OhioEPA

State of Ohio Environmental Protection Agency

Northwest District Office

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Ted Strickland, Governor
Lee Fisher, Lieutenant Governor
Chris Korleski, Director

Re: Hoffman Road Landfill, Lucas County
Ground Water

January 17, 2008

Mr. Edward Irelan, Manager of Operations
Hoffman Road Landfill
3962 Hoffman Road
Toledo, Ohio 43611

Dear Mr. Irelan:

On October 25, 2007, the Ohio Environmental Protection Agency (Ohio EPA), Division of Solid and Infectious Waste Management (DSIWM), Northwest District Office (NWDO) received a response to Ohio EPA's September 25, 2007, comment letter regarding the *Statistical Report of Groundwater Quality for the City of Toledo Hoffman Road Landfill*, dated August 2, 2007, for the Hoffman Road Landfill in Lucas County. The response, dated October 24, 2007, was submitted by Hull & Associates, Inc., on behalf of the City of Toledo. Ohio EPA has reviewed the response for compliance with the ground water monitoring requirements of the Ohio Administrative Code (OAC) 3745-27-10. Ohio EPA's comments are below.

COMMENTS

Violations

1. **The City of Toledo is in violation of OAC Rule 3745-27-10(C)(7)(a), which requires the statistical method used to evaluate ground water monitoring data to be appropriate for the distribution of chemical parameters or waste-derived constituents. To meet the requirement, the City of Toledo must revise the statistical analysis of ammonia data for monitoring wells MW-16 and MW-11 in accordance with the discussion below. In addition, if the City of Toledo's analysis confirms the statistically significant increasing findings of Ohio EPA, then an assessment plan must be submitted in accordance with the requirements of OAC Rule 3745-27-10(E)(1).**

   A. Ammonia at MW-16: The 24 background data points for ammonia at monitoring well MW-16 include 10 censored data points (41.67%). To determine whether Cohen's or Aitchenson's adjustment is most appropriate for censored data, a comparison of probability plots may be conducted.

One plot is developed by using all censored data to determine z scores but only plotting detects (censored probability plot) and the other by using only the detected data (detects only probability plot). The detects only probability plot displays a normal data distribution, indicating that Aitchenson's adjustment for non-detects may be appropriate. To determine whether Aitchenson's adjustment (substitution of zeros for non-detects) or the modified Aitchenson's adjustment (substitution of ½ the PQL for non-detects) should be used, consideration should be given to the type of constituent and whether it is likely that the constituent is present but censored by the analysis or more likely that it is not present. Since ammonia is likely present, but just below the level of detection, the modified Aitchenson's method would be most appropriate in this case. The City of Toledo chose the less appropriate method of substituting zero for non-detects. The City of Toledo did not include a censored probability plot to determine if Cohen's adjustment would be better. The City of Toledo chose the statistical method of control charts. This method assumes data are normally distributed. However, it is considered an acceptable method if the data are at least close to normally distributed. A normality test performed on the modified Aitchenson's adjusted data indicates that neither the raw data nor the natural log transformed data are normally distributed. However, the raw data are closer to a normal data distribution than the natural log transformed data. The City of Toledo inappropriately chose to conduct the control chart on the natural log transformed data, which fails to meet the requirements of OAC Rule 3745-27-10(C)(7)(a).

In addition, Ohio EPA conducted an analysis (using the modified Atichenson's adjustment) on both the raw data and the log transformed data. Both analyses indicate that there has been a statistically significant increase in ammonia concentrations at MW-16.

B. Ammonia at MW-11: The 24 background data points for ammonia at monitoring well MW-11 include one censored data point. The background data (replacing the censored data point with ½ the PQL) are normally distributed. The raw data has a better normal distribution than the natural log transformed data. The City of Toledo ran the control chart on natural log transformed data, which fails to meet the requirements of OAC Rule 3745-27-10(C)(7)(a).

Ohio EPA's control chart analysis on the raw data indicates that there has been a statistically significant increase in ammonia concentrations at MW-11.

Statements

2. **With the exception of the violation discussed in comment 1 above, the City of Toledo's (Hull & Associates) October 24, 2007, responses are adequate to demonstrate compliance with the rules referenced in comments 1 through 4 of Ohio EPA's September 25, 2007, letter.**

3. **The City of Toledo's October 24, 2007, response acknowledges Ohio EPA's statement in comment 5 of the September 25, 2007, correspondence. The City states that they will continue monthly monitoring of the pH levels at monitoring well MW-15A.**

   Comment 5 of Ohio EPA's September 25, 2007, letter stated if future monthly pH readings at monitoring well MW-15A show evidence of a failing well seal, Ohio EPA will expect the City of Toledo to repair or replace monitoring well MW-15A in accordance with OAC Rule 3745-27-10(B)(3)(e), which requires monitoring wells to be maintained to perform to design specifications.

If you have any questions please contact Mike Beal at the Ohio EPA Northwest District Office at 419-373-3093. Any written correspondence should be sent to the attention of Kimberly Burnham, Division of Solid and Infectious Waste Management, Ohio EPA Northwest District Office, 347 N. Dunbridge Road, Bowling Green, Ohio 43402.

Sincerely,

Kimberly Burnham, R.S.
Environmental Specialist
Division of Solid and Infectious Waste Management

/llr

pc: Jodi Vaughan, Toledo-Lucas County Health Department
Karen Okonta, Hull and Associates, Inc.
Mike Beal, DDAGW, NWDO
Jack Leow, DDAGW, NWDO
File: Lucas County, Hoffman Road Landfill, Ground Water

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