

April 4, 2001

Ben Baker
Project Manager
The Dow Chemical Company
9008 Bldg., Office 154
4520 East Ashman
Midland, MI 48674

SUBJECT: REPORT OF THE MEETING HELD TO DISCUSS APPROACH TO
DECOMMISSIONING OF THE DOW CHEMICAL COMPANY BAY CITY, MI,
SITE

Dear Mr. Baker:

On March 27, 2001, U.S. Nuclear Regulatory Commission staff met with representatives of the Dow Chemical Company (Dow) to discuss revision to the decommissioning plan at the Dow site in Bay City, MI. A report of this meeting is enclosed.

If you have any questions concerning this report, please contact me at (301) 415-6694.

Sincerely,

/RA/

M. (Sam) Nalluswami, Project Manager
Facilities Decommissioning Section
Decommissioning Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Meeting Report

cc: D. Minnar, MDEQ

Docket No.: 040-00017
License No.: STB-527

MEETING REPORT

DATE: March 27, 2001

TIME: 8:30 a.m. - 11:30 a.m.

PLACE: U. S. Nuclear Regulatory Commission (NRC)
11545 Rockville Pike
Rockville, MD 20852
Room: O-4B6

PURPOSE: To discuss a conceptual framework for amending the approved Decommissioning Plan for the NRC License No. STB-527 and its key elements as applicable to the Dow Chemical Company's (Dow's) Bay City Site Decommissioning Management Plan (SDMP) site in Bay City, Michigan.

ATTENDEES: See Attachment A

BACKGROUND

The Dow SDMP site originally included two locations: Midland and Bay City, MI. The decommissioning plan (DP) for this license, which addressed both locations, was approved in July 1996. The unrestricted release criteria approved in this DP are those of the "Action Plan to Ensure Timely Cleanup of Site Decommissioning Management Plan Sites" (SDMP Action Plan) (57 FR 13389). Dow representatives explained that Dow has removed, packaged and sent over 1000 railroad cars of waste to Envirocare since 1996. Of the 364 remaining uncleared subgrids at the Bay City site, 80 are currently being remediated for the year 2001. The decommissioning of the Bay City site has been complicated by a much larger volume of subsurface contamination than originally estimated, the presence of wetlands, winter flooding, a significant amount of contaminated material below the water table (i.e., in the saturated zone), and selection of an appropriate methodology using the groundwater pathway to demonstrate compliance with the unrestricted release criteria for contamination in the saturated zone. Dow indicated that the remaining area to be remediated is about 9.1 acres (about 25%) of the original Bay City site.

DISCUSSION

The attached briefing materials (Attachment B) and conceptual framework (Attachment C) focused the discussion.

Dow has taken 335 geoprobe soil borings/samples to determine subsurface activity and only 7 samples have shown concentrations of Th-232 in excess of 25 pCi/g. The soil borings were taken up to the till clay (aquitard) (10 to 11 feet deep). The groundwater aquifer is about 60 to 70 feet below the aquitard. According to Dow, random subsurface contamination in the saturated zone initially discovered in 1997, was not contemplated in the original DP. Thus, contamination exists in both the saturated and unsaturated zones with a water table in this area that is shallow (2 to 3 feet below the surface).

Enclosure

Dow discussed a conceptual approach to establish new unrestricted use criteria for the saturated zone that combines the SDMP exposure rate requirement and the U.S. Environmental Protection Agency's (EPA's) proposed drinking water standard of 20 pCi/L for Ra-226 in groundwater to achieve ALARA (**Note:** EPA's final limit is 5 pCi/L). Surface exposure levels would be maintained below 10 μ R/hr (above background) after an area was remediated, backfilled, and regraded. In order to determine whether an excavated area was adequately remediated, action levels for exposure rates in excavated areas would be established (using the MicroShield code) that correlate to an exposure rate of 10 μ R/hr (above background) at the surface after area regrading. Dow intends to estimate the future 1000 year ingrowth of the concentration Ra-226 in groundwater by applying the site specific ratio of Th-232 in soil (pCi/g) to Ra-228 in water (pCi/L) to estimated Th-230 levels. Dow explained that since the EPA drinking water standard for Ra-226 in groundwater would be used as a release criterion, dose modeling involving occupancy scenarios and pathway analysis (e.g., RESRAD) did not need to be performed. Also, it is Dow's belief that, over time, there is minimal leaching of radium from the slag into the groundwater. In addition, Dow provided a flowchart (included in Attachment C) of the proposed decommissioning approach for the remaining portions of the Bay City, Michigan, site. Dow requested NRC approval of this conceptual framework as a way to demonstrate compliance with the unrestricted release criteria. If NRC agrees with the conceptual approach, Dow will prepare and submit a revised DP incorporating this approach.

Dow stated that it is permitted to backfill the wetlands and regrade to original contour after excavation and remediation. Dow has projected the expense to clean up these remaining 9.1 acres as approximately \$30 million or more, using the same clean up method as for the previously remediated 31.33 acres. According to Dow, full scale excavation is expected to result in no further risk reduction (i.e., not ALARA).

Dow is proposing 10 pCi/g concentration in soil for both saturated and unsaturated zones and 20 pCi/L drinking water criteria in the saturated zone. The revised DP to be submitted will include all Sections of the DP except the Health and Safety Plan which may be included by reference. If the cost estimate changes, new financial assurance information will be submitted by Dow.

Summary of proposed conceptual approach:

- SDMP Action Plan exposure rate of 10 μ R/hour (above background) at 1 meter from the surface
- Calculated compliance with EPA's drinking water standard of 20 pCi/L in the saturated zone at 1000 years.
- 10 pCi/g thorium concentration limit for surface and subsurface soils

ACTIONS

Dow requested NRC's feedback on the conceptual approach by April 30, 2001.

Attachments:

- A. Meeting Attendees
- B. Briefing Materials
- C. Conceptual Framework

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