Ohio EPA held a public hearing on Feb. 13, 2018, regarding a permit modification to the remedy selection for RCRA Corrective Action for Envirosafe Services of Ohio, Inc. (ESOI). This document summarizes the comments and questions received at (the public hearing and/or during the associated comment period), which ended on Feb. 23, 2018.

Ohio EPA reviewed and considered all comments received during the public comment period. Ohio EPA has authority to consider specific issues related to protection of the environment and public health. Often, public concerns fall outside the scope of that authority. For example, concerns about zoning issues are addressed at the local level. Ohio EPA may respond to those concerns in this document by identifying another government agency with more direct authority over the issue.

To help you review this document, the questions are grouped by topic and organized in a consistent format.

Ground Water Statistical Analysis Concerns

Comment 1: 3745-54-91(A)(2) – Whenever the ground water protection standard under Ohio Administrative Code (OAC) 3745-54-92 is exceeded, the owner or operator must institute a corrective action program under OAC 3745-54-100. Exceeded is defined as statistically significant evidence of increased contamination as described in paragraph (D) OAC 3745-54-99.

Required: Statistically significant evidence is needed to trigger a corrective action.

Required: Statistics is a mathematical analysis of either question, the uppermost aquifer is being contaminated, or, the landfill (or land based management unit) is not leaking to the uppermost aquifer.
I have reviewed section K of the draft permit and have not found in any of the language a description of a statistical analysis or test. There is no t-test, no analysis of variance, no regression analysis, no chi square test or any remnant.

Without a statistical analysis, the owner/operator can use this regulation to legally object and win a lawsuit based on the argument Ohio EPA doesn’t have the legal authority to mandate that the owner/operator needs to take corrective action.

Response 1: Statistical analysis tests and procedures are included in ESOI’s Part B permit application and permit conditions. No revision to Module K is necessary.

The requirements for statistical procedures are specified in Permit Conditions K.6 and K.7 which include all the requirements of OAC Rule 3745-54-97(H) and (I). The development and listing of background statistical limits is documented in the Part B Permit Application Section E-6b; Appendix E.7; and Appendix E.9, Section 1.2.

The detection monitoring program requirement to compare ground water monitoring data to background statistical limits is in Permit Conditions K.9(b), (d), and (f). The compliance monitoring program requirement to compare ground water monitoring data to background statistical limits is in Permit Condition K.10(a)(iv) for uppermost aquifer bedrock wells and Permit Condition K.12(c) for deep till contact zone monitoring program and Permit Condition K.13(c) for shallow till contact zone monitoring program.

In accordance with OAC Rule 3745-54-99(H) and Permit Conditions K.10(b); K.12(d) and (e); and K.13(d) and (e), concentrations of elevated constituents are compared to concentration limits. These concentration limits are listed in Permit Condition K.2(a). In accordance with these permit conditions, a confirmed concentration above these concentration limits triggers corrective action.

Comment 2: 3745-54-97(G) – In detection monitoring or where appropriate in compliance monitoring, data on each hazardous constituent specified in the permit will be collected from background wells and wells at the
compliance point(s). The number and kinds of samples collected to establish background must be appropriate for the form of statistical test employed, following generally accepted statistical principles.

Required: A statistical test must be specified first and then the method of sampling, analysis, preservation, hold time etc. and can then be specified to be appropriate.

I have reviewed section K of the draft permit and have not found reference to a statistical test. A statistical test is an appropriate mathematical test to determine statistical significance.

Without a statistical analysis the owner/operator can use development of a background of at least four independent samples as not complete or what was collected is not appropriate for the statistical test of significance. The owner/operator has the legal high ground and would prevail in court, that the background developed for ESOI under this permit is invalid as it is not appropriate for the specified statistical analysis.

The technical reason is that the distribution of background data on each specified detection parameters cannot be found to be statistically significant and therefore the owner/operator has the options of: not taking any action or re-analyze using new samples for those detection parameters that is appropriate for a statistical test selected in the future that is appropriate.

Response 2: Statistical analysis tests and procedures are included in the Part B Permit Application and permit conditions. The number of samples are appropriate for the selected statistical methods, the statistical methods are appropriate for the background data distribution. No revisions to Module K are necessary.

