aquatic Protection Values

The maximum concentrations of chemicals detected in groundwater from within 30 metres (m) of Lake Ontario, and from the future Don River Valley and within 30 m of the future Don River, were initially screened against the Table 9 Site Condition Standards (Table 9 Standards; *Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition* [MOECC, 2011b]) (refer to Tables B-1 and B-2). The COCs identified in these initial steps were then further screened to identify potential contaminants of concern (COCs) that exceeded 10 times the aquatic protection values (APVs). If the estimated maximum (that is, maximum x 1.2) groundwater concentrations were less than 10xAPV, adequate protection to aquatic and benthic organisms would be assumed. Estimated maximum groundwater concentrations were assumed to be present across all groundwater units (any depth).

Lake Ontario

Table B-3 presents a summary of the secondary screening step (comparison to 10 times APV) for Lake Ontario. The following COCs were identified:

- Acenaphthylene
- Anthracene
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b&j)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Cadmium
- Chloride
- Chrysene
- Cobalt
- Dibenzo(a,h)anthracene
- F1 (C6-C10)
- F2 (C10-C16)
- Indeno(1,2,3-cd)pyrene
- PCB, Total
- Pyrene
- Silver

Future Don River

Table B-4 presents a summary of the secondary screening step (comparison to 10 times APV) for the future Don River. The following COCs were identified:

- 1+2-Methylnaphthalenes
- Acenapthene
- Acenaphthylene
- Anthracene
- Barium
- Benzo(a)anthracene
- Benzo(a)pyrene
- Benzo(b&j)fluoranthene
- Benzo(g,h,i)perylene
- Benzo(k)fluoranthene
- Chloride
- Chrysene
- Dibenzo(a,h)anthracene
- Ethylbenzene
- F1 (C6-C10)
- F2 (C10-C16)
- Fluoranthene
- Fluorene
- Indeno(1,2,3-cd)pyrene
- Mercury
- Naphthalene
- Phenanthrene
- Pyrene
- Silver
- Sodium
- Toluene
- Xylenes

B.1.2 Groundwater and Surface Water Interaction Assessment

Lake Ontario

Table B-3 shows those COCs with groundwater concentrations greater than 10 times the APV. As shown, exceedances of the APVs were noted for polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), limited inorganics (cadmium, chloride, cobalt, and silver), and petroleum hydrocarbon (PHC) F1 and F2. It is noted that PAHs and PCBs are likely associated with soil sediment in groundwater samples rather than the dissolved phase, which means their mobility is likely limited. Inorganic and PHC F1 impacts are isolated, generally detected in only one or two samples and are not suggestive of widespread impacts. The impacts are generally located on the northern side of the Site, with five of the six locations with concentrations of inorganics/PHCs that exceeded the APVs located on the northern side of the Study Area (SLR BH102, SLR BH127, SLR BH 128, SLR BH130, and Terrapex MW101). PHC F1 impacts were also measured in SLR BH147, the only location on the southern side of the Study Area. PHC F2 impacts to aquatic life in Lake Ontario cannot be ruled out with exceedances of the APVs noted along the northern and southern sides of the Study Area in locations SLR BH102, SLR BH147, SLR BH157, MW30-15, and MW39-15.

Future Don River

Table B-4 shows those COCs with groundwater concentrations greater than 10 times the APV. As shown, exceedances of the APVs were noted for PAHs, a limited number of inorganics (barium, chloride, mercury, silver, and sodium), PHC F1 and F2, ethylbenzene, toluene, and xylenes. It is noted that PAHs are likely associated with soil sediment in groundwater samples rather than the dissolved phase, which means their mobility is likely limited. The one exceedance of the APV for silver was based on a detection limit and does not represent actual site groundwater conditions; all other reported concentrations of silver (both detected and detection limits) were less than the APV. The remaining inorganics, ethylbenzene, toluene, and xylenes impacts are isolated, detected in between one and six sample locations and are not suggestive of widespread impacts. F1 and PHC F2 exceedances were detected more frequently, and the potential for impacts to aquatic receptors could not be ruled out.

Because the proposed future naturalization of the mouth of the Don River will require excavation through impacted zones in the Study Area, for those COCs retained for additional assessment, conservative site-specific assessments of dilution provided by the surface water in the future Don River were used to determine the potential for effects on aquatic organisms. Dilution in the future naturalized

Don River considers five sections of the future river from the Keating Channel in the north to Lake Ontario in the west. The assessment considers the Upper River Sediment Basin; Upper River (South of Basin); Upper River; Mid River; and Lower River.

B.1.2.1 Site Geology and Hydrogeology Conditions

As outlined in the Conceptual Site Model (Tab A), previous investigations determined that the site overburden geology consists of five main stratigraphic units: heterogeneous fill over a native sand unit; discontinuous peat/organic layers; discontinuous native silt, clayey silt to clay till; underlain by Georgian Bay Formation shale bedrock (CH2M, 2015). Two main hydrostratigraphic units were found at the Study Area: an unconfined fill/native sand aquifer and a weathered bedrock aquifer. The hydraulic properties of the fill and native sand layers are expected to be similar, given their predominantly coarse granular materials. Based on this understanding and the apparent direct-hydraulic connection between the two layers, groundwater will tend to flow horizontally and vertically within the fill and native sand layers, with the two layers acting as a single aquifer unit. The fill and native sand aquifer extends across the entire Study Area; however, as previously noted, the bottom of the native sand has not been confirmed in some areas of the Study Area. A weathered shale bedrock aquifer was identified underlying the fill/native sand aquifer. No aquitard separating the native sand and weathered shale bedrock units was identified; therefore, there may be a direct hydraulic connection between the two units.

As outlined in Tab A, based on the SLR Consulting Canada Ltd. (SLR) piezometric contours, the horizontal hydraulic gradient of the fill/native sand aquifer across the Study Area was estimated to range between 0.003 and 0.007 metres per metre (m/m) (SLR, 2009). Based on the September 1, 2015 piezometric contours, the horizontal hydraulic gradient of the fill/native sand aquifer is estimated to range between 0.004 and 0.0008 m/m.

Hydraulic conductivity (K) was calculated for various geology layers, based on slug tests conducted by GHD (2015). The slug test results demonstrated that the highest conductivity of the fill falls within the hydraulic conductivity range of the native sand. Therefore, the geometric mean hydraulic conductivity value of the native sand is applied in the assessment of the interaction between groundwater and surface water. The calculated hydraulic conductivity values in the native sand ranged from 3.05×10^{-5} to 8.7×10^{-4} metres per second (m/sec). The geometric mean of the hydraulic conductivity within the native sand aquifer is 1.46×10^{-4} m/sec (12.61 metres per day [m/d]). Based on the geometric mean hydraulic conductivities of 12.61 m/d for the native sand (used as a conservative conductivity for the fill) and 0.71 m/d for the upper weathered bedrock aquifer, respectively, the described hydraulic gradients, and porosities of 30 percent for the fill/native sand and 2 percent for the bedrock, horizontal groundwater velocities are estimated to range from 77 metres per year (m/y) for the fill/native sand aquifer, and 13 m/y for the upper weathered bedrock aquifer.

Lake Ontario exhibits a dynamic and major hydraulic influence on groundwater elevations within the fill/native sand aquifer across the Study Area. Groundwater elevations in the fill/native sand aquifer on September 1, 2015 and December 8, 2015 appear to be influenced by the level of Lake Ontario (75.02 and 74.50 metres above sea level, respectively), including the Keating Channel to the north, and Shipping Channel to the south. As shown in Tab A, Figure 11, a review of historical groundwater elevations at 150 Commissioners Street over three different groundwater monitoring events in comparison with historical Lake Ontario surface elevations shows that in part, groundwater elevations are controlled by the surface elevation of Lake Ontario. Groundwater elevations correspond to the surface elevation of Lake Ontario, with a rise in Lake Ontario leading to a rise in groundwater elevations in the fill/native sand aquifer, and a decline in Lake Ontario leading to lower groundwater elevations in the fill/native sand aquifer. Within the fill/native sand aquifer, groundwater generally flows from east to west toward Lake Ontario, with localized northern and southern flow from the middle sections of the Study Area in the general direction of the Keating Channel and Shipping Channel (Figure 10A). The interaction between Lake Ontario and Site groundwater elevations, specifically the influence of Lake

Ontario from the north, west and south, is likely to be a major control on contaminant migration across the Site.

B.1.2.2 Groundwater and Surface Water Dilution Assessment

Conceptual Model – Future Don River

For COCs retained for additional assessment in the future Don River (groundwater concentrations greater than 10 times APV), a conservative site-specific assessment of dilution in the future Don River was undertaken for aquatic organisms, considering a range of input parameters. At the conceptual level, it was assumed that groundwater will move through the shallow aquifer and discharge to the future Don River through "windows" on either river bank. This assumption is conservatively evaluated by using the lengths of various sections of the Don River that cross through the Study Area, multiplied by the depth of water in the various sections of the Don River.

The quality of the groundwater discharging to the future Don River is likely limited to groundwater quality in the shallow aquifer at certain areas. However, for this assessment, it is assumed that the maximum concentrations observed in the groundwater will be uniformly discharged to the future Don River through the entire discharging "windows".

As noted, the future Don River is divided into five sections from the Keating Channel in the north to Lake Ontario in the west: the Upper River Sediment Basin; Upper River (South of Basin); Upper River; Mid River; and Lower River. The following are the model parameters:

- The horizontal hydraulic gradients of the various sections of the Don River were determined from groundwater contours prepared by GHD Limited (GHD) in September 2015 (GHD, 2015). The horizontal gradients applied for the evaluation of groundwater to surface water range from 0.012 to 0.001 m/m, as presented in Tables B-5a through B-5e.
- The geometric mean of the hydraulic conductivity within the native sand aquifer of 1.46×10^{-4} m/sec (12.61 m/d) is applied in the assessment of groundwater and surface water dilution.
- The widths of the aquifer discharge boundaries perpendicular to groundwater flow correspond to the lengths of each of the sections of the future Don River evaluated, and range from 33 m to 613 m, as shown in Tables B-5a through B-5e.
- The saturated thickness of the aquifer varies in each section of the future Don River evaluated, and ranges from 1.8 m to 6.8 m, as shown in Tables B-5a through B-5e.

