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GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
JACKSON DISTRICT OFFICE



STEVEN E. CHESTER
DIRECTOR

April 13, 2004

VIA ELECTRONIC & US MAIL

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Dear Sirs:

SUBJECT: Gelman Sciences, Inc. (GSI) Remedial Action
Interim Feasibility Study for the Unit E Plume, January 23, 2004

As we previously informed you, our review of the above referenced submittal has been somewhat delayed due to other obligations related to this and other sites. We have provided you with some of these comments on the Interim FS (IFS) in recent meetings. Pall Life Sciences (PLS) is to submit the final Feasibility Study (FS) by June 1, 2004, as ordered by the Washtenaw County Circuit Court. We believe this will allow adequate time for PLS to incorporate these comments into the final FS. In the interest of getting these comments to you as soon as possible, our focus will be on the major issues we have identified. Comments on specific sections may apply to other sections that are not identified.

Water Supply Wells/City of Ann Arbor Water Supply

The IFS states in several places that water supply wells are not impacted and that the City of Ann Arbor (City) draws all of its drinking water supply from the Huron River. This is not accurate. Corrections to the appropriate sections of the IFS should be made to reflect the comments below.

- Section 2.1.2 states that there are no domestic drinking water supply wells within 15,750 feet. Figure 3 does not include the two residences at 2 and 5 Ridgemor that rely on wells for drinking water. The wells at these addresses should be depicted on Figure 3. The travel time to the nearest domestic well, as stated in Section 1.4.2, should be adjusted accordingly.
- Although the City has elected to shut down the Montgomery municipal supply well due to low levels of 1,4-dioxane, it has not been permanently removed from service and still must be considered in any decision about remedial actions. As you know, the contamination threatens the designated wellhead protection area for the Montgomery supply well, which should be recognized in the FS. The remedial option selected must address the threat to the wellhead protection area.
- The City does use groundwater from the Steere Farm municipal wells near the Ann Arbor Airport. The existence of these wells should be acknowledged, and any threat to them from the Unit E Aquifer contamination should be discussed.

- The IFS did not indicate that any industrial or commercial uses of groundwater, including irrigation wells, had been considered. We know of one well at 371 Parkland Plaza that supplies water for commercial or industrial uses. The FS should consider and identify the existence of any such wells which may be impacted currently, or in the future, and that may influence the migration of the contamination.

Relevant Criteria/Pathways

- Section 2.1.2, under GSI, states that GSI will be considered a relevant criterion until further investigation is complete. The summary of this section at the bottom of page 9 states that the residential drinking water pathway is the only relevant exposure pathway. This sentence should be revised to reflect that GSI is a relevant pathway until otherwise eliminated.
- Section 2.2 states that “MDEQ has agreed to change the residential drinking water criteria for 1,4-dioxane to 85 ppb as currently specified in the Part 201 rules.” This is not accurate. We would like to clarify this point, although it does not affect the FS. The generic residential cleanup criterion for 1,4-dioxane in groundwater has been 85 parts per billion (ppb) since June 2000. There is no established drinking water criterion for 1,4-dioxane in Michigan; therefore, 85 ppb, which is a risk-based criterion that accounts for human exposure through ingestion, is the concentration that is considered safe as drinking water, based on specific risk factors. As you know, the DEQ is currently in the process of considering a maximum contaminant level (MCL) for drinking water of 35 ppb. Unless and until such a rule is promulgated, or other factors are taken into account, 85 ppb is the criterion that the DEQ is authorized to enforce. However, the Consent Judgment has not been amended to account for this change in criterion. PLS should formally request an amendment to change the required cleanup objective from 77 ppb to 85 ppb, as allowed by the Consent Judgment and Section 20102a (3) of Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, and the Part 201 Administrative Rules (Part 201 Rules).

Water Discharge Options

Section 3.3.5 should include a discussion of the volume of water that needs to be discharged and the capacity of the various options for accepting that volume. Several sections indicate that 500 gallons per minute (gpm) needs to be extracted to capture the contamination. Although there is some documentation of this volume in Appendix C, we have some concerns with this information. The pumping rate that was determined necessary to capture the leading edge of the Unit E plume is based on a groundwater flux calculation from along Maple Road derived from the characteristics of the aquifer and contamination plume in that area. The groundwater flux calculation should be calculated for the leading edge of the plume with the relevant data to better estimate the pumping rate needed to capture the plume at that location. In addition, there appears to be an error in the calculation of the groundwater flux (Q equals 401 gpm not 433 gpm). Detailed analysis of alternatives that require water discharge should provide for sufficient capacity to accommodate the volume of water necessary to meet the objectives of each alternative.

PLS's Preferred Alternative

Alternative 6, Groundwater Pumping – Active Remediation Proximate to Huron River, is PLS's preferred alternative. It is not acceptable for several reasons. This alternative allows for expansion of the plume after initiation of the remedial action, contrary to Rule 299.5705(5) of the

Part 201 Rules, and does not include active remediation at the leading edge of the plume or removal of 1,4-dioxane through naturally occurring biological or chemical processes, as required by Rule 299.5705(6) of the Part 201 Rules. Therefore, PLS would have to request and justify that a waiver of Rules 299.5705(5) and (6), pursuant to Section 18(5) and (6) of Part 201 of the NREPA, be granted by the department. The DEQ would not grant waivers for this alternative without additional upgradient source control. In addition, it is stated that treatment near the river would be easier due to less development. This is not known, as the migration pathway has not been determined and there are many stretches along the river where there is intense development. In addition, this alternative requires ongoing investigation that includes well installation and monitoring, so some of the disruption attributed to other alternatives is inherent in this option as well.

