Ashman Center
December 8, 2003

The Dow Chemical Company
Midland, Michigan 48667

Mr. Sam Nalluswami
U.S. Nuclear Regulatory Commission
11545 Rockville Pike
Rockville, MD 20852

SUBJECT: Revision 1 of the Supplement to the Decommissioning Plan

Revision 1 of the Supplement to the Decommissioning Plan (Revised Supplement) is provided in Enclosure 1. Revision 0 was submitted to NRC in a letter dated January 31, 2002. The Revised Supplement was developed after evaluating several options for addressing the technical limitations in the currently approved plan (Amendment No. 7) that have lead to excessive excavation of clean material. The cost of this excavation was exorbitant when evaluated on a risk basis and not justified by ALARA. The major technical limitations of the current plan are described below.

Basically, the sensitivity of current, industry standard, field survey methods used in accordance with Amendment No. 7 are inadequate to effectively distinguish between background and the current 2.9 pCi/g Th-232 during excavation. This problem is particularly severe in the saturated zone. Poor instrument sensitivity resulted in remediation to near background levels and the offsite disposal of significant waste volumes that were below the limit. This is shown by a review of the final status survey (FSS) results to date (covering 31 acres), where the average concentration of licensed material was only 0.3 pCi/g Th-232.

The problem was compounded by the use of standard small grab samples in remediation support and FSS. Any elevated result in a small 500 g sample would typically result in the excavation of at least several yards of additional material due to a number of field considerations such as the bucket size of standard excavators. Much of this material would be below the limit, particularly after the unavoidable mixing that occurs during excavation. The use of small grab samples is not risk-informed since it does not represent the exposure geometry encountered in post-excavation future land use scenarios. One-meter composite samples are more appropriate for this purpose.

Another characteristic of the Bay City site that caused excessive excavation was the random, volumetric, distribution and the limited percentage of the Mg-Th slag in the fill. Less than 2% of the original fill material is believed to be from Mg-Th slag, i.e., 98% of the material was not contaminated. This is can be seen graphically in Figure 8 of the Revised Supplement. The random distribution and relatively low volume of contaminated material exacerbated the problems with poor instrument sensitivity and grab samples in that when an isolated elevated area was identified, excavation continued in surrounding low contaminated areas until essentially reaching background.

The unnecessary excavation that resulted from these technical and risk-based limitations ultimately compelled TDCC to shutdown excavation and re-evaluate the existing plan due to a projected cost of $25 Million to complete the job using current methods. After shutdown, ~750 borehole samples were collected from the saturated and unsaturated zones in the remaining 9.1 acre area, for a total of 1500 samples. The borehole results were an important consideration during the development of the Revised Supplement. In addition, the results demonstrate that the residual contamination level at the Bay City site is low and support the position that significant excavation is not justified. The average concentration at the site would be 1.6 pCi/g Th-232 if

only the 30 highest concentration areas were remediated. The current methods would require much greater volumes of material to be excavated than that represented by 30 borehole samples.

The Revised Supplement contains a survey and averaging approach that is consistent with NRC approved guidance (the AAR Method) that was specifically developed to address sites with random subsurface contamination. Risk-based volumetric sampling methods are applied that reduce the affect of the technical limitations discussed above. TDCC believes that the Revised Supplement provides a reasonable solution, notwithstanding that fact that several thousand cubic yards of low concentration material will still require excavation. Using this approach, the site could be released for unrestricted use under the SDMP Action Plan criteria already approved for the site.

The changes to the Revised Supplement are summarized below. The revisions are essentially limited to Sections 3 and 4.

- Section 1 of the Supplement was not revised except for a change in the inventory calculation on the bottom of page 7. The Ra-226 1000 year in-growth calculation was deleted since it was included to support the alternate criterion calculation that has been withdrawn by TDCC.
- Section 2 was revised to include, verbatim, the information submitted to NRC on March 17, 2003 in response to RAI #2.
- Sections 3 and 4 are complete revisions that are intended to entirely supercede the original Supplement.
- Section 5 was revised to reflect the schedule for the implementation of the Revised Supplement methods.

Enclosure 2 contains responses to the NRC RAI's dated December 26, 2002. The majority of the RAI's are no longer directly applicable because they apply to the MCL-Based alternate criterion proposal that has been withdrawn. For these RAIs, TDCC's response is that the RAI is no longer applicable. There are other RAI's that TDCC concluded could still be applicable to the Revised Supplement although the exact reference or context may not directly apply to the Revised Supplement. For these RAI's, a response was provided or a reference to the most appropriate Section in the Revised Supplement was included.

Please contact me at (989) 636-0787 or David Fauver at (772) 492-0163 if you have any questions.

Sincerely,

Ben Baker

Ben Baker
Project Manager
The Dow Chemical Company
Ashman Center
4520 E. Ashman
Midland, MI 48674

cc: Duane Schmidt, NRC Rockville
David Fauver, Babcock Services
Jerry Sgro, URS Corporation