Based on these conservative inputs, the volumes of groundwater discharging from the Study Area along the banks of the various sections of the future Don River were calculated. The values ranged from an estimated 10 to 380 cubic metres per day (m^3/d). The dilution factors of the groundwater discharges to the future Don River were calculated by obtaining daily flow data from the Water Survey of Canada for the Don River at Todmorden (Station 02HC024) for the period from 1962 to 2014 (Government of Canada, 2015). By using the daily flow records for the Don River, the dilution factors could be calculated on the actual observed low-flow conditions. The minimum and mean flows of the Don River for the period 1962 to 2014 were 85,536 m^3/d, and 353,635 m^3/d, respectively. To be conservative, the minimum daily flow records were used in this assessment. The dilution ratios under minimum flow conditions were estimated to range from 1:226 to 1:8,154, as presented in Tables B-5a through B-5e.

B.1.3 Site-specific Assessment of Groundwater Contaminants of Concern Retained from Screening

For the purposes of this assessment, groundwater concentrations of COCs from the Study Area were assumed to be located immediately at the groundwater aquifer-Don River discharge boundary. Estimated maximum groundwater concentrations from all groundwater units were selected to represent

worst-case groundwater concentrations. This implies that at some future time, groundwater concentrations found in the Study Area could reach the future Don River without any attenuation or dilution during migration/transport (conservative worst case assumption). Using site-specific dilution factors of 1:226 to 1:8,154, estimated COC concentrations were compared to the APVs.

Tables B-5a through B-5e present the site-specific screening assessments of the COCs. COC concentrations in groundwater that are less than these screening values are concluded to be protective of aquatic and benthic receptors in the future Don River.

As shown in Tables B-5a, B-5b, and B-5c, in the Upper River Sediment Basin, the Upper River South of the Sediment Basin, and the Upper River, there is the potential for impacts to aquatic receptors from PAHs and PHC F2. It is noted that PAHs are likely associated with soil sediment in groundwater samples rather than the dissolved phase, which means their mobility is likely limited. While the models show the potential for PHC F2 impacts, it should be noted that the highest concentrations of PHC F2 are generally located downstream of these sections of the future Don River.

As shown in Table B-5d, in the Mid River, there is the potential for impacts to aquatic receptors from PAHs, and PHC F1 and F2. It is noted that PAHs are likely associated with soil sediment in groundwater samples rather than the dissolved phase, thus their mobility is likely limited. The potential for impacts to aquatic receptors from PHC F1 and PHC F2 cannot be ruled out.

As shown in Table B-5e, in the Lower River, there is the potential for impacts to aquatic receptors from PAHs, and PHC F2. It is noted that PAHs are likely associated with soil sediment in groundwater samples rather than the dissolved phase, thus their mobility is likely limited. The potential for impacts to aquatic receptors from PHC F1 cannot be ruled out.

Overall, based on the current understanding of site conditions, the potential for impacts to aquatic receptors in Lake Ontario and the future Don River cannot be ruled out. Given that excavation activities in the river valley, potential remediation, and development of the Flood Protection Landform will likely address some of most significant site impacts resulting in improved groundwater conditions, it is assumed that management of groundwater to surface water interactions will not be required post-development. A more in depth review of anticipated groundwater to surface water interactions under redeveloped conditions is required to validate this assumption.

Uncertainty Analysis

The uncertainties associated with this assessment included the following: 1) the model, 2) groundwater input assumptions used, and 3) river flow conditions. This assessment considered only contributions of COCs in groundwater from the Study Area that may affect Lake Ontario or the future Don River. Background conditions or surface water quality, as well as other potential contaminated sources of groundwater, have not been assessed since this is beyond the scope of the current assessment. Table B-6 summarizes the uncertainty in this assessment.

Many of the COCs identified are PAHs. Limited organic COCs were also noted. These COCs are characterized by high-molecular weights, are readily adsorbed to organic matter, are sparingly soluble, and are low-volatility compounds. For example, the solubility for PAHs ranges from 0.00026 to 31.7 milligrams per litre. The low volatility of PAHs is characterized by low Henry's Law constants ranging between 4.1×10^{-4} to 2.5×10^{-5}. At typical subsurface conditions, PAHs are solids. The potential for migration through the soil column or groundwater systems in soluble form is limited. PAHs have high organic carbon partition coefficient (K_{oc}) values, which provides greater tendency to adsorb onto organic matter in the subsurface, with Log K_{oc} values ranging from 3 to 5 (103 to 105 millilitres per gram), greatly retarding physical transport of these compounds via groundwater. The potential mobility of COCs, or lack thereof, was not factored into or considered in this assessment.

B.1.4 References

CH2M HILL Canada Limited (CH2M). 2015. *Stage 1: Preliminary Environmental Assessment and Geotechnical and Earthworks Report*. Prepared for Waterfront Toronto. September 30.

GHD Limited (GHD). 2015. Port Lands Environmental, Geotechnical, and Hydrogeological Investigation, Port Lands, Toronto, Ontario. Prepared for Waterfront Toronto. September 15.

Government of Canada. 2015. *Wateroffice. Historical Hydrometric Data.* Available online at: http://wateroffice.ec.gc.ca/mainmenu/historical_data_index_e.html.

SLR Consulting Canada Ltd. (SLR). 2009. *Subsurface Investigation in Support of the EA for the DMN and Port Lands Flood Protection Project.* Prepared for the Toronto and Region Conservation Authority. October 5.

Table B-1. Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land less than 30 m from Lake Ontario)

Contaminants of Cocnern Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	No. of Stations	No. of Samples	Table 9 [c] Standards (µg/L)	Max Concentration Detected (µg/L)	Max Nondetect Concentration (µg/L)	Max Concentration [d] (µg/L)	Count of Detects Above Table 9 Standards	Count of Non-Detects Above Table 9 Standards (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1,1,2-Tetrachloroethane	28	30	3.3	5	0.5	5	2		**Included (Max > Table 9 Standard)**
1,1,2,2-Tetrachloroethane	28	30	3.2	10	0.5	10	2		**Included (Max > Table 9 Standard)**
1,1,2-Trichloroethane	28	30	4.7	10	0.5	10	2		**Included (Max > Table 9 Standard)**
1,1-Dichloroethene	28	30	1.6	5	0.5	5	2		**Included (Max > Table 9 Standard)**
1,2-Dibromoethane	28	30	0.25	10	0.5	10	7	1	**Included (Max > Table 9 Standard)**
1,2-Dichloroethane	28	30	1.6	10	0.5	10	2		**Included (Max > Table 9 Standard)**
1,3-Dichloropropene (max)	27	28	5.2	10	0.3	10	2		**Included (Max > Table 9 Standard)**
1,4-Dichlorobenzene	28	30	8	10	0.5	10	2		**Included (Max > Table 9 Standard)**
Acenaphthylene	29	31	1.4	4	0.02	4	3		**Included (Max > Table 9 Standard)**
Anthracene	29	31	1	7.1	0.02	7.1	3		**Included (Max > Table 9 Standard)**
Benzene	29	31	44	420	0.5	420	2		**Included (Max > Table 9 Standard)**
Benzo(a)anthracene	29	31	1.8	24	0.09	24	2		**Included (Max > Table 9 Standard)**
Benzo(a)pyrene	29	31	0.81	28	0.09	28	5		**Included (Max > Table 9 Standard)**
Benzo(b&j)fluoranthene	20	22	0.75	16	0.09	16	3		**Included (Max > Table 9 Standard)**
Benzo(g,h,i)perylene	29	31	0.2	16	0.09	16	9		**Included (Max > Table 9 Standard)**
Benzo(k)fluoranthene	29	31	0.4	6	0.02	6	4		**Included (Max > Table 9 Standard)**
Bismuth	1	2		11	0.002	11			**Included (No Standard; known to be present)**
Bromomethane	28	30	5.6	25	0.5	25	3		**Included (Max > Table 9 Standard)**
Cadmium	29	31	2.1	23	0.19	23	1		**Included (Max > Table 9 Standard)**
Carbon tetrachloride	28	30	0.79	27	0.2	27	3		**Included (Max > Table 9 Standard)**
Chloride	29	31	1800000	2500000	0.003	2500000	2		**Included (Max > Table 9 Standard)**
Chloroethane	1	2		21	0.003	21			**Included (No Standard; known to be present)**
Chloroform	28	30	2.4	5	1	5	2		**Included (Max > Table 9 Standard)**
Chrysene	29	31	0.7	3.2	0.5	3.2	6		**Included (Max > Table 9 Standard)**
cis-1,2-Dichloroethene	28	30	1.6	40	0.5	40	3		**Included (Max > Table 9 Standard)**
Cobalt	29	31	52	60	0.5	60	1		**Included (Max > Table 9 Standard)**
Dibenzo(a,h)anthracene	29	31	0.4	1.88	0.02	1.88	3		**Included (Max > Table 9 Standard)**
Electrical Conductivity [e]	19	20	3.16	6.23	0	6.23	1		**Included (Max > Table 9 Standard)**
F1 (C6-C10) (max)	29	31	420	3200	25	3200	2		**Included (Max > Table 9 Standard)**
F2 (C10-C16) (max)	28	29	150	14000	100	14000	7		**Included (Max > Table 9 Standard)**
F3 (C16-C34) (max)	29	31	500	2600	250	2600	4		**Included (Max > Table 9 Standard)**
Indeno(1,2,3-Cd)Pyrene	29	31	0.2	2.7	0.5	2.7	8	1	**Included (Max > Table 9 Standard)**
Mercury	28	29	0.29	1.5	0.01	1.5	1		**Included (Max > Table 9 Standard)**
PCB, Total	1	2	0.2	142	0	142	2		**Included (Max > Table 9 Standard)**
Pyrene	27	28	5.7	11	0.02	11	3		**Included (Max > Table 9 Standard)**
Silver	29	31	1.2	4	0.5	4	1		**Included (Max > Table 9 Standard)**
Tetrachloroethene	28	30	1.6	107	0.5	107	4		**Included (Max > Table 9 Standard)**
Tin	1	2		40.1	0	40.1			**Included (No Standard; known to be present)**
trans-1,2-Dichloroethene	28	30	1.6	321	0.5	321	3		**Included (Max > Table 9 Standard)**
Trichloroethylene	28	30	1.6	100	0.5	100	3		**Included (Max > Table 9 Standard)**
Vinyl Chloride	28	30	0.5	39	0.5	39	6		**Included (Max > Table 9 Standard)**
1,1,1-Trichloroethane	28	30	640	5	0.5	5			Excluded (Max < or = Table 9 Standard)
1,1-Dichloroethane	28	30	320	5	0.5	5			Excluded (Max < or = Table 9 Standard)
1,2-Dichlorobenzene	28	30	4600	10	0.5	10			Excluded (Max < or = Table 9 Standard)
1,2-Dichloropropane	28	30	16	5	0.5	5			Excluded (Max < or = Table 9 Standard)
1,3-Dichlorobenzene	28	30	7600	10	0.5	10			Excluded (Max < or = Table 9 Standard)
1,3-Dichloropropene	20	22	5.2	0	0.5	0.5			Excluded (Max < or = Table 9 Standard)
1+2-Methylnaphthalenes (max)	29	31	1500	170	0.09	170			Excluded (Max < or = Table 9 Standard)
2-Butanone	28	30	470000	250	20	250			Excluded (Max < or = Table 9 Standard)
2-Hexanone	1	2			0.09	0.09			Excluded (no standard available; all results non-detect)
4-Methyl-2-Pentanone	28	30	140000	250	20	250			Excluded (Max < or = Table 9 Standard)
Acenaphthene	29	31	600	15	0.09	15			Excluded (Max < or = Table 9 Standard)
Acetone	28	30	100000	500	30	500			Excluded (Max < or = Table 9 Standard)
Aluminum	1	2	86.9	0.34	0.005	0.34			Excluded (Max < or = PGMIS background)
Antimony	29	31	16000	5	1	5			Excluded (Max < or = Table 9 Standard)
Arsenic	29	31	1500	13	1	13			Excluded (Max < or = Table 9 Standard)
Barium	29	31	23000	2690	0.5	2690			Excluded (Max < or = Table 9 Standard)
Beryllium	29	31	53	8.99	1	8.99			Excluded (Max < or = Table 9 Standard)
Boron	29	31	36000	2440	0.002	2440			Excluded (Max < or = Table 9 Standard)
Bromodichloromethane	28	30	67000	12	2	12			Excluded (Max < or = Table 9 Standard)
Bromoform	28	30	380	11	5	11			Excluded (Max < or = Table 9 Standard)
Calcium	1	2	431000	12	0.19	12			Excluded (Max < or = PGMIS background)
Chlorobenzene	28	30	500	25	0.5	25			Excluded (Max < or = Table 9 Standard)

