U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 040-00017/94001(DRSS)

License No. STB-527

Docket No. 040-00017

Facilities: The Dow Chemical Company
Midland, Michigan

The Dow Chemical Company
Bay City, Michigan

Inspection Conducted: March 30, 1994

Inspectors: M F Kurth
M. F. Kurth
Radiation Specialist

5/4/94
Date

D. G. Wiedeman
D. G. Wiedeman
Senior Health Physicist

5/4/94
Date

Approved By: George M. McCann
G. M. McCann, Chief
Fuel Facilities and Decommissioning
Section

5/6/94
Date

Inspection Summary

Inspection on March 30, 1994 (Report No. 040-00017/94001(DRSS))
Areas Inspected: This was a routine inspection to determine exposure rates of the thorium storage sites and areas adjacent to the thorium storage sites on The Dow Chemical Company property in Midland and Bay City, Michigan. Also, the inspection included a review of the licensee's access controls to the thorium storage sites, the proper postings, and verification that the thorium storage sites are not eroding onto areas adjacent to the storage site.
Results: The NRC inspectors did not identify any exposure rate measurements above natural background in those areas adjacent to the thorium storage sites. The proper access controls are in place, along with the proper postings. Also, visual evidence and natural background exposure rate measurements of areas adjacent to the storage sites demonstrated that the sites are not eroding.

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DETAILS

1. Persons Contacted

*Jeffrey Feerer, Ph.D., Senior Environmental Specialist, Environmental Services
Robert Walker, Supervisor of Site Services, Bay City Plant

*Indicates those present at the exit meeting held on March 30, 1994.

2. Background

The Dow Chemical Company (Dow) was issued a license by the Atomic Energy Commission (AEC) in 1962 to use thorium metal compounds for the production of thorium-magnesium alloys at two locations in Michigan, Bay City and Midland. In 1973, the license was amended to authorize storage only or transfer of metal or process sludge to authorized recipients. Licensed operations resulted in the production of slag material and contaminated soil containing thorium that now require disposal.

Waste material and contaminated soil are being stored at the Midland and Bay City sites. Dow has proposed to dispose of all the contaminated material from its Midland and Bay City sites at its Salzburg hazardous waste landfill, designed in accordance with the requirements of the Resource Conservation and Recovery Act (RCRA) and located in Midland, Michigan.

The Bay City storage site is a fenced in area that is owned and controlled by Dow. Dow estimates that 30,600 cubic meters of material requiring disposal is located at the Bay City site.

The Midland storage site contains an estimated volume of 9,200 cubic meters of thorium waste material. The material is covered by a 0.3 meter to 0.6 meter tar cap.

3. Independent Measurements

The inspectors conducted radiological surveys in and around the thorium storage areas at the Bay City and Midland sites. The survey instruments used were a Ludlum Model No. 19 microR meter, last calibrated August 10, 1993, and a Victoreen Model No. 190 with attached pancake probe, last calibrated February 14, 1994. The inspectors did not identify any areas above natural background (10 microroentgen per hour (μR/hr) or 2.58 nanocoulombs/kilogram/hr (nC/kg/hr)) in the areas surrounding the thorium storage sites.

At the Bay City site, the highest reading of the thorium storage area was approximately 2000 μR/hr (516.0 nC/kg/hr) on contact. The average readings were from 20 μR/hr (5.16 nC/kg/hr) to 50 μr/hr (12.9 nC/kg/hr) on contact.

The highest reading at the Midland thorium storage site was 300 μR/hr (77.4 nC/kg/hr) on contact. The average readings were from 10 μR/hr (2.58 nC/kg/hr) to 100 μR/hr (25.8 nC/kg/hr) on contact.

No violations of NRC requirements were identified.

4. Access Control

The Midland thorium storage site is a rectangular plot of land on Dow controlled and fenced property. Access to the storage site is controlled on three sides by a wooden security fence. The forth side is roped off by a series of plastic chain links.

The Bay City thorium storage site is controlled by a locked gate and chain link fence. Also, an area adjacent to the fenced-in area, an area which is part of the thorium storage site, is roped-off.

No violations of NRC requirements were identified.

5. Posting

At both the Bay City and Midland thorium storage sites, the proper postings are utilized. Along all sides of the Bay City and Midland thorium storage sites, yellow and magenta colored signs are placed on the rope, plastic chain link, wooden fence, and chain link fence which read, "Caution Radioactive Materials" and "Caution Radiation Area." Several signs are posted on each side of the access controlled areas.

No violations of NRC requirements were identified.

6. Exit Meeting

At the conclusion of the inspection on March 30, 1994, the inspectors met with Dr. Feerer. A summary of the areas inspected, and the forthcoming letter were discussed. The Dow Chemical Company personnel did not indicate that any information provided during the inspection as proprietary.