

STATE OF IOWA
GOVERNOR KIM REYNOLDS ★ LT. GOVERNOR ADAM GREGG
DIRECTOR OF DEPARTMENT OF NATURAL RESOURCES CHUCK GIPP

MEMO

From: Amie Davidson, Supervisor, Solid Waste Section, Land Quality Bureau

To: Solid Waste Landfill Responsible Officials

Cc: Consultants, Department of Natural Resources (DNR) Solid Waste Engineers, DNR ESD Field Services

Date: June 22, 2017

Re: Double Quantification Rule Resampling

The Iowa Department of Natural Resources (DNR) has been reviewing the statewide implementation of the Double Quantification Rule (DQR), which is recommended in United States Environmental Protection Agency's Unified Guidance for the statistical analysis of compounds never detected in background groundwater samples. The DQR is routinely utilized for the evaluation of organic compounds, and after two consecutive detections a compound is deemed to be present at levels in excess of background.

The DNR has been allowing the analysis of the DQR to be performed on consecutive semi-annual sampling event results. Upon further review of the DQR as presented in Section 6.2.2 of the Unified Guidance, the DNR now believes that this current implementation of the DQR is inconsistent with the Unified Guidance and 567 Iowa Administrative Code (IAC) 113.10. As explained in the Unified Guidance, the DQR has the form of a 1-of-2 or 1-of-3 non-parametric prediction limit test using the maximum value from the background data set. The difference with the DQR is that the maximum value from the background data set is unknown since all results in the background are below the reporting limit. Therefore, in place of a reportable concentration from the background data, the reporting limit is used as a non-parametric prediction limit. Detections above the reporting limit are then considered to be in excess of the prediction limit, with one resample necessary to confirm the original exceedance. The DNR's current policy is to utilize the next semi-annual sample as the required resample, but in accordance with the requirements of 567 IAC 113.10(5)"c"(3) all resampling must be completed within 90 days of the original exceedance. All resampling schemes must be specified in the approved hydrologic monitoring system plan for the site. The Unified Guidance discusses the timing of the DQR resamples and recommends the following (Section 6.2.2, p. 6-13):

"A sufficiently long interval should occur between the initial and repeat samples to minimize the possibility of a systematic analytical error. But the time interval should be short enough to avoid missing a subsequent real detection due to seasonal changes in the aquifer depth or flow direction. It is suggested that 1-2 months could be appropriate, but will depend on site-specific hydrological conditions."

Although 90 days allowed by 113.10(5)"c"(3) slightly exceeds the time frame recommended by the Unified Guidance, the DNR believes that 90 days is appropriate due to the low groundwater velocities

present at most facilities. Continuation of the current policy, whereby the next semi-annual sample is evaluated as the resample, is no appropriate.

Please note that the changes to the current sampling protocols are required only when a compound being evaluated with the DQR is detected. Non-detect results or estimated (J-flagged) results below the reporting limit do no trigger a resample requirement since they are below the prediction limit. Additionally, for wells already in assessment monitoring program or a corrective action monitoring program, newly detected compounds need only be compared to the groundwater protection standard (GWPS) and not resampled. This policy change therefore applies only to newly detected compounds at wells in a detection monitoring program.

The DNR understands that this policy represents a change from previous DNR directives regarding implementation of the DQR. No action is necessary for previously noted detections, but beginning with the fall 2017 sampling events resamples within 90 days shall be collected for any newly detected compounds at wells in a detection monitoring program.

If you have any questions regarding this policy change, please contact your DNR project engineer.

Sincerely,

A handwritten signature in cursive script that reads "Amie Davidson".

Amie Davidson, P.E.
Supervisor
Land Quality Bureau