Table B-1. Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Land less than 30 m from Lake Ontario)

Contaminants of Cocnern Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	No. of Stations	No. of Samples	Table 9 [c] Standards (µg/L)	Max Concentration Detected (µg/L)	Max Nondetect Concentration (µg/L)	Max Concentration [d] (µg/L)	Count of Detects Above Table 9 Standards	Count of Non-Detects Above Table 9 Standards (Using Max SDL)	Included/Excluded as COC (Rationale)
Chlorodibromomethane	28	30	65000	10	2	10			Excluded (Max < or = Table 9 Standard)
Chloromethane	1	2			0.5	0.5			Excluded (no standard available; all results non-detect)
Chromium	29	31	640	50	5	50			Excluded (Max < or = Table 9 Standard)
Chromium, Hexavalent (Cr6+)	28	29	110	7	10	10			Excluded (Max < or = Table 9 Standard)
Copper	29	31	69	10	2	10			Excluded (Max < or = Table 9 Standard)
Cyanide	9	9	52	2	0	2			Excluded (Max < or = Table 9 Standard)
Cyanide	19	20	52	2.8	2	2.8			Excluded (Max < or = Table 9 Standard)
Dichlorodifluoromethane	19	20	3500	0	2	2			Excluded (Max < or = Table 9 Standard)
Dichloromethane	28	30	610	65	5	65			Excluded (Max < or = Table 9 Standard)
Ethylbenzene	29	32	1800	66	0.5	66			Excluded (Max < or = Table 9 Standard)
F4 (C34-C50) (max)	28	29	500	370	250	370			Excluded (Max < or = Table 9 Standard)
Fluoranthene	27	28	73	11	0.5	11			Excluded (Max < or = Table 9 Standard)
Fluorene	29	31	290	20	0.5	20			Excluded (Max < or = Table 9 Standard)
Iron	1	2	4090	0	0.5	0.5			Excluded (Max < or = PGMIS background)
Lead	29	31	20	5	0.5	5			Excluded (Max < or = Table 9 Standard)
Magnesium	1	2	134000	0	0.5	0.5			Excluded (Max < or = PGMIS background)
Manganese	1	2	717	0	0.5	0.5			Excluded (Max < or = PGMIS background)
Methyl tert-butyl ether	28	30	190	27.2	2	27.2			Excluded (Max < or = Table 9 Standard)
Molybdenum	28	29	7300	25	0.5	25			Excluded (Max < or = Table 9 Standard)
Naphthalene	29	30	1400	23	0.09	23			Excluded (Max < or = Table 9 Standard)
n-Hexane	19	20	51	0	0.5	0.5			Excluded (Max < or = Table 9 Standard)
Nickel	29	31	390	61	5	61			Excluded (Max < or = Table 9 Standard)
Nitrate (as N)	9	9	11500	550	0	550			Excluded (Max < or = PGMIS background)
Nitrate-Nitrite (as N)	9	9	11500	550	0	550			Excluded (Max < or = PGMIS background)
Nitrite (as N)	9	9	121	10	0	10			Excluded (Max < or = PGMIS background)
Phenanthrene	29	31	380	50	0.02	50			Excluded (Max < or = Table 9 Standard)
Phosphorus	1	2	7970	4	0.002	4			Excluded (Max < or = PGMIS background)
Potassium	1	2	20700	3	0.002	3			Excluded (Max < or = PGMIS background)
Selenium	29	31	50	20	0.5	20			Excluded (Max < or = Table 9 Standard)
Sodium	29	31	1800000	1500000	0.09	1500000			Excluded (Max < or = Table 9 Standard)
Strontium	1	2	20200	3	0.09	3			Excluded (Max < or = PGMIS background)
Styrene	28	30	1300	106	0.5	106			Excluded (Max < or = Table 9 Standard)
Thallium	29	31	400	51.1	0.1	51.1			Excluded (Max < or = Table 9 Standard)
Titanium	1	2	4.8	0.0007	0	0.0007			Excluded (Max < or = PGMIS background)
Toluene	29	31	14000	14	0.5	14			Excluded (Max < or = Table 9 Standard)
Trichlorofluoromethane	20	22	2000	106	5	106			Excluded (Max < or = Table 9 Standard)
Uranium (U)	20	22	330	14	0.1	14			Excluded (Max < or = Table 9 Standard)
Vanadium	29	31	200	10	5	10			Excluded (Max < or = Table 9 Standard)
Xylenes, Total	29	33	3300	57	0.5	57			Excluded (Max < or = Table 9 Standard)
Zinc	29	31	890	50	10	50			Excluded (Max < or = Table 9 Standard)

Notes:

[a] (max) Indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition (All land uses) (Table 9 Standards/SCS) MOECC, 2011) for all COCs, for all COCs, except for aluminum, calcium, electrical conductivity, iron, manganese, magnesium, nitrate/nitrite, phosphorus, potassium, strontium, and titanium, for which the 97.5th percentile of the Provincial Groundwater Monitoring Information

[d] Column lists the greater of the maximum concentration between Max Detected Concentration and Max Nondetect Concentration.

[e] Units for electrical conductivity are mS/cm.