Permit Condition K.6 specifies requirements for setting background limits. The sampling methods, sampling frequency and data evaluation procedures are described in appendices E.7 and E.9 of Section E of the Part B Permit Application and Permit Conditions K.4, K.6, K.7 and K.9 through K.13. Requirements for statistical procedures are specified in Permit Conditions K.6 and K.7.
Comment 3: 3745-54-97(H) – The owner or operator will specify one of the following statistical methods to be used in evaluating ground water monitoring data for each hazardous constituent which will be specified in the unit per permit. The statistical test chosen must be conducted separately for each hazardous constituent in each well. Where practical quantification limits (PQLs) are used in any of the following statistical procedures to comply with paragraph (l)(5) of this rule, the PQL must be proposed by the owner/operator and approved by the director. Use of any of the following statistical methods must be protective of human health and the environment and must comply with the performance standards outlined in paragraph (l) of this rule.

Required: A statistical test must be specified.

I have reviewed section K of the draft permit and have not found the statistical test or tests selected by the owner/operator and subsequently approved by the Agency.

Without a statistical analysis, the owner/operator can prevail in any legal matter concerning the question: is the RCRA facility leaking to the uppermost aquifer?

ESOI is in an area that had extensive oil and gas drilling and oil production in the early 1900s.

I have never found the records of properly closing these rusting steel cased wells. These wells can and will rust through the casing and with natural oil field dynamics force crude oil, saltwater and oil formation water [geologically very old water from possibly the Silurian Perion (443 million to 416 million ybp)] into the uppermost aquifer causing contamination. The owner/operator can make a technical and legal case for the presence of crude oil constituents being part of the background and concentrations found will vary with the releases from the oil field.

The owner/operator can make the technical and legal use of a comparison of a method detection limit (MDL)-based drinking water health standard to a practical quantitation level (PQL) is comparing apples to oranges as violating scientific and statistical principles. U.S. EPA method detection limits are based on distilled water spiked with one contaminant at a time under ideal conditions. The MDL
is a different type of data. The owner/operator can prevail in stating that a PQL of each detection contaminant must be made for the Silurian Period uppermost aquifer. That owner/operator can prevail by stating the matrix of this aquifer influences the result from performing the specified U.S. EPA laboratory method.

This is standard understanding of water analysis, instruments and the ability to apply the scientific principles to interpreting the results of ground water analysis. It is understanding the intersection of chemistry/geology/hydrology/biology.

Response 3: Elevated constituents are identified by comparing compliance data to an approved statistical background limit. No revisions to Module K are necessary.

Statistical analysis tests and procedures are included in the Part B Permit Application and permit conditions. The number of samples are appropriate for the selected statistical methods, the statistical methods are appropriate for the background data distribution. Requirements for developing the statistical background limit are in Permit Conditions K.6 and K.7. The statistical procedures and statistical methods that have been approved by the Director are listed and described in the Part B Permit Application Section e-6b; Appendix E.7; and Appendix E.9, Section 1.2.

The statistical methods include the following:

Where background consists of 100 percent non-detects (in background samples the constituent was not detected) the statistical limit is the non-parametric prediction limit of the highest value in the background which in this case would be less than (<) the PQL. A confirmed detection at or above the PQL is considered a statistical increase in concentration. The PQL, in accordance with OAC Rule 3745-54-97(1)(5), must be the lowest concentration level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions that are available to the facility. U.S. EPA guidance, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance, March 2009, refers to this statistical procedure as the double quantification rule. Where, if a constituent is 100 percent non-detect in background data and the constituent is detected at a quantifiable level in a compliance well and it is confirmed with a
resample, then that constituent is considered statistically elevated (a statistical increase in concentration).

Where background consists of < 50 percent non-detects and the background data is normally distributed, the statistical method used is a parametric prediction limit.

Where background is not normally distributed or consists of > 50 percent non-detects, the statistical method used is a non-parametric prediction limit, where the limit is equal to the highest value in the background.

Comment 4: 3745-54-97(H)(1)(2)(3)(4)(5) – A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence of contamination. The method must include estimation and testing of the contrasts between each compliance well’s mean and the background mean levels for each constituent.

Required: A parametric analysis of variance (ANOVA) followed by multiple comparisons procedures to identify statistically significant evidence or a statistical method described in (2)(3)(4)(5).

I have reviewed section K of the draft permit and have not found any ANOVA performed or required to be performed; I have not found a statistically derived tolerance or prediction interval; I have not found a statistically derived control chart; and, I have not found an alternate statistical method.

In the original permit approved by U.S. EPA and Ohio EPA, an alternate statistical method appropriate for ESOI, the uppermost aquifer and compliant with the regulations was approved.

Without a stated statistical test, the owner/operator has created a permitting rabbit hole. There is no legal authority to force the owner/operator to do anything. All EPA actions require finding a statistically significant increase in concentration. Ohio EPA will be left toothless if contamination is ever found.

