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<u>RETURN RECEIPT REQUESTED</u>

June 17, 2009

Ms. Lucy S. Wang
Associate Environmental Consultant
Eli Lilly and Company, Tippecanoe Laboratories
1650 Lilly Road
Lafayette, Indiana 47909-9201

RE: Monitored Natural Attenuation Study
Eli Lilly and Company, Tippecanoe Laboratories
IND 006 050 967

Dear Ms. Wang:

This letter is a follow up to our June 8, 2009 conference call regarding the use of the Hydrasleeve® sampling device in the monitored natural attenuation (MNA) ground-water study at the Tippecanoe facility and Lilly's proposal to perform *in-situ* treatment in the source area(s). Two issues which arose during the call were the need to supplement Lilly's MNA Study Work Plan approved by the U.S. EPA on May 29, 2009, and the primary use of the ground water chemistry data which will be generated by the MNA sampling program. In addition to a brief historical overview, this letter provides our perspective on the primary purpose of the MNA data set as well as the necessary MNA study supplements.

In our November 4, 2008 letter, we identified the need to define the chemistry of the ground water at Tippecanoe Laboratories as a prerequisite to determine the effectiveness of MNA for the contaminants of concern (COCs) at the facility. In our evaluation of Lilly's September 30, 2008, *Corrective Measures Study Report/Section 4 – Plume Stability Analysis*, we concluded that there was "no clear evidence of stability" of the COCs beneath the main plant and the adjacent floodplain of the Wabash River. We also noted that the conclusions provided in the *Plume Stability Analysis* imply that some form(s) of natural attenuation is occurring in the contaminant plume, although no evidence given to support this supposition.

In our November 4, 2008, letter, we directed Lilly to conduct an MNA study for the ground water COCs beneath the main plant, which would include calculating target contaminant levels in the source area(s) which would ensure that contaminant concentrations in downgradient wells remain stable or would decrease with time, and that End Point Criteria will not be exceeded at the point of compliance (POC) wells if the main plant extraction wells remained shut down. We also stated that the MNA study must be conducted in accordance with U.S. EPA's April 1999 and April 2004 guidance documents.

In its January 29, 2009 response, Lilly agreed to conduct both an MNA study and a targeted *in-situ* treatment study for the ground water COCs beneath the main plant and along the Wabash River floodplain.

On April 9, 2009, U.S. EPA and Lilly discussed future potential courses of action including the MNA study, and the potential usage of *in-situ* treatment and further ground-water extraction. We acknowledged that *in-situ* treatment is a possible remedial alternative, but noted the lack of detail in the *in-situ* proposal and that Lilly would need to show that an *in-situ* option would be comparable to or more effective than extraction, which has been shown to be effective historically. We also noted that an MNA study is needed to understand the capacity of the site's ground water chemistry to naturally degrade the COCs and supplement the active remedy in the source area(s). In response, Lilly cited a preference for an *in-situ* treatment approach supplemented by MNA. On April 10, 2009, Lilly submitted its *Monitored Natural Attenuation Study Work Plan*, their ground-water sampling scheme for MNA analysis. After review and subsequent discussions, U.S. EPA approved the plan on May 29, 2009.

During our most recent conference call on June 8, 2009 conference call, Lilly noted that the objective of the MNA study would be to gather the data needed to design an *in-situ* treatment program, as stated at the end of the first paragraph on Page 2 of the *MNA Study Work Plan*. Although the data could be used for this purpose, we noted that such a goal is inconsistent with our stated objective in our November 4, 2008 letter. Although some form of source control is an essential component of a remedy which incorporates MNA; the principal MNA objectives for Tippecanoe Laboratories include determining if natural attenuation of the COCs is occurring, to determine the rate of degradation for the COCs and their daughter products (should degradation be documented) and to calculate the future COC concentrations throughout the plume as well as at downgradient sentinel wells.

As discussed during the June 8, 2009 meeting, the MNA samples should also be analyzed for total organic carbon, and the MNA report should provide a detailed rationale for the non-degradation or degradation of the COCs based upon the geochemical characteristics of the site. In addition, the reporting limits for the MNA geochemical parameters should be comparable and appropriate to any MNA decision criteria.

We are enlisting U.S. EPA staff with expertise in MNA evaluations, who will review Lilly's MNA calculations and conclusions that will be presented in the forthcoming revised Corrective Measures Study report. We also recommend that Lilly consult the U.S. EPA guidance document *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* EPA/600/R-98/128 (Sept. 1998, pp 6-7) for preparation of its MNA study. This document can be accessed on-line at:

http://www.epa.gov/ada/download/reports/protocol.pdf

Please contact me at (312) 353-1248 or by e-mail at Heller.Donald@epa.gov if you have questions.

Sincerely,

Donald A. Heller, Corrective Action Project Manager
Corrective Action Section 1
Remediation and Reuse Branch

cc: Allen Debus, RRB
David Petrovski, RRB
Doug Griffin, IDEM-OLQ