Bold parameters are identified as COCs

µg/L - microgram per litre

COC - contaminant of concern

Max - maximum concentration

MOECC - Ontario Ministry of the Environment and Climate Change

PAH - polycyclic aromatic hydrocarbon

mS/cm - milliSiemens per centimetre

SDL - sample detection limit

VOC - volatile organic compound

Table B-2. Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Future Don River Valley and Land within 30 metres of Future Don River)

Contaminants of Concern Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	No. of Stations	No. of Samples	Table 9 [c] Standards (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	Count of Detects Above Table 9 Standards	Count of Non-Detects Above Table 9 Standards (Using Max SDL)	Included/Excluded as COC (Rationale)
1,1,1,2-Tetrachloroethane	93	102	3.3	10	440	440	2	10	**Included (Max > Table 9 Standard)**
1,1,2,2-Tetrachloroethane	93	102	3.2	20	870	870	4	10	**Included (Max > Table 9 Standard)**
1,1,2-Trichloroethane	93	102	4.7	20	440	440	3	11	**Included (Max > Table 9 Standard)**
1,1-Dichloroethane	93	102	320	10	349.99	349.99		1	**Included (Max > Table 9 Standard)**
1,1-Dichloroethene	93	102	1.6	10	440	440	4	13	**Included (Max > Table 9 Standard)**
1,2-Dibromoethane	93	102	0.25	20	440	440	11	21	**Included (Max > Table 9 Standard)**
1,2-Dichloroethane	93	102	1.6	20	440	440	5	13	**Included (Max > Table 9 Standard)**
1,2-Dichloropropane	93	102	16	10	440	440		4	**Included (Max > Table 9 Standard)**
1,3-Dichloropropene (max)	93	102	5.2	20	120	120	2	5	**Included (Max > Table 9 Standard)**
1,4-Dichlorobenzene	93	102	8	20	440	440	2	6	**Included (Max > Table 9 Standard)**
1+2-Methylnaphthalenes (max)	77	86	1500	69100	0.57	69100	8		**Included (Max > Table 9 Standard)**
Acenaphthene	92	105	600	21400	0.05	21400	9		**Included (Max > Table 9 Standard)**
Acenaphthylene	90	100	1.4	2210	2	2210	16	1	**Included (Max > Table 9 Standard)**
Anthracene	86	96	1	10400	0.04	10400	27		**Included (Max > Table 9 Standard)**
Barium	78	87	23000	42300		42300	2		**Included (Max > Table 9 Standard)**
Benzene	94	120	44	1880	220	1880	27	2	**Included (Max > Table 9 Standard)**
Benzo(a)anthracene	91	101	1.8	4720	0.5	4720	16		**Included (Max > Table 9 Standard)**
Benzo(a)pyrene	91	103	0.81	3090	0.5	3090	18		**Included (Max > Table 9 Standard)**
Benzo(b&j)fluoranthene	92	102	0.75	2530	0.5	2530	17		**Included (Max > Table 9 Standard)**
Benzo(g,h,i)perylene	91	100	0.2	1050	0.5	1050	26	5	**Included (Max > Table 9 Standard)**
Benzo(k)fluoranthene	91	100	0.4	833	0.5	833	18	4	**Included (Max > Table 9 Standard)**
Bromomethane	93	102	5.6	50	2599.99	2599.99	4	7	**Included (Max > Table 9 Standard)**
Carbon tetrachloride	93	102	0.79	10	440	440	5	13	**Included (Max > Table 9 Standard)**
Chloride (Cl)	78	87	1800000	10900000	0	10900000	4		**Included (Max > Table 9 Standard)**
Chloroform	93	102	2.4	10	170	170	3	16	**Included (Max > Table 9 Standard)**
Chrysene	91	101	0.7	4270	0.3	4270	23		**Included (Max > Table 9 Standard)**
cis-1,2-Dichloroethene	89	99	1.6	9699.99	430	9699.99	12	11	**Included (Max > Table 9 Standard)**
Dibenzo(a,h)anthracene	91	100	0.4	270	20	270	10	7	**Included (Max > Table 9 Standard)**
Dichloromethane	93	102	610	50	870	870		1	**Included (Max > Table 9 Standard)**
Electrical Conductivity [e]	65	74	3.16	28.4		28.4	12		**Included (Max > PGMIS background)**
Ethylbenzene	94	119	1800	9520	3	9520	13		**Included (Max > Table 9 Standard)**
F1 (C6-C10) (max)	90	110	420	103000	10000	103000	36	2	**Included (Max > Table 9 Standard)**
F2 (C10-C16) (max)	97	112	150	12000000	6700	12000000	67		**Included (Max > Table 9 Standard)**
F3 (C16-C34) (max)	97	112	500	13000000	1300	13000000	54	1	**Included (Max > Table 9 Standard)**
F4 (C34-C50) (max)	96	109	500	1100000	2000	1100000	28		**Included (Max > Table 9 Standard)**
Fluoranthene	85	96	73	8900	0.02	8900	11		**Included (Max > Table 9 Standard)**
Fluorene	92	104	290	9800	0.5	9800	7		**Included (Max > Table 9 Standard)**
Indeno(1,2,3-Cd)Pyrene	91	101	0.2	1010	1	1010	23	5	**Included (Max > Table 9 Standard)**
Mercury	96	106	0.29	8.39	0.09	8.39	9		**Included (Max > Table 9 Standard)**
Methyl tert-butyl ether (MTBE)	93	102	190	27.2	1700	1700		4	**Included (Max > Table 9 Standard)**
Naphthalene	87	96	1400	64500	7	64500	8		**Included (Max > Table 9 Standard)**
n-Hexane	65	74	51	85.9	18	85.9	2		**Included (Max > Table 9 Standard)**
Phenanthrene	92	105	380	33800	0.09	33800	11		**Included (Max > Table 9 Standard)**
Pyrene	86	96	5.7	13300	0.02	13300	16		**Included (Max > Table 9 Standard)**
Silver	93	102	1.2	1	5	5		2	**Included (Max > Table 9 Standard)**
Sodium	93	104	1800000	4670000		4670000	4		**Included (Max > Table 9 Standard)**
Tetrachloroethene	93	102	1.6	10	440	440	4	13	**Included (Max > Table 9 Standard)**
Toluene	94	121	14000	46299.99	220	46299.99	4		**Included (Max > Table 9 Standard)**
trans-1,2-Dichloroethene	93	102	1.6	10.3	870	870	7	13	**Included (Max > Table 9 Standard)**
Trichloroethylene	92	101	1.6	10	440	440	4	13	**Included (Max > Table 9 Standard)**
Vinyl Chloride	94	104	0.5	870	86.99	870	18	12	**Included (Max > Table 9 Standard)**

Table B-2. Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Future Don River Valley and Land within 30 metres of Future Don River)
Contaminants of Concern Screening - Table 9 Standards
Port Lands, Toronto, Ontario

Parameter [a]	No. of Stations	No. of Samples	Table 9 [c] Standards (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	Count of Detects Above Table 9 Standards	Count of Non-Detects Above Table 9 Standards (Using Max SDL)	Included/Excluded as COC (Rationale)
Xylenes, Total	94	121	3300	37000	3	37000	12		**Included (Max > Table 9 Standard)**
1,1,1-Trichloroethane	93	102	640	10	220	220			Excluded (Max < or = Table 9 Standard)
1,2-Dichlorobenzene	93	102	4600	20	440	440			Excluded (Max < or = Table 9 Standard)
1,3-Dichlorobenzene	93	102	7600	20	440	440			Excluded (Max < or = Table 9 Standard)
2,4&2,6-Dinitrotoluene (max)	5	5	2300		0.5	0.5			Excluded (Max < or = Table 9 Standard)
2-Butanone	93	102	470000	500	13000	13000			Excluded (Max < or = Table 9 Standard)
2-Chloronaphthalene	5	5			1	1			Excluded (no standard available; not detected; no elevated SDL)
3,3`-Dichlorobenzidine	5	5	500		25	25			Excluded (Max < or = Table 9 Standard)
4-Bromophenyl Phenyl Ether	5	5			0.3	0.3			Excluded (no standard available; not detected; no elevated SDL)
4-Chlorophenyl Phenylether	5	5			0.5	0.5			Excluded (no standard available; not detected; no elevated SDL)
4-Methyl-2-Pentanone	93	102	140000	500	8699.99	8699.99			Excluded (Max < or = Table 9 Standard)
Acetone	93	102	100000	1000	13000	13000			Excluded (Max < or = Table 9 Standard)
Antimony	15	15	16000		1	1			Excluded (Max < or = Table 9 Standard)
Arsenic	93	103	1500	50	10	50			Excluded (Max < or = Table 9 Standard)
Barium	15	18	23000	470		470			Excluded (Max < or = Table 9 Standard)
Beryllium	89	98	53	5	10	10			Excluded (Max < or = Table 9 Standard)
Bis (2-chloroethoxy) methane	5	5			2	2			Excluded (no standard available; not detected; no elevated SDL)
bis (2-Chloroisopropyl) ether	5	5	20000		2	2			Excluded (Max < or = Table 9 Standard)
Bis (2-ethylhexyl) phthalate	5	5	30		2	2			Excluded (Max < or = Table 9 Standard)
Boron	93	105	36000	11000	100	11000			Excluded (Max < or = Table 9 Standard)
Bromodichloromethane	93	102	67000	10	170	170			Excluded (Max < or = Table 9 Standard)
Bromoform	93	102	380	20	170	170			Excluded (Max < or = Table 9 Standard)
Butyl benzyl phthalate	5	5			0.5	0.5			Excluded (no standard available; not detected; no elevated SDL)
Cadmium	96	105	2.1	1	1	1			Excluded (Max < or = Table 9 Standard)
Chlorobenzene	93	102	500	10	440	440			Excluded (Max < or = Table 9 Standard)
Chlorodibromomethane	93	102	65000	20	170	170			Excluded (Max < or = Table 9 Standard)
Chromium	96	116	640	50	50	50			Excluded (Max < or = Table 9 Standard)
Chromium, Hexavalent (Cr6+)	77	86	110	5	10	10			Excluded (Max < or = Table 9 Standard)
Cobalt	78	103	52	23	10	23			Excluded (Max < or = Table 9 Standard)
Copper	96	105	69	20	20	20			Excluded (Max < or = Table 9 Standard)
Cyanide	78	87	52	9	20	20			Excluded (Max < or = Table 9 Standard)
Dichlorodifluoromethane	65	74	3500		40	40			Excluded (Max < or = Table 9 Standard)
Diethylphthalate	5	5	30		1	1			Excluded (Max < or = Table 9 Standard)
Dimethylphthalate	5	5	30		2	2			Excluded (Max < or = Table 9 Standard)
Di-N-Butylphthalate	5	5			2	2			Excluded (no standard available; not detected; no elevated SDL)
Di-n-octyl phthalate	5	5			2	2			Excluded (no standard available; not detected; no elevated SDL)
Hexachlorobenzene	5	5	3.1		1	1			Excluded (Max < or = Table 9 Standard)
Isophorone	5	5			0.5	0.5			Excluded (no standard available; not detected; no elevated SDL)
Lead	96	87	20	5	5	5			Excluded (Max < or = Table 9 Standard)
Molybdenum	93	103	7300	25	5	25			Excluded (Max < or = Table 9 Standard)
Nickel	96	106	390	55	50	55			Excluded (Max < or = Table 9 Standard)
Nitrate as N	13	13	11500	100		100			Excluded (Max < or = PGMIS background)
Nitrate-Nitrite (as N)	13	13	11500	100		100			Excluded (Max < or = PGMIS background)
Nitrite (as N)	13	13	121	10		10			Excluded (Max < or = PGMIS background)
N-Nitrosodi-N-propylamine	5	5			2	2			Excluded (no standard available; not detected; no elevated SDL)
N-Nitrosodiphenylamine	5	5			2	2			Excluded (no standard available; not detected; no elevated SDL)
PCB, Total	4	4	0.2		0.04	0.04			Excluded (Max < or = Table 9 Standard)
Selenium	93	102	50	20.1	5	20.1			Excluded (Max < or = Table 9 Standard)
Styrene	93	102	1300	20	440	440			Excluded (Max < or = Table 9 Standard)
Thallium	93	102	400	0.5	1	1			Excluded (Max < or = Table 9 Standard)
Trichlorofluoromethane	65	74	2000		100	100			Excluded (Max < or = Table 9 Standard)

