

October 12, 1995

Dow Chemical Company  
ATTN: Mr. Hayden Schoen  
Environmental Manager  
Associated Manufacturing  
1261 Building  
Midland, MI 48667

SUBJECT: NRC INSPECTION (REPORT NO. 040-00017/95001(DNMS)) OF DOW CHEMICAL  
COMPANY'S MIDLAND AND BAY CITY, MICHIGAN THORIUM WASTE STORAGE  
SITES

Dear Mr. Schoen:

This refers to the routine safety inspection conducted by Messrs. G. McCann and J. Parrott on September 19, 1995, of activities, authorized by NRC License No. STB-527. At the conclusion of the inspection, the findings were discussed with those members of your staff identified in the enclosed report. Messrs. McCann and Parrott also discussed the preliminary inspection findings with you on October 11, 1995.

Areas examined during the inspection are identified in the attached report. The inspection consisted of a selective examination of procedures and representative records, observations, independent measurements, and interviews with personnel.

Based on the results of this inspection, the NRC has determined that a violation of NRC requirements occurred. The violation is cited in the enclosed Notice of Violation (Notice). A written response is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, the enclosure, and your response to this letter will be placed in the NRC Public Document Room (PDR). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without protection.

The responses directed by this letter and the enclosed Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, Public Law No. 96-511.

Dow Chemical Company

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We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Original Signed By

J. W. McCormick-Barger, Chief  
Decommissioning Branch

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

Enclosures:

1. Notice of Violation
2. Inspection Report No.  
040-00017/95001(DNMS)

cc w/encl: D. Minnaar, Michigan Department of Public Health  
M. Weber, DWM  
P. Goldberg, NMSS

bcc w/encl: J. Parrot, NMSS  
PUBLIC (IE07)

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NAME	McCann <i>sum</i>		Parrott <i>Telephone</i>			McBarger <i>gm 82</i>			
DATE	10/11/95		10/11/95	<i>10/05/95</i>		10/12/95			

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## NOTICE OF VIOLATION

Dow Chemical Company  
Midland, Michigan

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

During an NRC inspection conducted on September 19, 1995, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600 (60 FR 34381; June 30, 1995), the violation is listed below:

1. 10 CFR 20.1801 requires, in part, that each licensee secure from unauthorized removal or access, licensed materials which are stored in controlled or unrestricted areas.

Contrary to the above, on September 19, 1995, the licensee failed to secure from unauthorized removal or access, licensed materials which were stored in controlled or unrestricted areas. Specifically, the licensee failed to maintain gates and the perimeter security fence, located around controlled and contaminated areas, in such a manner as to preclude unauthorized removal or access to the licensed materials.

This is a Severity Level IV violation.

Pursuant to the provisions of 10 CFR 2.201, Dow Chemical Company is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region III, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Because your response will be placed in the NRC Public Document Room (PDR), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without reduction. However, if you find it necessary to include such information, you should clearly indicate the specific information that you desire not to be placed in the PDR, and provide the legal basis to support your request for withholding the information from the public.

Dated at Lisle, Illinois  
this 12 day of October, 1995

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 040-00017/94001(DNMS)  
Docket No. 040-00017

Priority I  
License No. STB-527

Licensee: Dow Chemical Company  
1261 Building  
Midland, MI 48667

Inspection Date: September 19, 1995

Inspection Locations: The Dow Chemical Company  
Midland, Michigan

The Dow Chemical Company  
Bay City, Michigan

Inspector: George M. McCann  
George M. McCann  
Senior Radiation Specialist

10/11/95  
Date

Inspector: Jack D. Parrott  
Jack D. Parrott  
Project Manager

10/11/95  
Date

Approved By: J. W. McCormick-Barger  
J. W. McCormick-Barger, Chief  
Decommissioning Branch

10/12/95  
Date

Inspection Summary

Inspection on September 19, 1995 (Report No. 040-00017/95001(DNMS))

Areas Inspected: This was a routine inspection to conduct radiation surveys at 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 Dow staff were cooperative with NRC inspectors and in general it was determined that adequate procedures were in place to assure adequate maintenance and security of the site. However, NRC inspectors did identify one violation of NRC requirements and one inspection followup item as follows:

Violation:

Failure to secure radioactive material against unauthorized removal and access, as required by 10 CFR 20.1801; Section III of this report (040-00017/95001-01).

Inspection Followup Item:

Areas of elevated background radiation (approximately ten times ambient background radiation levels) were identified outside the "hot-pile"; Section V of this report (IFI No. 040-00017/95001-02).