Without a stated statistical test and stated performance standard (when is significance found?) the owner/operator will prevail in a court when contesting any compliance NOV
issued by Ohio EPA as 3745-54-97(G) was never triggered as there can be no statistical finding of significance.

Response 4: OAC Rule 3745-54-97(H) requires the owner or operator to specify the statistical methods listed in paragraph H that will be used in evaluating ground water monitoring data. ESOI selected prediction limits, number 3 in the list in paragraph H. The statistical procedures and statistical methods are described in the Part B Permit Application Section E-6b; Appendix E.7; and Appendix E.9, Section 1.2. No revisions to Module K are necessary.

Comment 5: 3745-54-98 (F) The owner or operator must determine whether there is statistically significant evidence of contamination for any chemical parameter or hazardous constituent specified in the permit pursuant to paragraph (A) of the rule at a frequency specified under paragraph (D) of this rule.

1) In determining whether statistically significant evidence of contamination exists, the owner or operator must use the method(s) specified in the permit under paragraph (H) of OAC 3745-54-97. These method(s) must compare data collected at the compliance point(s) to the background ground water quality data.

2) The owner or operator must determine whether there is statistically significant evidence of contamination at each monitoring well at the compliance point within a reasonable period after completion of sampling. The director will specify in the facility permit what period is reasonable, after considering the complexity of the statistical test and the availability of laboratory facilities to perform the analysis of ground water samples.

Required: The owner/operator must have stated what statistical test is to be used and how it is to be used.

I have reviewed section K of the draft permit and have not found any statistical method as required by OAC 3745-54-97(F). Without a stated statistical test, the section (F)(1) and (F)(2) can't be acted on and the owner/operator is not
complying with the state and federal regulations. The permit holder is in violation.

Response 5: The statistical procedures and statistical methods are described in the Part B Permit Application Section E-6b; Appendix E.7; and Appendix E.9, Section 1.2. No revisions to Module K are necessary.

Comment 6: 3745-54-98 (G) If the owner or operator determines, pursuant to paragraph (F) of this rule, that there is statistically significant evidence of contamination for chemical parameters or hazardous constituents specified pursuant to paragraph (A) of this rule at any monitoring well at the compliance point, he must:

1. Notify the director of this finding in writing within seven days. The notification must indicate what chemical parameters or hazardous constituents have shown statistically significant evidence of contamination;

2. Immediately sample the ground water in all monitoring wells and determine whether constituents in the ground water monitoring list (found in the appendix to this rule) are present, and if so, in what concentration. However, the director, on a discretionary basis, may allow sampling for a site-specific subset of constituents from the list in the appendix to this rule and other representative/related waste constituents.

3. For any compounds listed in the ground water monitoring list (found in the appendix to this rule) found in the analysis pursuant to paragraph (G)(2) of the rule, the owner or operator may resample within one month or at an alternative site-specific schedule approved by the director and repeat the analysis for those compounds detected. If the results of the second analysis confirm the initial results, then these constituents will form the basis for compliance monitoring. If the owner or operator does not resample for the compounds in paragraph (G)(2) of this rule, the hazardous constituents found during the initial ground water monitoring list analysis will form the basis for compliance monitoring.
Required: When contamination is found the owner/operator must notify the director in seven days and immediately sample the ground water.

I have reviewed section K of the draft permit and have not found any statistical method that can be used to determine statistically significance.

Therefore, without an appropriate statistical method there can be no finding of contamination

Response 6: The statistical procedures and statistical methods that have been approved by the Director are listed and described in the Part B Permit Application Section E-6b; Appendix E.7; and Appendix E.9, Section 1.2. The requirements of OAC Rule 3745-54-98(G) are specified in Permit Condition K.9(g). No revisions to Module K are necessary.

Comment 7: 3745-54-99 Compliance monitoring program. An owner or operator required to establish a compliance monitoring program under OAC 3745-54-90 to 3745-54-101, at a minimum, shall discharge the following responsibilities:

Required: If a parameter(s) are found to be statistically significant then the O/O must enter compliance monitoring.

I have reviewed Section K of the draft permit and have not found any statistical method that can be used to determine statistically significance. Contamination is defined in the regulation as being a finding of statistically significance.

Therefore, without an appropriate statistical method, there can be no finding of contamination. With no finding of significance, the owner/operator will prevail in a court of law that Ohio EPA has no legal standing to require the owner/operator to do anything.

The law and the regulations are very specific in what is required.

Response 7: Compliance monitoring program requirements are specified in Permit Condition K.10. The statistical procedures and statistical methods that have been approved by the Director are listed and
described in the Part B Permit Application Section E-6b; Appendix E.7; and Appendix E.9, Section 1.2. No revisions to Module K are necessary.