Table B-2. Summary of Chemicals Detected and Maximum Concentrations in Groundwater (Future Don River Valley and Land within 30 metres of Future Don River)

Contaminants of Concern Screening - Table 9 Standards

Port Lands, Toronto, Ontario

Parameter [a]	No. of Stations	No. of Samples	Table 9 [c] Standards (µg/L)	Max Concentration Detected (µg/L)	Max Non-Detect Concentration (µg/L)	Max Concentration [d] (µg/L)	Count of Detects Above Table 9 Standards	Count of Non-Detects Above Table 9 Standards (Using Max SDL)	Included/Excluded as COC (Rationale)
Uranium	65	74	330	7.33	1	7.33			Excluded (Max < or = Table 9 Standard)
Vanadium	93	102	200	10	50	50			Excluded (Max < or = Table 9 Standard)
Zinc	96	107	890	99.9	100	100			Excluded (Max < or = Table 9 Standard)

Notes:

[a] (max) Indicates the representative maximum concentration (the maximum concentration of similar analytes or total concentration of multiple isomers) is used for comparison.

[b] Indicates whether the parameter is considered volatile or non-volatile under MOECC-specified criteria.

[c] Ontario Regulation 153/04, Table 9: Generic Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition (All land uses) (Table 9 Standards/SCS) (MEECC, 2011) for all COCs, for all COCs, except for electrical conductivity and nitrate/nitrite, for which the 97.5th percentile of the Provincial Groundwater Monitoring Information System (PGMIS) value (MOECC, 2011) is presented.

[d] Column lists the greater of the maximum concentration between Max Detected Concentration and Max Non-Detect Concentration.

[e] Units for electrical conductivity are mS/cm.

Bold parameters are identified as COCs

µg/L - microgram per litre

COC - contaminant of concern

Max - maximum concentration

MOECC - Ontario Ministry of the Environment and Climate Change

mS/cm - milliSiemens per centimetre

SCS - site condition standard

SDL - sample detection limit

Table B-3. Screening Assessment - Groundwater to Surface Water - Lake Ontario

Estimated Maximum Concentrations of Contaminants of Concern in Groundwater Compared to Aquatic Protection Values

Port Lands, Toronto, Ontario

Parameter [a]	Estimated Maximum (µg/L)	10xAPV Value [b] (µg/L)	Parameters Considered for Further Assessment (Max > 10xAPV?)	Potential for Surface Water Impacts
1,1,1,2-Tetrachloroethane	6	20000		
1,1,2,2-Tetrachloroethane	12	24000		
1,1,2-Trichloroethane	12	94000		
1,1-Dichloroethene	6	12000		
1,2-Dibromoethane	12	96000		
1,2-Dichloroethane	12	200000		
1,3-Dichloropropene (max)	12	2400		
1,4-Dichlorobenzene	12	7600		
Acenaphthylene	4.8	1.4	**Acenaphthylene**	Mobility in groundwater not anticipated
Anthracene	8.5	1	**Anthracene**	Mobility in groundwater not anticipated
Benzene	500	4600		
Benzo(a)anthracene	28	1.8	**Benzo(a)anthracene**	Mobility in groundwater not anticipated
Benzo(a)pyrene	33	2.1	**Benzo(a)pyrene**	Mobility in groundwater not anticipated
Benzo(b&j)fluoranthene	19	4.2	**Benzo(b&j)fluoranthene**	Mobility in groundwater not anticipated
Benzo(g,h,i)perylene	19	0.2	**Benzo(g,h,i)perylene**	Mobility in groundwater not anticipated
Benzo(k)fluoranthene	7.2	1.4	**Benzo(k)fluoranthene**	Mobility in groundwater not anticipated
Bismuth	13	--		
Bromomethane	30	3200		
Cadmium	27	2.1	**Cadmium**	Potentially mobile parameter; however low exceedance detection frequency (1 of 31 samples) suggest impacts isolated
Carbon tetrachloride	32	2000		
Chloride (Cl)	3000000	1800000	**Chloride (Cl)**	Potentially mobile parameter; however low exceedance detection frequency (2 of 31 samples) suggest impacts isolated
Chloroethane	25	--		
Chloroform	6	12000		
Chrysene	3.8	0.7	**Chrysene**	Mobility in groundwater not anticipated
cis-1,2-Dichloroethene	48	140000		
Cobalt	72	52	**Cobalt**	Potentially mobile parameter; however low exceedance detection frequency (1 of 31 samples) suggest impacts isolated
Dibenzo(a,h)anthracene	2.2	0.4	**Dibenzo(a,h)anthracene**	Mobility in groundwater not anticipated
Electrical Conductivity [c]	7.4	--		
F1 (C6-C10) (max)	3800	420	**F1 (C6-C10) (max)**	Potentially mobile parameter; however low exceedance detection frequency (2 of 31 samples) suggest impacts isolated
F2 (C10-C16) (max)	16000	170	**F2 (C10-C16) (max)**	Potentially mobile parameter; potential surface water impacts cannot be ruled out
F3 (C16-C34) (max)	3100	--		
Indeno(1,2,3-Cd)Pyrene	3.2	1.4	**Indeno(1,2,3-Cd)Pyrene**	Mobility in groundwater not anticipated
Mercury	1.8	7.7		
PCB, Total	170	0.14	**PCB, Total**	Mobility in groundwater not anticipated
Pyrene	13	5.7	**Pyrene**	Mobility in groundwater not anticipated
Silver	4.8	1.2	**Silver**	Yes; potentially mobile parameter, however low exceedance detection frequency (1 of 31 samples) suggest impacts isolated
Tetrachloroethene	120	8400		
Tin	48	--		
trans-1,2-Dichloroethene	380	220000		
Trichloroethylene	120	220000		
Vinyl Chloride	46	360000		

Notes:

[a] Parameter considered for evaluation if identified as a COC in Table B-1.

[b] 10xAPV values obtained from the table entitled *Groundwater Components for Within 30 m of a Water Body (Table 9) (ug/L)* (MOE, 2011).

[c] Units for electrical conductivity are mS/cm.

Estimated Maximum - Maximum value (either maximum detected value * 1.2) or maximum detection limit.

µg/L - microgram per litre

APV - Aquatic Protection Value

Table B-4. Screening Assessment - Groundwater to Surface Water - Future Don River

Estimated Maximum Concentrations of Contaminants of Concern in Groundwater Compared to Aquatic Protection Values