Options to be Eliminated

As discussed above, Alternative 6, in its current form, is not acceptable and should not be included in the detailed analysis part of the FS.

Alternative 2, Monitored Natural Attenuation and Institutional Controls, will not be considered without the addition of source control near Wagner Road and near Maple Road, and a contingency for addressing the exceedance of GSI at the Huron River.

Other Options to Consider

The DEQ prefers a complete cleanup to meet generic residential criteria. The Consent Judgment requires cleanup to generic residential criteria. The Opinion and Remediation Enforcement Order (REO) issued by the Washtenaw County Circuit Court requires that all affected water supplies be cleaned up to legally acceptable levels, which we interpret to mean generic residential criteria. The preferred alternative does not meet these criteria. However, we believe it is appropriate for the FS to consider the full array of alternatives allowed by Part 201 of the NREPA.

PLS did not include any interim responses in the IFS; however, PLS delayed submittal of the final FS in order to perform *in situ* testing that, if successful, is to be considered in areas with higher concentrations, for the purpose of interim response (source control). We believe this is appropriate to consider. We also believe that other source control measures should be considered, in combination with proposals to intercept the contamination at the leading edge, or to reliably restrict the use of groundwater in portions of the aquifer that would not be addressed by active remediation and are, or may be, contaminated above the generic residential cleanup criterion of 85 ppb. The following options should be added to the chapter on identification and screening of remedial technologies. We believe several of these would survive the screening process and should be considered in the detailed analysis.

- All alternatives should include source control, preferably to cut off further migration, at or west of Wagner Road. We have recently approved a work plan for installation of two extraction wells in this area; however, supplementation of this interim response should be considered to increase mass removal and cut off further migration.
- Alternatives 3a, 3c, 3e, 4a and 4c should be modified with extraction to take place near Maple Road, with the objective of cutting off any further migration of contamination beyond the extraction locations. The basis for the amount of water that needs to be extracted

should be provided. These alternatives should be combined with reliable restrictions on use of the aquifer that would not be addressed by active remediation and are, or may be, contaminated above the generic residential cleanup criterion of 85 ppb.

- Recirculation pumping, which involves extraction, treatment and reinjection at the same location, should be considered for source control near Maple Road, and near MW-72. This alternative should be evaluated in combination with leading edge pumping, and separately, in combination with reliable restrictions on the use of the aquifer.
- If determined feasible by current testing, *in situ* oxidation with hydrogen peroxide should be considered for source control near Maple Road, and near MW-72, as well as other feasible upgradient and downgradient areas. This alternative should be evaluated in combination with leading edge pumping, and separately, in combination with reliable restrictions on the use of the aquifer.
- PLS indicated it would be gathering additional information for Alternative 5, deep well injection. We have concerns about the ability of the Mt. Simon formation to accept the volume of water required, based on PLS's previous experience with deep well injection. In addition, the length of time to obtain the required permits could be protracted. These factors should be considered in determining the feasibility of this alternative.

Detailed Analysis of Alternatives to Retain and Add

Alternatives 3a, 3c, 3e, 4a and 4c should be retained for consideration in this section.

The option discussed in Section 3.3.3, piping contaminated groundwater to the Huron River for treatment before discharge should be included to allow comparison of costs with other options. This should be evaluated for groundwater pumped from the leading edge, and separately for source control near Maple Road. The placement of the treatment system could be at some intermediate location, away from more developed areas, but not necessarily at the point of discharge, depending on accessibility.

We specifically request that the detailed analysis include several alternatives that involve capturing the leading edge of the contamination combined with discharge to the Huron River, downstream of the City's water supply intake at Barton Pond.

As you know, any alternative that does not include capture at the leading edge of the contamination would require reliable restrictions on the use of the aquifer, which could include an institutional control such as an ordinance to reliably restrict the use of groundwater. Such an ordinance would have to be approved by the City. We are attempting to set up a meeting with the City, PLS, the Department of Attorney General and the DEQ, in order to discuss issues related to the proposed alternatives. It is critical that all parties, including local citizens, understand and accept the alternative that is ultimately selected. We recommend that this meeting take place before submittal of the FS.

We are available to discuss these comments with you prior to your submittal of the FS, and believe such discussions would be beneficial. As indicated at the beginning of this letter, these are our major comments on the IFS. We may have additional comments that we will send to you as they arise.

Mr. Farsad Fotouhi
Mr. Alan D. Wasserman
Mr. Michael L. Caldwell

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April 13, 2004

Please contact me if you have questions or would like to discuss these matters in more detail.

Sincerely,

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SK/KJ

cc: Ms. Mary Ann Bartlett, Pall Corp.
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