

Everett Spellman/Kdhe
02/25/2005 04:42 PM

To KRIERK@kochind.com
cc Katherine Dunn/Kdhe@Kdhe, Mostafa Kamal/Kdhe@Kdhe
bcc
Subject Statistical Section of the 2004 Annual Groundwater Report 

Katrina,

Below are responses to each of the sections addressed in your email message.

Statistical Software:

The use of the software program Sanitas instead of ChemStat is acceptable.

Detection Limits:

Replacement of non-detects with the laboratory detection levels is acceptable. EPA guidance does allow the substitution of values of half the detection levels for non-detected constituents.

Non-Parametric Box and Whiskers Plots:

The use of Box and Whiskers Plots is encouraged. However, please also include a copy of the analytical data in a tabular format.

Time versus Concentration Plots:

The use of these plots is acceptable as a visual tool to present the data.

Non-Parametric Tolerance Intervals:

The use of non-parametric tolerance interval is acceptable as long this method is implemented according to 40 C.F.R. 264.97. However, because KNC is operating a corrective action program under 264.100, KNC must use the GWPS as the concentration standard. Therefore, the use of background data is inappropriate.

I will be out of the office next week. Should you need clarification on any of these items, please contact Kathy Dunn at 785-296-6561

Thank you.

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Bureau of Waste Management
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"Krier, Katrina" <KRIERK@kochind.com>



"Krier, Katrina"
<KRIERK@kochind.com>
02/09/2005 02:43 PM

To ESpellma@kdhe.state.ks.us
cc
Subject Statistical Section of the 2004 Annual Groundwater Report

2-9-05

RCRA



531820

Mr. Everett Spellman,

Thank you for your guidance during our January 31, 2005, conversation regarding the statistical portion of our annual groundwater report. On February 3, 2005, we held an internal meeting to review our statistical approach. The following is a summary of our proposed approach for the 2004 Annual Ground Water Monitoring Report. The goal of this proposed statistical approach and these analyses is to meet all of the requirements of the permit and associated regulations, satisfy the intent of the SAP, and meet your expectations of characterizing the site. We would be interested in any comments that you might have.

Statistical Software

We are working on the annual groundwater report utilizing the *Sanitas* software instead of *ChemStat* as discussed per our phone conversation.

Detection Limits

In our statistical analyses we are planning to replace samples without detectable constituent levels with the detection limit reported by the laboratory.

Non-Parametric Box and Whisker Plots

As suggested, we are planning to present non-parametric Box and Whisker Plots for the nitrate plus nitrite, chromium and VOC data. These plots will show the median, the maximum, 75th percentile, 25th percentile and the minimum value pictorially for nitrate plus nitrite, chromium and VOC levels in each well. This pictorial representation is intended to replace the tabular format utilized in past reports and replace the mean and standard deviation requirement of the SAP.

Time versus Concentration Plots

We are planning to include time versus concentration plots of nitrate plus nitrite, chromium and VOC levels in each well for our comparison to the GWPS. The GWPS would be indicated on each plot and these plots would be a type of control chart. Consistent with the 2003 Annual Ground Water Monitoring Report, we are planning to determine if there are any statistically significant trends in these results.

Non-Parametric Tolerance Intervals

Also as discussed, we plan to use the non-parametric tolerance interval described in 264.97 instead of the non-parametric tolerance interval compared to the GWPS specified in the SAP. Per 264.97(h) (3), a tolerance or prediction interval procedure in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper tolerance or prediction limit.

For this test, we are planning to continue using nitrate plus nitrite data from monitoring wells TW-11, 22, 23 and 52 as background, chromium data from monitoring wells TW-11, 19, 22, 56 and 63 as background and VOC data from monitoring wells A-3B and B-1 as background. Consistent with the 2003 Annual Ground Water Monitoring Report and 40 CFR 264.97, we are planning to calculate the non-parametric tolerance intervals for the nitrate plus nitrite, chromium and VOCs in the respective suite of background wells using the background well data for 2003 & 2004. These non-parametric tolerance intervals for

nitrate plus nitrite, chromium and VOCs in the background wells will be compared to the individual results from each test well for the 2004 data.

As discussed, we plan to include additional statistics, not necessarily required in order to better evaluate our system and where applicable may request to reduce the sampling frequency in certain wells.

Please respond to this e-mail to let us know if we are on track or if you have additional suggestions.

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