Port Lands, Toronto, Ontario

Parameter [a]	Estimated Maximum (µg/L)	10xAPV Value [b] (µg/L)	Parameters Considered for Further Assessment (Max > 10xAPV?)	Parameters Recommended for Further Assessment
1,1,1,2-Tetrachloroethane	< 440	20000		
1,1,2,2-Tetrachloroethane	< 870	24000		
1,1,2-Trichloroethane	< 440	94000		
1,1-Dichloroethane	< 349.99	2000000		
1,1-Dichloroethene	< 440	12000		
1,2-Dibromoethane	< 440	96000		
1,2-Dichloroethane	< 440	200000		
1,2-Dichloropropane	< 440	57000		
1,3-Dichloropropene (max)	< 120	2400		
1,4-Dichlorobenzene	< 440	7600		
1+2-Methylnaphthalenes (max)	82000	1500	**1+2-Methylnaphthalenes (max)**	Mobility in groundwater not anticipated
Acenaphthene	25000	5200	**Acenaphthene**	Mobility in groundwater not anticipated
Acenaphthylene	2600	1.4	**Acenaphthylene**	Mobility in groundwater not anticipated
Anthracene	12000	1	**Anthracene**	Mobility in groundwater not anticipated
Barium	50000	23000	**Barium**	Potentially mobile parameter; however low exceedance detection frequency (2 of 87 samples, both from same location) suggest impacts isolated
Benzene	2200	4600		
Benzo(a)anthracene	5600	1.8	**Benzo(a)anthracene**	Mobility in groundwater not anticipated
Benzo(a)pyrene	3700	2.1	**Benzo(a)pyrene**	Mobility in groundwater not anticipated
Benzo(b&j)fluoranthene	3000	4.2	**Benzo(b&j)fluoranthene**	Mobility in groundwater not anticipated
Benzo(g,h,i)perylene	1200	0.2	**Benzo(g,h,i)perylene**	Mobility in groundwater not anticipated
Benzo(k)fluoranthene	990	1.4	**Benzo(k)fluoranthene**	Mobility in groundwater not anticipated
Bromomethane	< 2599.99	3200		
Carbon tetrachloride	< 440	2000		
Chloride (Cl)	13000000	1800000	**Chloride (Cl)**	Potentially mobile parameter; however low exceedance detection frequency (4 of 87 samples; 3 sample locations) suggest impacts isolated
Chloroform	< 170	12000		
Chrysene	5100	0.7	**Chrysene**	Mobility in groundwater not anticipated
cis-1,2-Dichloroethene	11000	140000		
Dibenzo(a,h)anthracene	320	0.4	**Dibenzo(a,h)anthracene**	Mobility in groundwater not anticipated
Dichloromethane	< 870	13000		
Electrical Conductivity	34	--		
Ethylbenzene	11000	1800	**Ethylbenzene**	Potentially mobile parameter; however low exceedance detection frequency (13 of 119 samples; 6 sample locations) suggest impacts isolated
F1 (C6-C10) (max)	120000	420	**F1 (C6-C10) (max)**	Potentially mobile parameter
F2 (C10-C16) (max)	14000000	170	**F2 (C10-C16) (max)**	Potentially mobile parameter
F3 (C16-C34) (max)	15000000	--		
F4 (C34-C50) (max)	1300000	--		
Fluoranthene	10000	73	**Fluoranthene**	Mobility in groundwater not anticipated
Fluorene	11000	290	**Fluorene**	Mobility in groundwater not anticipated
Indeno(1,2,3-Cd)Pyrene	1200	1.4	**Indeno(1,2,3-Cd)Pyrene**	Mobility in groundwater not anticipated
Mercury	10	7.7	**Mercury**	Potentially mobile parameter, however low exceedance detection frequency (1 of 106 samples) suggest impacts isolated
Methyl tert-butyl ether (MTBE)	< 1700	1000000		
Naphthalene	77000	6200	**Naphthalene**	Mobility in groundwater not anticipated
n-Hexane	100	2500		
Phenanthrene	40000	380	**Phenanthrene**	Mobility in groundwater not anticipated
Pyrene	15000	5.7	**Pyrene**	Mobility in groundwater not anticipated
Silver	< 5	1.2	**Silver**	Exceedance based on method detection limit
Sodium	5600000	1800000	**Sodium**	Potentially mobile parameter, however low exceedance detection frequency (4 of 104 samples; 3 sample locations) suggest impacts isolated
Tetrachloroethene	< 440	8400		

Table B-4. Screening Assessment - Groundwater to Surface Water - Future Don River

Estimated Maximum Concentrations of Contaminants of Concern in Groundwater Compared to Aquatic Protection Values

Port Lands, Toronto, Ontario

Parameter [a]	Estimated Maximum (µg/L)	10xAPV Value [b] (µg/L)	Parameters Considered for Further Assessment (Max > 10xAPV?)	Parameters Recommended for Further Assessment
Toluene	55000	14000	**Toluene**	Potentially mobile parameter, however low exceedance detection frequency (4 of 121 samples, all from one sample location) suggest impacts isolated
trans-1,2-Dichloroethene	< 870	220000		
Trichloroethylene	< 440	220000		
Vinyl Chloride	1000	360000		
Xylenes, Total	44000	3300	**Xylenes, Total**	Potentially mobile parameter, however low exceedance detection frequency (12 of 121 samples; 5 sample locations) suggest impacts isolated

Notes:

[a.] Parameter considered for evaluation if identified as a COC in Table B-2.

[b.] 10xAPV values obtained from the table entitled *Groundwater Components for Within 30 m of a Water Body* (Table 9 Standards) (µg/L) (MOE, 2011).

[c.] Units for electrical conductivity are mS/cm.

Estimated Maximum - Maximum value (either maximum detected value x 1.2) or maximum detection limit.

< - less than

µg/L - microgram per litre

APV - aquatic protection value

mS/cm - milliSiemens per centimetre

TABLE B-5a. Assumptions Used to Derive Site Specific Dilution Values and Predicted Surface Water Concentrations - Future Don River - Upper River Sediment Basin

Port Lands, Toronto, Ontario

Parameter	Symbol	Units		Model Value		Data Source
Hydraulic Gradient	*i*	m/m		0.002		Determined from groundwater contours prepared by GHD September 2015
Aquifer Saturated Thickness	*b*	m		3.3		Saturated zone depth - Upper River Sediment Basin section.
Aquifer Discharge Boundary Width	*w*	m		63		Approximate length of Upper River Sediment Basin section.
Aquifer Discharge Boundary Area	*A*	m^2		416		Calculated discharge boundary area. 2 x Saturated aquifer thickness x aquifer width
Effective Porosity	*n*	% as Decimal		0.3		Referenced from literature values
Hydraulic Conductivity	*K*	m/d		12.610		Referenced from GHD Slug Test Data For Fill / Native Sand (Geometric Mean); conservatively applied maximum geometric mean from the native sand unit.
Darcy Flux	*v*	m/d		0.02522		Hydraulic Conductivity x Hydraulic Gradient
Average Linear Groundwater Velocity	$v_{average}$	m/d		0.0840667		(Hydraulic Conductivity x Hydraulic Gradient)/Porosity
Groundwater Discharge to River	*Q*	m^3/d		10.492		Hydraulic Conductivity x Hydraulic Gradient x Discharge Boundary Area
Don River Mean Daily Flow		m^3/d		353635.2		Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Don River Minimum Daily Flow		m^3/d		85536		Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Dilution Factor (GW to River)	*DF*			0.0001226		Groundwater Flux/(Don River Flow + Groundwater Flux)
Dilution Factor Ratio (GW to River)	*DFR*		1:	8,154		(Don River Flow + Groundwater Flux)/Groundwater Flux

Chemical Name	Aquatic Receptor Protection Value (µg/L)	Estimated Maximum Groundwater Concentration (µg/L)	Predicted Diluted Concentration in Upper Don River - Sediment Basin (µg/L)	Comparison Against Aquatic Protection Value	Comments
1+2-Methylnaphthalenes (max)	150	82000	1.E+01	Does Not Exceed	
Acenaphthene	520	25000	3.E+00	Does Not Exceed	
Acenaphthylene	0.14	2600	3.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Anthracene	0.1	12000	1.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Barium	2300	50000	6.E+00	Does Not Exceed	
Benzo(a)anthracene	0.18	5600	7.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(a)pyrene	0.21	3700	5.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(b&j)fluoranthene [a]	0.42	3000	4.E-01	Does Not Exceed	
Benzo(g,h,i)perylene	0.02	1200	1.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(k)fluoranthene	0.14	990	1.E-01	Does Not Exceed	Mobility in groundwater not anticipated
Chloride (Cl)	180000	13000000	2.E+03	Does Not Exceed	
Chrysene	0.07	5100	6.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Dibenzo(a,h)anthracene	0.04	320	4.E-02	Does Not Exceed	Mobility in groundwater not anticipated
Ethylbenzene	180	11000	1.E+00	Does Not Exceed	
F1 (C6-C10) (max)	42	120000	1.E+01	Does Not Exceed	
F2 (C10-C16) (max)	17	14000000	2.E+03	**Exceeds Aquatic Receptor Protection Value**	Potentially mobile parameter
Fluoranthene	7.3	10000	1.E+00	Does Not Exceed	
Fluorene	29	11000	1.E+00	Does Not Exceed	
Indeno(1,2,3-Cd)Pyrene	0.14	1200	1.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Mercury	0.77	10	1.E-03	Does Not Exceed	
Naphthalene	620	77000	9.E+00	Does Not Exceed	
Phenanthrene	38	40000	5.E+00	Does Not Exceed	
Pyrene	0.57	15000	2.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Silver	0.12	< 5	< 6.E-04	Does Not Exceed	
Sodium	180000	5600000	7.E+02	Does Not Exceed	
Toluene	1400	55000	7.E+00	Does Not Exceed	
Xylenes, Total	330	44000	5.E+00	Does Not Exceed	

Notes:

[a] APV for benzo(b)fluoranthene used in evaluation

< - indicates analyte not detected in well. Value use is the max reporting limit

µg/L - microgram per litre

% - percent

m - metre

m^2 - square metre

m^3/d - cubic metre per day

m/d - metre per day

m/m - metre per metre

TABLE B-5b. Assumptions Used to Derive Site Specific Dilution Values and Predicted Surface Water Concentrations - Future Don River - Upper River (South of Basin)

Port Lands, Toronto, Ontario

Parameter	Symbol	Units	Model Value	Data Source
Hydraulic Gradient	*i*	m/m	0.005	Determined from groundwater contours prepared by GHD September 2015
Aquifer Saturated Thickness	b_1	m	1.8	Saturated zone depth - beginning of Upper River South of Basin
Aquifer Saturated Thickness	b_2	m	3.3	Saturated zone depth - end of Upper River South of Basin.
Aquifer Discharge Boundary Width	*w*	m	33	Approximate length of Upper River South of Basin section.
Aquifer Discharge Boundary Area	*A*	m^2	168	Calculated discharge boundary area. 2 x Saturated aquifer thickness x aquifer width
Effective Porosity	*n*	s Decimal	0.3	Referenced from literature values
Hydraulic Conductivity	*K*	m/d	12.610	Referenced from GHD Slug Test Data For Fill / Native Sand (Geometric Mean); conservatively applied maximum geometric mean from the native sand unit
Darcy Flux	*v*	m/d	0.06305	Hydraulic Conductivity x Hydraulic Gradient
Average Linear Groundwater Velocity	$v_{average}$	m/d	0.2101667	(Hydraulic Conductivity x Hydraulic Gradient)/Porosity
Groundwater Discharge to River	*Q*	m^3/d	10.611	Hydraulic Conductivity x Hydraulic Gradient x Discharge Boundary Area
Don River Mean Daily Flow		m^3/d	353635.2	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Don River Minimum Daily Flow		m^3/d	85536	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Dilution Factor (GW to River)	*DF*		0.000124	Groundwater Flux/(Don River Flow + Groundwater Flux)
Dilution Factor Ratio (GW to River)	*DFR*	1:	8,062	(Don River Flow + Groundwater Flux)/Groundwater Flux

