



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION



January 26, 2007

Curt Richards
Vice President
Olin Corporation
P. O. Box 248
Charleston, TN 37310

RE: Alternative for Demonstrating Compliance with Pollutant Mobility Criteria
Newhall Street Neighborhood, Hamden

Dear Mr. Richards:

The Remediation Division of the Bureau of Water Protection and Land Reuse ("Department") has reviewed the letter report titled "Hamden Non-Public Properties, Groundwater Data Evaluation Relative to Fill Leaching Potential, Newhall Street Neighborhood (SRD-128)" dated January 2, 2007. That letter report was submitted by Olin Corporation as part of their evaluation of potential options which may be considered under the provisions for Alternative Pollutant Mobility Criteria of the RSRs.

The remedial measures to address the presence of polluted fill materials in the Newhall Street Neighborhood need to address both the human health risk posed by direct contact with the material and the potential for contaminants to leach from the material into groundwater. Pursuant to the Connecticut Remediation Standard Regulations ("RSRs"), these concerns are addressed by the Direct Exposure Criteria ("DEC") and the Pollutant Mobility Criteria ("PMC"). Soil analytical results suggest that the fill material throughout the area exceeds the PMC. However, groundwater data collected from the area does not show that leaching is occurring to a significant extent. Therefore, alternative approaches to achieving compliance with the PMC are being evaluated.

At this time, the Department is unable to approve the specific alternative approach to PMC being proposed in your January 2, 2007 letter, in part because the proposal is not consistent with the regulatory language provided under the RSRs.

Regulatory Framework

The proposal indicates that when applying the Alternative Dilution Factor allowed under 22a-133k-2(c)(3), it was found that "some individual wells ... have groundwater analyte concentrations ... exceeding GWPC and SWPC" and so the attempt to comply with PMC was shifted to a groundwater compliance evaluation. It was then concluded that "[w]hen the groundwater plume ... is evaluated statistically, ... it is compliant with the RSR criteria."

However, Subsection 3(f)(1) of the RSRs, "Applying the Criteria for Ground Water," limits this approach to compliance with the ground-water protection criteria ("GWPC") to one of two conditions, either:

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- compliance with the ground-water protection criteria for four consecutive quarterly sampling periods at all sampling locations;
or
- twelve consecutive monthly samples from each sampling location and the ninety-five percent upper confidence level of the arithmetic mean of all results are compliant with GWPC, and that no single sample exceeds two times the remedial criteria.

Under the RSRs, the requested statistical evaluation of groundwater quality is not appropriate, since four consecutive quarters of monitoring data, rather than 12 monthly samples, are being used and results from individual samples exceed two times the criteria.

Also, the method used to show compliance with GWPC was inappropriately applied to Surface Water Protection Criteria ("SWPC"). Under this subsection of the RSRs, SWPC compliance needs to be achieved through use of the average concentration of four consecutive quarterly results of wells representative of the plume, or by compliance at wells representative of the discharge to the receiving surface water body.

Alternative PMC Approaches

Subsection 2(d)(4) indicates "the Commissioner may approve an alternative dilution or dilution attenuation factor, provided that it ... will ensure that such release area will not degrade ground-water quality and thereby prevent the achievement of the applicable ground-water remediation standards." Based on this, two additional approaches should be further evaluated for resolving the PMC issue:

1. The goal of the Alternative Dilution or Dilution Attenuation Factor for a GA Area, as stated in Subsection 2(d)(4), is that it "will ensure that such release area will not degrade ground-water quality and thereby prevent the achievement of the applicable ground-water remediation standards." However, when considering alternatives in a GB area, it is also allowable for dilution across the site area to be applied so that "soil water at such release area will not cause the ground water at the nearest downgradient property boundary to exceed the ground-water protection criterion." This site might have the potential to have the consent order boundary be considered the "property boundary." If this approach were determined to be appropriate and the affected area had a GB ground-water classification, the use of ground-water dilution of the soil water would be allowed, rather than requiring compliance within the soil water.
2. Characterization of a steady state plume with a minimum of four quarters of monitoring may be considered for a remedial exception for pollutant mobility criteria.

Other Issues

3. In order for the Department to properly evaluate future revisions to your request for an alternative approach to Pollutant Mobility Criteria, several additional items will need to be addressed. These topics were discussed in our January 4, 2007 meeting with David Share.

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4. One of the primary contaminants being found in groundwater exceeding the SWPC is zinc, in the area north of Morse Street. Reportedly, in the limited sampling of unsaturated fill, zinc was not found to be leachable by SPLP analyses. Therefore, additional information is needed regarding the conditions under which this zinc is being detected in relation to the presence of saturated fill, anaerobic conditions, and upgradient groundwater impacts. The presence of anaerobic conditions can be evaluated using existing analytical results for iron, manganese and ORP (oxidation-reduction potential).
5. Some of the contaminants detected (VOCs, pesticides and perhaps ETPH) appear to be unrelated to the waste fill. Further discussion of this issue should be provided.
6. An understanding of the groundwater flow velocity is needed to support the location and frequency of the monitoring program used to support the alternative PMC request.
7. The January 2, 2007 letter focused on statistics to resolve one time exceedances of individual parameters in a few of the wells. Since the Regulatory Framework portion of this letter points out the limitations of this approach, different methods should be evaluated.
 - a. Since individual detections of contaminants in groundwater samples are not necessarily "confirmed exceedances," a quality control review would be appropriate to determine whether the results were representative of the groundwater chemistry and not sample collection / handling issues;
 - b. A focused short-term supplemental groundwater monitoring program will be needed to support the assumptions being used in the characterization of groundwater quality;
 - c. A review of the placement of wells within the monitoring network is needed concerning the representativeness of the data in depicting the impacts from areas of thickly placed fill, especially regarding areas where "anomalous" exceedances may be asserted;
 - d. Detections of petroleum and pesticides should be evaluated for chemical weathering and product availability consistent with filling that occurred prior to the 1950s.
8. Similarly, given the availability of investigations to the north and west of the consent order boundaries, an evaluation of hydrogeologic conditions in adjacent areas would be beneficial in supporting the assumptions being presented in the alternative PMC request. This could include combining mapping of groundwater contours, water quality, the extent of peat and the extent of saturated fill.
9. Specifics are needed concerning which monitoring wells will be utilized to determine compliance with Surface Water Protection Criteria.

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Column Study

10. Given the progress which has been made toward achieving an acceptable alternative PMC approach, a column study to address the disparity between the apparent leachability of contaminants in the fill and the lack of groundwater contamination may not be necessary. Therefore, the due date for the revised scope of work for a column study is rescheduled to March 15, 2007.

If you have any questions regarding this matter, please contact Ray Frigon or Maurice Hamel of my staff at (860) 424-3797 and (860) 424-3787, respectively.

Sincerely,



Patrick Bowe
Director
Remediation Division
Bureau of Water Protection & Land Reuse

PB:MRH

cc: David Share, Olin Corporation
Nelson Walter, MACTEC
David Silverstone, Regional Water Authority
Jeffrey Lennox, Leggette, Brashears & Graham, Inc.
Mayor Craig Henrici, Town of Hamden
Chris Harriman, Haley & Aldrich, Inc.
Brian Cutler, Loureiro Engineering Associates, Inc.
Meg Harvey, DPH
Leslie Balch, QVHD
Jill Barrett, Fitzgerald & Halliday, Inc.
Newhall Advisory Committee
Kevin Hood, Center for Hazardous Substances in Urban Environments