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Improving Healthcare and Chemistry

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July 22, 1998

Ms. Sharon R. Cotner
Project Manager
U.S. Army Corps of Engineers
Public Information Center
9170 Latty Avenue
St. Louis, MO 63134

Re: Mallinckrodt Inc. comments on the Preliminary Draft Groundwater Characterization Report of 1997/1998 Baseline Data for the St. Louis Downtown Site, St. Louis, Missouri, May 1988

Dear Ms. Cotner:

Mallinckrodt appreciates the opportunity to review the Preliminary Draft Groundwater Characterization Report for the St. Louis Downtown Site. Our comments are attached.

Mallinckrodt will be pleased to review our comments with you and your staff and answer any questions you may have. Please contact me at 314-654-6170 if you have any questions or comments.

Sincerely,

Robert F. Boland, PE
Environmental Program Manager

cc: P. H. Duft
J. M. Frauenhoffer
J. K. Grant
G. L. Hempen, USACE (via fax)
M. L. Puett
R. Torini

Mallinckrodt Inc. Comments on the Preliminary Draft Groundwater Characterization Report of 1997/1998 Baseline Data for the St. Louis Downtown Site, St. Louis, Missouri, May 1988

Page 1, para 3: Mallinckrodt does not operate underground process piping.

Page 3, para 6: Mallinckrodt recommends that the wells which are screened in both the Upper and Lower hydrostratigraphic zones be abandoned and closed. These wells create a communication channel between the Upper and Lower Zones. Abandoning the wells will eliminate this channel and act to protect the Lower Zone. As the wells are screened in both zones, analytical results cannot be clearly attributed to either and are therefore of limited value in describing the current or future subsurface conditions.

Page 5, para 5: Revise the last sentence to state: Previous piezometric data (BNI 1990) demonstrate the absence of a direct hydraulic connection between the Upper Zone and both the Lower Zone and the Mississippi River.

Page 6, para 2: Revise the first sentence. It is the Lower Zone, not the monitoring wells completed in it, that is hydraulically connected to the Mississippi River.

Page 7, para 3: Comparison of concentration data to Secondary MCLs may be inappropriate for several reasons:

1. Background concentrations have not been determined and the appropriate corrections have not been made.
2. The Lower Zone is subject to saline groundwater intrusion from bedrock. This may result in naturally elevated inorganic concentrations.
3. The characteristics of fill give rise to potentially elevated and highly variable concentrations.
4. SMCLs are unenforceable guidelines regarding aesthetic values (taste, color, etc.) and are not appropriate measures of water quality, particularly in the absence of background reference concentrations.

Page 7, para 5: Mallinckrodt and others typically refer to the Upper Zone as a perched zone. It is essentially an accumulation of water in fill material atop a low permeability layer of floodplain alluvium. The Upper saturated zone would not exist were it not for the existence of the fill and the low permeability material beneath it. We believe this is an important characteristic of the Upper Zone and recommend that it be identified and described in the report.

Page 7, para 5: The sentence beginning "These results suggest..." is speculative and ignores the potential contribution of fill constituents to the observed concentrations of TDS and other inorganic analytes. Mallinckrodt recommends that the sentence be deleted or alternate interpretations be presented.

Page 10, para 2: Installation of one or more upgradient or off-site wells is recommended so that the background concentrations can be established and monitoring results appropriately interpreted.

Page 10, para 3: Mallinckrodt agrees that historic monitoring data (BNI 1990) substantiate the retardation of migration and lack of direct hydraulic communication between the Upper and Lower Zones.

Page 11, para 6: Insert a comment that elevated organic and inorganic concentrations may be due to the coal ash and cinders in fill. As discussed elsewhere in these comments, an upgradient background well would provide valuable information in interpreting the significance of these data.

Page 11, para 7: Mallinckrodt believes that the expected variability of constituent concentrations and the inherent variability in sampling and analytical techniques make comparisons of the two data sets speculative and potentially misleading. Evaluation of data collected in additional sampling events is required before constituent concentrations can be reliably determined and trends assessed. Mallinckrodt recommends that a statement to this effect be included in this paragraph.

Page 12, para 2: The sentence beginning "Iron was the only inorganic..." is inconsistent with the data presented in Table 4-5. Provide supporting data or delete the sentence.

Page 14, 15: Mallinckrodt believes that the groundwater analytical results, particularly those for the Lower Zone are problematic. Two specific data quality issues are of concern to Mallinckrodt: the potential that improper well installation has resulted in vertical cross contamination between the Upper and Lower Zone, and the potential that reported concentrations may represent laboratory contaminants instead of groundwater constituents. The first issue can only be addressed by abandonment and replacement of wells that straddle the Upper and Lower Zones and by performance of additional sampling events over an extended period of time. The second issue should be addressed by the completion and documentation of data validation to ensure that the specified constituents were indeed detected at the reported concentrations.

Page 16, No. 9: Revise first sentence to read: "Groundwater data from the Upper Hydrostratigraphic Zone at SLDS indicates total uranium, six VOCs, one SVOC, and six inorganic constituents above established MCLs, prior to correction for background concentrations.

Page 16: Add a conclusion before item number 6 that the Upper and Lower Zones are separated by a low permeability layer which limits hydraulic communication between the two zones and retards downward migration of constituents into the Lower Zone.

Page 16: Add a conclusion that one or more upgradient background wells are required to allow meaningful interpretation of the data.

Figure 3-2: Mallinckrodt questions whether the single water level measurement at B16W09D is sufficient to justify the curvature and closure of the contours depicted in Figure 3-2. Conventional models of groundwater flow in the alluvium would suggest that the contours would more closely parallel the river.

Table 4-3 As discussed elsewhere in these comments, meaningful interpretation of inorganic constituent concentrations cannot be performed without comparison to background concentrations. In addition, comparison to SMCLs is inappropriate.