Chemical Name	Aquatic Receptor Protection Value (µg/L)	Groundwater Concentration at Boundary (µg/L)	Predicted Diluted Concentration in Upper Don River - Sediment Basin (µg/L)	Comparison Against Aquatic Protection Value	Comments
1+2-Methylnaphthalenes (max)	150	82000	1.E+01	Does Not Exceed	
Acenaphthene	520	25000	3.E+00	Does Not Exceed	
Acenaphthylene	0.14	2600	3.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Anthracene	0.1	12000	1.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Barium	2300	50000	6.E+00	Does Not Exceed	
Benzo(a)anthracene	0.18	5600	7.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(a)pyrene	0.21	3700	5.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(b&j)fluoranthene [a]	0.42	3000	4.E-01	Does Not Exceed	
Benzo(g,h,i)perylene	0.02	1200	1.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(k)fluoranthene	0.14	990	1.E-01	Does Not Exceed	
Chloride (Cl)	180000	13000000	2.E+03	Does Not Exceed	
Chrysene	0.07	5100	6.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Dibenzo(a,h)anthracene	0.04	320	4.E-02	Does Not Exceed	
Ethylbenzene	180	11000	1.E+00	Does Not Exceed	
F1 (C6-C10) (max)	42	120000	1.E+01	Does Not Exceed	
F2 (C10-C16) (max)	17	14000000	2.E+03	**Exceeds Aquatic Receptor Protection Value**	Potentially mobile parameter
Fluoranthene	7.3	10000	1.E+00	Does Not Exceed	
Fluorene	29	11000	1.E+00	Does Not Exceed	
Indeno(1,2,3-Cd)Pyrene	0.14	1200	1.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Mercury	0.77	10	1.E-03	Does Not Exceed	
Naphthalene	620	77000	1.E+01	Does Not Exceed	
Phenanthrene	38	40000	5.E+00	Does Not Exceed	
Pyrene	0.57	15000	2.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Silver	0.12	< 5	< 6.E-04	Does Not Exceed	
Sodium	180000	5600000	7.E+02	Does Not Exceed	
Toluene	1400	55000	7.E+00	Does Not Exceed	
Xylenes, Total	330	44000	5.E+00	Does Not Exceed	

Notes:

[a.] APV for benzo(b)fluoranthene used in evaluation

< - indicates analyte not detected in well. Value use is the max reporting limit

µg/L - microgram per litre

% - percent

m - metre

m^2 - square metre

m^3/d - cubic metre per day

m/d - metre per day

m/m - metre per metre

TABLE B-5c. Assumptions Used to Derive Site Specific Dilution Values and Predicted Surface Water Concentrations - Future Don River - Upper River

Port Lands, Toronto, Ontario

Parameter	Symbol	Units	Model Value	Data Source
Hydraulic Gradient	*i*	m/m	0.005	Determined from groundwater contours prepared by GHD September 2015
Aquifer Saturated Thickness	*b*	m	1.8	Saturated zone depth - Upper River section.
Aquifer Discharge Boundary Width	*w*	m	130	Approximate length - Upper River section.
Aquifer Discharge Boundary Area	*A*	m^2	468	Calculated discharge boundary area. 2 x Saturated aquifer thickness x aquifer width
Effective Porosity	*n*	% as Decimal	0.3	Referenced from literature values
Hydraulic Conductivity	*K*	m/d	12.610	Referenced from GHD Slug Test Data For Fill / Native Sand (Geometric Mean); conservatively applied maximum geometric mean from the native sand unit.
Darcy Flux	*v*	m/d	0.06305	Hydraulic Conductivity x Hydraulic Gradient
Average Linear Groundwater Velocity	$v_{average}$	m/d	0.2101667	(Hydraulic Conductivity x Hydraulic Gradient)/Porosity
Groundwater Discharge to River	*Q*	m^3/d	29.507	Hydraulic Conductivity x Hydraulic Gradient x Discharge Boundary Area
Don River Mean Daily Flow		m^3/d	353635.2	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Don River Minimum Daily Flow		m^3/d	85536	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Dilution Factor (GW to River)	*DF*		0.0003449	Groundwater Flux/(Don River Flow + Groundwater Flux)
Dilution Factor Ratio (GW to River)	*DFR*	1:	2,900	(Don River Flow + Groundwater Flux)/Groundwater Flux

Chemical Name	Aquatic Receptor Protection Value (µg/L)	Estimated Maximum Groundwater Concentration (µg/L)	Predicted Diluted Concentration in Upper Don River - Sediment Basin (µg/L)	Comparison Against Aquatic Protection Value	Comments
1+2-Methylnaphthalenes (max)	150	82000	3.E+01	Does Not Exceed	
Acenaphthene	520	25000	9.E+00	Does Not Exceed	
Acenaphthylene	0.14	2600	9.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Anthracene	0.1	12000	4.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Barium	2300	50000	2.E+01	Does Not Exceed	
Benzo(a)anthracene	0.18	5600	2.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(a)pyrene	0.21	3700	1.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(b&j)fluoranthene [a]	0.42	3000	1.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(g,h,i)perylene	0.02	1200	4.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(k)fluoranthene	0.14	990	3.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Chloride (Cl)	180000	13000000	4.E+03	Does Not Exceed	
Chrysene	0.07	5100	2.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Dibenzo(a,h)anthracene	0.04	320	1.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Ethylbenzene	180	11000	4.E+00	Does Not Exceed	
F1 (C6-C10) (max)	42	120000	4.E+01	Does Not Exceed	
F2 (C10-C16) (max)	17	14000000	5.E+03	**Exceeds Aquatic Receptor Protection Value**	Potentially mobile parameter
Fluoranthene	7.3	10000	3.E+00	Does Not Exceed	
Fluorene	29	11000	4.E+00	Does Not Exceed	
Indeno(1,2,3-Cd)Pyrene	0.14	1200	4.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Mercury	0.77	10	3.E-03	Does Not Exceed	
Naphthalene	620	77000	3.E+01	Does Not Exceed	
Phenanthrene	38	40000	1.E+01	Does Not Exceed	
Pyrene	0.57	15000	5.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Silver	0.12	< 5	< 2.E-03	Does Not Exceed	
Sodium	180000	5600000	2.E+03	Does Not Exceed	
Toluene	1400	55000	2.E+01	Does Not Exceed	
Xylenes, Total	330	44000	2.E+01	Does Not Exceed	

Notes:

[a.] APV for benzo(b)fluoranthene used in evaluation

< - indicates analyte not detected in well. Value use is the max reporting limit

µg/L - microgram per litre

% - percent

m - metre

m^2 - square metre

m^3/d - cubic metre per day

m/d - metre per day

m/m - metre per metre

TABLE B-5d. Assumptions Used to Derive Site Specific Dilution Values and Predicted Surface Water Concentrations - Future Don River - Mid River

Port Lands, Toronto, Ontario

Parameter	Symbol	Units	Model Value	Data Source
Hydraulic Gradient	i	m/m	0.012	Determined from groundwater contours prepared by GHD September 2015
Aquifer Saturated Thickness	b_1	m	1.8	Saturated zone depth - beginning of Mid River section.
Aquifer Saturated Thickness	b_2	m	2.3	Saturated zone depth - end of Mid River section.
Aquifer Discharge Boundary Width	w	m	613	Approximate length - Mid River section.
Aquifer Discharge Boundary Area	A	m^2	2513	Calculated discharge boundary area. 2 x Saturated aquifer thickness x aquifer width
Effective Porosity	n	% as Decimal	0.3	Referenced from literature values
Hydraulic Conductivity	K	m/d	12.610	Referenced from GHD Slug Test Data For Fill / Native Sand (Geometric Mean); conservatively applied maximum geometric mean from the native sand unit.
Darcy Flux	v	m/d	0.15132	Hydraulic Conductivity x Hydraulic Gradient
Average Linear Groundwater Velocity	$v_{average}$	m/d	0.5044	(Hydraulic Conductivity x Hydraulic Gradient)/Porosity
Groundwater Discharge to River	Q	m^3/d	380.313	Hydraulic Conductivity x Hydraulic Gradient x Discharge Boundary Area
Don River Mean Daily Flow		m^3/d	353635.2	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Don River Minimum Daily Flow		m^3/d	85536	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Dilution Factor (GW to River)	*DF*		0.004426547	Groundwater Flux/(Don River Flow + Groundwater Flux)
Dilution Factor Ratio (GW to River)	*DFR*	1:	226	(Don River Flow + Groundwater Flux)/Groundwater Flux