## DETAILS

### 1. Persons Contacted

\*H. Schoen, Environmental Manager, Associated Manufacturing, Dow Chemical Company (Dow)

C. Moore, Facilities Manager, Site Services (Bay City Site), DowBrands, Dow

\*J. Grappin, CHP, Radiation Safety Officer, Dow

\*Indicates those present at the exit meeting held on September 19, 1995.

### 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 primary storage site (referred to Dow staff as the "hot-pile") was a fenced in area. It was estimated that 30,600 cubic meters of material requiring disposal was located at the Bay City site. The material had been covered with an asphalt cover.

The Midland storage site contained an estimated volume of 9,200 cubic meters of thorium waste material. The thorium storage area was covered with a soil and clay cover.

### 3. Access Control

The Midland thorium storage site was a rectangular plot of land on Dow controlled and fenced property. Access to the storage site was controlled on three sides by a wooden security fence. The fourth side was roped off by a series of plastic chain linked fence. Additionally, the area was contained within a main security fence which surrounds the entire Dow Midland site. The site was also under the control and observation of a 24 hour Dow security force. Access to the site can be obtained only by passing through a security guard post, registering with the guard and being accompanied by a Dow employee (if the visitor was a non-Dow employee).

The Bay City thorium storage areas are surrounded by the Dow Brands manufacturing facilities. Access to the storage sites are controlled by the company's security fence and security force. However, one side of the site is bordered by the Saginaw River which is not fenced. Therefore, boaters could possibly gain access to the storage areas.

The Bay City thorium "hot-pile" storage site was controlled by a locked gate and chain link fence. Also, areas immediately adjacent to the fenced-in "hot-pile" area were roped off with plastic chain-link barriers. The areas next to the "hot-pile" were small localized contaminated areas which were covered with soil, grass and weeds. NRC inspectors noted that the asphalt cover had begun to breakup, due to weathering.

NRC inspectors determined during the tour of the storage site that the gate to the "hot-pile" had developed a gap sufficient to allow unrestricted access to the pile. Additionally, tall marsh grass and weeds (approximately 4-6 feet tall) had grown up in and around at least one third of the security fence. NRC inspectors were unable to view this portion of the fence due to the weeds. Therefore, it could not be determined if this portion of the fence was adequate to prevent unrestricted access.

10 CFR 20.1801 requires that the licensee secure from unauthorized removal or access licensed materials that are stored in controlled areas. Contrary to this, Dow did not adequately secure from unauthorized removal or limit access to radioactively contaminated soil located in the restricted areas of the Dow "hot-pile" thorium storage area. The failure of the licensee to adequately secure radioactive materials from unauthorized removal or limit access is a violation of NRC requirements (Violation 040-000017/95001-01).

One violation of NRC requirements was identified.

4. Posting

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

No violations of NRC requirements were identified.

5. Independent Measurements

The inspectors conducted radiological surveys in and around the thorium storage areas at the Bay City and Midland sites. The survey instrument used was a Ludlum Model No. 3 (NRC Tag. No. 045631, calibrated June 15, 1995). The inspectors survey findings identified an area outside the Bay City "hot-pile" which was approximately 10 to 15 (500 to 750 counts

per minute (cpm)) times ambient background along an area of the fence 15 - 25 feet long. Ambient background for the above survey meter was 40-50 cpm. The NRC inspectors' other survey findings were in agreement with the previous NRC inspection.

NRC inspectors discussed their concern regarding the identified radiation levels outside the "hot-pile" fenced area. The licensee agreed to re-evaluate this area using an appropriate exposure rate meter to determine compliance with 10 CFR 20.1302, "Compliance with Dose Limits for Individual Members of the Public", Section 20.1302(b)(2). The NRC will continue to monitor this issue during future inspections and consider this an inspection followup item (IFI No. 040-00017/95001-02).

No violations of NRC requirements were identified.

6. Licensing Site Visit

On September 19, 1995, the NRC staff met with Dow personnel (see Section I of this report for a list of attendees), to discuss Dow's plans regarding their submittal of additional information (health and safety plan) to supplement a license amendment request. The license amendment request was to bury the thorium contaminated material from the Midland and Bay City sites at the Salzburg landfill. Dow personnel indicated that this information would be submitted by October 1995.

7. Exit Meeting

At the conclusion of the inspection on September 19, 1995, the inspectors met with those individuals identified in Section I of this report to discuss the preliminary findings of the NRC inspectors. The Dow Chemical Company personnel did not indicate any information provided during the inspection as proprietary.