General Objection to the Facility

Comment 8: Objection to the facility was expressed citing local health concerns and the potential for nuclear waste having been disposed.

Response 8: ESOI is in compliance with its operating permit. While ESOI accepted radioactive wastes that were less than the Nuclear Regulatory Commission (NRC) regulatory levels, there is no indication that radiation levels are adversely affecting human health or the environment. In regard to potential future waste, ESOI’s permit prohibits the disposal of NRC radioactive waste. The proposed remedial activities for older sections of the facility are designed to be protective of human health and the environment.

Comments from Envirosafe Services of Ohio, Inc.

Comment 9: The permittee noted that continued monitoring of site conditions near building C since completion of the corrective measures study (CMS) indicates that there are no concerns with the building floor slab. The permittee requested that the status of the concrete building floor slab be evaluated during the corrective measures design phase as a possible element to be retained and integrated into the new cap for this unit. The permittee notes, if feasible, this would be a significant reduction in waste generation from the remedial action.

Response 9: Ohio EPA does not support modifying the selected remedy during the design phase. The remedy alternative summary for SWMU 8 in the CMS states, “The task of improving the cap on the unit would require removing building C (including the floor slab), AOC 12, and AOC 7, clearing portions of the existing cover, and filling or grading the low points of the cover.” Since Ohio EPA conditionally approved the CMS, site conditions have not changed with respect to the building (including the floor slab), within the footprint of SWMU 8, such that an alternative to removing the building (including the floor slab) is justified.
If the permittee has determined, after the CMS, that there is no environmental benefit to removing the existing building (including the floor slab) located within the footprint of SWMU 8, then leaving the building (including the floor slab) intact negates the need to construct a new building reducing waste generation and preserving a significant amount of excess funds available for future care of the facility. In addition, at this point in the process, any changes to the selected remedy would require the submittal of a SWMU-specific CMS and a permit modification.

Comment 10: Based upon communication with Ohio EPA, ESOI takes exception to the addition of cis-1,2-dichloroethylene to table K.2(a).

Response 10: Cis-1,2-dichloroethylene has been removed from the table to Permit Condition K.2(a).

However, cis-1,2-dichloroethylene may be added in the future if trichloroethene is detected in the ground water. OAC Rule 3745-54-99(A)(1) and 3745-54-93(A) require the list of hazardous constituents to be based on constituents listed in the appendix to OAC Rule 3745-51-11 that are reasonably expected to be in or derived from waste contained in a regulated unit. Dichloroethylene is listed in the appendix to OAC Rule 3745-51-11 with a footnote that states it includes members of the general class not specifically listed by name in the appendix; thus, cis-1,2-dichloroethylene as an isomer of dichloroethylene is included as a hazardous constituent listed in the appendix. Since trichloroethene has been detected in leachate analysis (see analytical results of leachate in Appendix E.4 of the Part B Permit Application) and cis-1,2-dichloroethylene is a breakdown product of trichloroethene, it is reasonably expected to be derived from the waste and may be added to Table K.2(a) constituent list if trichloroethylene [(a selected indicator constituent, listed in the detection monitoring program Table to Permit Condition K.9(b)] is detected in the ground water.

Comment 11: Based upon communication with Ohio EPA, ESOI takes exception to setting the maximum PQL for 1,4-dioxane to 3 ug/L in footnote 8 of the table to section K.2.a(i).

Response 11: Ohio EPA revised the PQL for test method SW846:8270 from 10 ug/l to 3 ug/l after noting that ESOI was reporting analysis results for Spring 2013 through Spring 2014 sampling events.
with a PQL ranging from 0.98 ug/l to 1.1 ug/l. From Spring 2014 through Fall 2015, ESOI did not report any analysis results for 1,4-dioxane using test method SW847:8270. From Spring 2016 through Fall 2017 sampling events analysis results were reported using a PQL ranging from 5.0 to ug/l to 5.4 ug/l. The PQL for analysis of constituents needs to be below the ground water protection standard listed in Permit Condition K.2(a) whenever possible. While ESOI has not demonstrated that it can consistently obtain a PQL of 3 ug/l, ESOI has consistently obtained a PQL of less than the protection standard of 8.5 ug/l using test method SW846:8270. Ohio EPA has revised footnote 8 to reflect this for test method SW846:8270 or other methods selected to obtain a lower PQL. The footnote has been revised as follows:

8. The concentration limit for 1,4-dioxane in the uppermost aquifer is 8.5 ug/l unless the PQL exceeds 8.5 ug/l. The PQL for the analysis of uppermost aquifer samples will be in accordance with the following: Using analysis method SW846:8260, the maximum PQL is 50 ug/l; for method SW846:8270 or alternate analytical methods selected to achieve a lower PQL the maximum PQL shall be < 8.5 ug/l. A PQL less than 8.5 ug/l is required for uppermost aquifer wells when conducting compliance monitoring or corrective measures monitoring in the uppermost aquifer, or if concentrations in a deep till well exceeds the specified Action Level. In detection monitoring, if 1,4-dioxane is detected at an estimated level in the uppermost aquifer with a PQL that is >8.5 ug/l, resampling shall be conducted to confirm the detection with a PQL that is <8.5 ug/l.