Chemical Name	Aquatic Receptor Protection Value (µg/L)	Estimated Maximum Groundwater Concentration (µg/L)	Predicted Diluted Concentration in Upper Don River - Sediment Basin (µg/L)	Comparison Against Aquatic Protection Value	Comments
1+2-Methylnaphthalenes (max)	150	82000	4.E+02	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Acenaphthene	520	25000	1.E+02	Does Not Exceed	
Acenaphthylene	0.14	2600	1.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Anthracene	0.1	12000	5.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Barium	2300	50000	2.E+02	Does Not Exceed	
Benzo(a)anthracene	0.18	5600	2.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(a)pyrene	0.21	3700	2.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(b&j)fluoranthene [a]	0.42	3000	1.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(g,h,i)perylene	0.02	1200	5.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(k)fluoranthene	0.14	990	4.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Chloride (Cl)	180000	13000000	6.E+04	Does Not Exceed	
Chrysene	0.07	5100	2.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Dibenzo(a,h)anthracene	0.04	320	1.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Ethylbenzene	180	11000	5.E+01	Does Not Exceed	
F1 (C6-C10) (max)	42	120000	5.E+02	**Exceeds Aquatic Receptor Protection Value**	Potentially mobile parameter
F2 (C10-C16) (max)	17	14000000	6.E+04	**Exceeds Aquatic Receptor Protection Value**	Potentially mobile parameter
Fluoranthene	7.3	10000	4.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Fluorene	29	11000	5.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Indeno(1,2,3-Cd)Pyrene	0.14	1200	5.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Mercury	0.77	10	4.E-02	Does Not Exceed	
Naphthalene	620	77000	3.E+02	Does Not Exceed	
Phenanthrene	38	40000	2.E+02	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Pyrene	0.57	15000	7.E+01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Silver	0.12	< 5	< 2.E-02	Does Not Exceed	
Sodium	180000	5600000	2.E+04	Does Not Exceed	
Toluene	1400	55000	2.E+02	Does Not Exceed	
Xylenes, Total	330	44000	2.E+02	Does Not Exceed	

Notes:

[a.] APV for benzo(b)fluoranthene used in evaluation

< - indicates analyte not detected in well. Value use is the max reporting limit

µg/L - microgram per litre

% - percent

m - metre

m^2 - square metre

m^3/d - cubic metre per day

m/d - metre per day

m/m - metre per metre

TABLE B-5e. Assumptions Used to Derive Site Specific Dilution Values and Predicted Surface Water Concentrations - Future Don River - Lower River

Port Lands, Toronto, Ontario

Parameter	Symbol	Units	Model Value	Data Source
Hydraulic Gradient	i	m/m	0.001	Determined from groundwater contours prepared by GHD September 2015
Aquifer Saturated Thickness	b_1	m	2.3	Saturated zone depth - beginning of Lower River section.
Aquifer Saturated Thickness	b_2	m	6.8	Saturated zone depth - end of Lower River section.
Aquifer Discharge Boundary Width	w	m	182	Approximate length - Lower River section.
Aquifer Discharge Boundary Area	A	m^2	1656	Calculated discharge boundary area. 2 x Saturated aquifer thickness x aquifer width
Effective Porosity	n	% as Decimal	0.3	Referenced from literature values
Hydraulic Conductivity	K	m/d	12.610	Referenced from GHD Slug Test Data For Fill / Native Sand (Geometric Mean); conservatively applied maximum geometric mean from the native sand unit.
Darcy Flux	v	m/d	0.01261	Hydraulic Conductivity x Hydraulic Gradient
Average Linear Groundwater Velocity	$v_{average}$	m/d	0.0420333	(Hydraulic Conductivity x Hydraulic Gradient)/Porosity
Groundwater Discharge to River	Q	m^3/d	20.885	Hydraulic Conductivity x Hydraulic Gradient x Discharge Boundary Area
Don River Mean Daily Flow		m^3/d	353635.2	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Don River Minimum Daily Flow		m^3/d	85536	Water Survey of Canada Archived Hydrometric Data for Don River at Todmorden (02HC024) 1962 to 2014 http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=graph.cfm
Dilution Factor (GW to River)	DF		0.0002441	Groundwater Flux/(Don River Flow + Groundwater Flux)
Dilution Factor Ratio (GW to River)	DFR	1:	4,097	(Don River Flow + Groundwater Flux)/Groundwater Flux

Chemical Name	Aquatic Receptor Protection Value (µg/L)	Estimated Maximum Groundwater Concentration (µg/L)	Predicted Diluted Concentration in Upper Don River - Sediment Basin (µg/L)	Comparison Against Aquatic Protection Value	Comments
1+2-Methylnaphthalenes (max)	150	82000	2.E+01	Does Not Exceed	
Acenaphthene	520	25000	6.E+00	Does Not Exceed	
Acenaphthylene	0.14	2600	6.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Anthracene	0.1	12000	3.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Barium	2300	50000	1.E+01	Does Not Exceed	
Benzo(a)anthracene	0.18	5600	1.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(a)pyrene	0.21	3700	9.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(b&j)fluoranthene [a]	0.42	3000	7.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(g,h,i)perylene	0.02	1200	3.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Benzo(k)fluoranthene	0.14	990	2.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Chloride (Cl)	180000	13000000	3.E+03	Does Not Exceed	
Chrysene	0.07	5100	1.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Dibenzo(a,h)anthracene	0.04	320	8.E-02	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Ethylbenzene	180	11000	3.E+00	Does Not Exceed	
F1 (C6-C10) (max)	42	120000	3.E+01	Does Not Exceed	
F2 (C10-C16) (max)	17	14000000	3.E+03	**Exceeds Aquatic Receptor Protection Value**	Potentially mobile parameter
Fluoranthene	7.3	10000	2.E+00	Does Not Exceed	
Fluorene	29	11000	3.E+00	Does Not Exceed	
Indeno(1,2,3-Cd)Pyrene	0.14	1200	3.E-01	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Mercury	0.77	10	2.E-03	Does Not Exceed	
Naphthalene	620	77000	2.E+01	Does Not Exceed	
Phenanthrene	38	40000	1.E+01	Does Not Exceed	
Pyrene	0.57	15000	4.E+00	**Exceeds Aquatic Receptor Protection Value**	Mobility in groundwater not anticipated
Silver	0.12	< 5	< 1.E-03	Does Not Exceed	
Sodium	180000	5600000	1.E+03	Does Not Exceed	
Toluene	1400	55000	1.E+01	Does Not Exceed	
Xylenes, Total	330	44000	1.E+01	Does Not Exceed	

Notes:

[a.] APV for benzo(b)fluoranthene used in evaluation

< - indicates analyte not detected in well. Value use is the max reporting limit

µg/L - microgram per litre

% - percent

m - metre

m^2 - square metre

m^3/d - cubic metre per day

m/d - metre per day

m/m - metre per metre

Table B-6. Analysis of Uncertainty for the Groundwater to Surface Water Pathway

Port Lands, Toronto, Ontario

Input Parameter or Assumption	Discussion of Uncertainty	Analysis Likely to Under or Over Estimate Risk	Assumption Likely to Alter Conclusions of RA
Hydraulic gradients and hydraulic conductivity of Site geology	Low uncertainty, as parameters have been measured over time, and conservative values were used from observed data.	Overestimate risk	No
Use of maximum groundwater detections	Low uncertainty, as groundwater chemistry has been measured over time and conservative use of maximum values is likely to overestimate the risk to receptors in the Don River because the overall groundwater quality is not uniformly contaminated at the maximum detected concentrations. Many wells demonstrate much lower concentrations, as demonstrated by summary statistics and data. The use of the maximum value overestimates the exposure to benthic organism in the sediment, since groundwater quality across the Site has been characterized to include lower concentrations than the maximum values, and these concentrations do not account for further attenuation of COCs during transport to the Don River.	Overestimate risk	No
Use of minimum Don River daily discharge rate (flow)	The minimum daily river flow was employed in considering dilution. Use of mean monthly flow is significantly higher; therefore, dilution from typical base flow in the Don River is significantly higher.	Overestimate risk	No
Window of groundwater discharge	Length and width of the discharge face are determined as follows: • The lengths of the discharge faces were estimated based on the lengths of the various river sections and selected to be conservative, because they consider the Site to be continuous and contiguous across the geology and river interface. • The width of the discharge window is based on the calculated saturated zone depth, which includes the proposed elevation of the future Don River bed, and the measured water table elevation at the Site.	Overestimate or underestimate risk	No
Volume of groundwater discharged to the Don River	The volume of groundwater discharging is based, in part, on the interpreted groundwater flow direction to the Don River using the geometric mean measured hydraulic conductivity, hydraulic gradients specific to the river section, and literature-referenced porosity. Future modification to the Site in the context of the flood protection landform may require the use of clay soil, which has different hydrogeological properties than the coarse-grained soils used in the groundwater flow calculations. The groundwater velocity may overestimate the contribution of groundwater to the Don River.	Overestimate risk	No

Table B-6. Analysis of Uncertainty for the Groundwater to Surface Water Pathway

Port Lands, Toronto, Ontario

Input Parameter or Assumption	Discussion of Uncertainty	Analysis Likely to Under or Over Estimate Risk	Assumption Likely to Alter Conclusions of RA
Mixing zone, and sediment porewater assumptions	The size of the mixing zone in the sediment pore water is considered to be negligible or insignificant based on the modeled quantities of groundwater mixing with the quantities of surface water. The mixing is also likely to be rapid because of the quantities modelled in mixing and the porous sand media in which the mixing is taking place. Adverse effects are unlikely to receptors.	Neutral or underestimate risk	No
Temperature and salinity differences between groundwater and surface water	Temperature and salinity affect the density of water. Differences in these parameters may have an effect on mixing time within the sediment porewater. However, given the expected negligible contribution from groundwater (on a volume basis) effects on mixing, if any, are also likely to negligible. Dilution is still anticipated to be extremely rapid; therefore, adverse effect to benthic organisms from elevated concentrations are unlikely.	Neutral	No
Incremental effects to the future Don River	This appendix considered only contributions of COCs in groundwater from the Site that were within 30 m of the future Don River. Background conditions, surface water quality, or other potential contaminated sources of groundwater have not been assessed. Downstream effects of COCs discharging to the Don River have not been assessed.	Neutral or underestimate risk	No

Notes:

COC - contaminant of concern

m - metre

RA - Risk Assessment