August 14, 2001

Ben Baker
Project Manager
The Dow Chemical Company
9008 Bldg., Office 154
4520 East Ashman
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SUBJECT: REPORT OF THE MEETING AND SITE VISIT ON JULY 20, 2001, TO DISCUSS APPROACH TO DECOMMISSION THE DOW CHEMICAL COMPANY BAY CITY, MI, SITE

Dear Mr. Baker:

On July 20, 2001, U.S. Nuclear Regulatory Commission staff met with the representatives of the Dow Chemical Company (Dow) at the Bay City site to discuss an alternate approach to decommission this site. The Dow staff conducted a tour of the site for the NRC staff. 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: July 20, 2001

TIME: 9:00 a.m. - 1:00 p.m.

PLACE: Dow Chemical Company's Bay City Site
Bay City, Michigan

PURPOSE: Tour Dow Chemical Company's (Dow's) Site Decommissioning Management Plan (SDMP) site in Bay City, Michigan, and discuss the approach for decommissioning of the site.

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). The initial area of the thorium slag pile at Bay City site was about 1.7 acres around the southwest corner of the site. According to Dow staff, thorium contaminated materials were randomly dumped, spread and pushed with bulldozers into depressions/holes in the ground during the early 1950s. According to Dow staff, random subsurface contamination in the saturated zone initially discovered in 1997, was not included in the DP approved in 1996. 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).

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. Material has been continually removed from this site since 1996. Of the 364 remaining uncleared subgrids at the Bay City site, 78 (4.8% of the total) are currently being remediated for the year 2001. Dow indicated that the remaining area to be remediated is about 9.1 acres (about 25%) of the original Bay City site.

On March 27, 2001, NRC staff met with Dow representatives to discuss a revision to the decommissioning plan. During the meeting, Dow presented a conceptual approach for completing the decommissioning at the Bay City site. A report of this meeting was issued on April 4, 2001. NRC commented on the conceptual approach in a letter dated May 29, 2001.

Enclosure

DISCUSSION

The discussions were focused on the attached briefing materials (Attachment B). Dow's revised conceptual approach is summarized on Attachment C. Dow's proposed final survey protocol was presented (Attachment D) and discussed.

Two critical path issues were raised. First, Dow requested if additional saturated zone soil characterization will be required. In response, NRC staff requested that Dow submit its sample data for review. Second, Dow asked if leach testing would be required. Leaching of thorium from the slag was an issue raised in NRC's May 29, 2001, letter. NRC agreed to provide a definitive answer to this question.

Dow noted that radionuclide concentrations are reported without background subtracted. NRC staff suggested that Dow take background measurements at appropriate locations. For example, the Ra-228 concentrations in groundwater (Slide 11) may represent background. Such a demonstration may support Dow's position that contamination is not leaching from the slag.

Dow is planning to submit a supplement to the approved DP by September 2001 and is hoping to complete surface and subsurface remediation and verification in 2003.

Following the meeting, Dow representatives escorted NRC staff on a tour of the site.

ACTIONS

Dow

- Provide saturated zone soil sample data. [Post Meeting Note: Data was e-mailed on July 22, 2001]

- Submit supplement to the DP by September 2001.

NRC

- Provide feedback regarding any additional sampling.

- Provide feedback on the need to conduct leach testing of thorium from slag.

- Provide feedback on the 1:3 ratio of Th-232 to Th-230.

Attachments:
A. Meeting Attendees
B. Briefing Materials
C. Summary of Conceptual Approach
D. Proposed Final Survey Protocol

MEETING ATTENDEES

Topic: Supplement to Decommissioning Plan for Dow Chemical Company's Bay City Site

Date: July 20, 2001

NAME	AFFILIATION	PHONE NUMBER
Bob Nelson	NRC/NMSS/DWM	301-415-7298
Stewart Schneider	NRC/NMSS/DWM	301-415-7765
Dave Fauver	RSI	240-694-0167
Ben Baker	Dow	517-636-0787
Sam Nalluswami	NRC/NMSS/DWM	301-415-6694
Corey McDaniel	EOP Group	202-833-8940
Jerry Sgro	Dow	517-638-0342
Dave Minnar	MDEQ	517-335-8197

Attachment A

DOW'S CONCEPTUAL APPROACH TO DECOMMISSIONING
REVISED DECOMMISSIONING CRITERIA

Surface Soils (Unsaturated Zone)

- 10 pCi/g total thorium

Subsurface Soils (Saturated Zone)

- Use the Site Decommissioning Management Plan Action Plan unrestricted use exposure rate criteria of 10 μR/hr (above background) after an area has been remediated, backfilled and regraded in lieu of the Action Plan criteria of 10 pCi/g total thorium.
  - According to the Action Plan, the soil release criteria were set so that no individual would receive an external dose in excess of 10 μR/hr above background
  - Other than groundwater, direct exposure is the only credible pathway of exposure for this site
    - Because the area is a wetland, the most credible reuse scenario is recreational.
    - Any other use would require additional fill, thereby further shielding the user

Groundwater

- Demonstrate compliance with EPA's proposed drinking water standard of 5 pCi/L for Ra-226/Ra-228 in groundwater by modeling the future ingrowth (to 1000 years) of Ra-226 from the decay of Th-230
  - There is currently no Ra-226 in the groundwater.
  - The ratio of Th-232 in the saturated zone (pCi/g) to the Ra-228 concentration in surrounding groundwater (pCi/L) will be used as the surrogate ratio for the future Th-230 pCi/g to Ra-226 pCi/L ratio after 1000 years.
  - The Th-230 in the saturated zone will be limited to the concentration that is projected to result in 5 pCi/L Ra-226/Ra-228 in water after 1000 years in growth.

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