Comment 12: ESOI requested that the permit condition K.2(a)(ii) be revised to include the following exclusion: “...Unless demonstrated to be a false detection or an alternate source that is not from the permittee, all constituents detected...”

Response 12: Permit Condition K.2(a)(ii) has been revised to state...”Unless demonstrated to be a false detection or an alternate source that is not from the permittee, all constituents detected...”

Comment 13: ESOI takes exception to implementing permit condition K.2.a(iii) requiring updates to toxicity data, for example, beginning in 2019 given that this may potentially change the conditions immediately upon issuance. ESOI requested
that the requirement for analysis should be defined as five years from the date of permit issuance.

Response 13: Permit Condition K.2.a(iii) has been revised to state, “Once every five (5) years (beginning in 2023...). Including a specific year approximately 5 years from permit issuance allows flexibility for the submittal to occur within the specific year instead of being constrained by a date exactly five years from permit issuance.

Comment 14: ESOI takes exception to implementing permit condition K.8(b)(i)(i), requiring expanded leachate analysis, beginning in 2019.

Response 14: Permit Condition K.8(b)(i)(i) has been revised to state, “Leachate analysis results per Permit Condition K.2(a)(ii) beginning in 2023.... Including a specific year approximately five years from permit issuance allows flexibility for the submittal to occur within the specific year instead of being constrained by a date exactly five years from permit issuance.

Comment 15: ESOI requested that Ohio EPA confirm if the correct permit condition is referenced within permit condition K.8(b)(ii)(b)(xvii). ESOI suggested that this condition should refer to semi-annual reporting requirements in permit condition K.8(b)(i)(b)(i) through (x).

Response 15: Permit Condition K.8(b)(ii)(b)(xvii) has been revised to refer to permit Condition K.8(b)(i)(b)(i) through (x).

Comment 16: ESOI requested that Ohio EPA confirm if the correct permit condition is referenced within permit condition K.8(b)(ii)(b)(xx). ESOI suggested that this condition should refer to permit condition K.8(b)(i)(b)(i) through (x).

Response 16: Permit Condition K.8(b)(ii)(b)(xx) has been revised to refer to permit Conditions K.8(b)(i)(b)(i) through (x).

Comment 17: ESOI stated that the correct permit condition reference within permit condition K.10(b)(ii) is K.9(g)(v)(b).

Response 17: Permit Condition K.9(g)(v)(b) is the correct reference. The permit condition has been revised accordingly.
Comment 18: Based on previous communication with Ohio EPA regarding permit condition K.13(a)(i) and design criteria for leachate detection systems, ESOI takes exception to basing decision on leachate levels in the primary leachate collection system versus the secondary leachate collection system for double-lined landfills.

Response 18: OAC Rule 3745-57-03(A)(2) and Permit Condition M.3(a)(i) require all modern double-lined landfills to be designed and operated to ensure that the leachate depth over the primary liner does not exceed one foot. Ohio EPA has determined that the leachate levels in the double-lined landfills at ESOI would have to exceed this limit by several orders of magnitude before this permit condition would be implemented. In addition, Ohio EPA has determined that if the primary leachate collection system were to leak into the secondary leachate collection system, the two systems would be hydraulically connected. Additionally, ESOI does not have the means to directly measure the height of leachate in all the secondary leachate collection system sub-cells. Therefore, Ohio EPA has revised Permit Condition K.13(a)(i) to reflect previous communication and design and operation considerations for double-lined landfills.

Permit Condition K.13(a)(i) has been revised as follows: “Assess leachate levels in adjacent WMUs in comparison with the elevation of the lacustrine/upper till contact zone ground water level. Leachate levels are the most recently recorded average of interior leachate head for each unit. The shallow till contact zone ground water level is the lowest ground water elevation in the adjacent shallow till wells. For double-lined WMUs, the shallow till contact zone ground water elevation in the adjacent wells should be compared to the elevation of the leachate in the primary leachate collection system [leachate measurements required by Permit Conditions M.7(C) and F.2(D)(ii)].”

End of Response to Comments