

August 20, 2001

James E. Adams
Radiation Safety Officer
Mallinckrodt Inc.
Mallinckrodt and Second Street
P.O. Box 470158
St. Louis, MO 63147

SUBJECT: NRC INSPECTION REPORT (IR 04006563/2001-001 (DNMS)) -
MALLINCKRODT CHEMICAL, INC.

Dear Mr. Adams:

This refers to the routine inspection conducted at your former CT Production facilities located at Mallinckrodt and Second Street, St. Louis, Missouri on July 25, 2001. Preliminary inspection findings were also discussed with you on August 15, 2001.

As a result of the inspection performed on July 25, 2001, the enclosed NRC Form 591, SAFETY AND COMPLIANCE INSPECTION is issued for License No. STB-401. You will note, as discussed during our August 15, 2001 telephone conversation, that no violations of NRC requirements were identified. It is not necessary that you acknowledge receipt of this form.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the *Publically available records (pars) component of NRC's document system (ADAMS)*. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

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

Sincerely,

/RA/

George M. McCann Senior Radiation Specialist
Decommissioning Branch

Docket No. 040-06563
License No. STB-401

Enclosure: NRC Form 591

cc: J. Buckley, DWM
B. Jorgensen, RIII

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OFFICE	RIII	RIII	C			
NAME	McCann:js	Jorgensen				
DATE	08/ /01	08/2001				

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SAFETY AND COMPLIANCE INSPECTION

1. LICENSEE Mallinckrodt, Inc. P.O. Box 470158 Mallinckrodt & Second St.	2. REGIONAL OFFICE REGION III US NUCLEAR REGULATORY COMMISSION 801 WARRENVILLE ROAD LISLE IL 60532-4351
REPORT NUMBER(S) 3. DOCKET NUMBER(S) 4. LICENSE NUMBER(S) 5. DATE(S) OF INSPECTION 04006563 STB-401 07/25/2001	

LICENSEE:
 The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

1. Based on the inspection findings, no violations were identified.

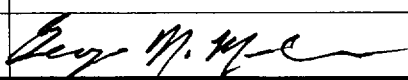
2. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, NUREG-1600, to exercise discretion, were satisfied.

_____ non-cited violation(s) were discussed involving the following requirement(s):

3. During this inspection certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited. This form is a NOTICE OF VIOLATION, which is required to be posted in accordance with 10 CFR 19.11.

STATEMENT OF CORRECTIVE ACTIONS

I hereby state that, within 30 days, the actions described by me to the Inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE			
NRC INSPECTOR	George M. McCann		08/16/01

MATERIALS DECOMMISSIONING INSPECTION FIELD NOTES

Region III

Inspection Report No. 040-06563/2001-001(DNMS)) License No. STB-401

Docket No. 040-06563

Licensee: Mallinckrodt Incorporated Licensee Contact: James E. Adams, Radiation Safety Officer

Telephone No: 314-654-1212

Date of Amendment: July 12, 1993

Last Amendment No. 2 Program Code: 03620

Date of Last Inspection: November 21, 1996

Date of This Inspection: July 25, 2001

Date of Next Inspection: To Be determined, based on approval of Decommissioning Plan

Type of Inspection: (X) Announced () Unannounced
(X) Routine () Special
() Initial Decomm. () Reinspection of Decomm.
Level of Inspection: (X) Normal () Reduced () Extended

Brief Description of history on License/Facility: Mallinckrodt was first issued License No. STB-401 on June 26, 1964, for the processing of ore to extract Columbium and Tantalum (CT). The license authorized the possession of thorium and uranium in natural or synthetic ores up to 30,000 kg of each. The license was active, utilizing the Plant 5 facilities until October 1985 when processing of ores was discontinued and the facility was placed in a standby status. The licensee's contractor packaged and shipped drums containing processing residues to an authorized radioactive waste disposal facility and conducted a general cleanup of Plant 5 buildings during 1992. The cleanup consisted of removing and cleaning debris from the floor of the buildings and drumming the material for waste disposal. Contaminated equipment was either packed for disposal or left in the buildings to be addressed during future decommissioning activities. Radiological characterization of the Plant 5 area was conducted from September 1994 to March 1995.

The licensee submitted a Decommissioning Plan (DP) for the CT Decommissioning Project (CTDP) to the NRC on November 11, 1997. The CTDP Plan will be submitted in two parts because the C-T decommissioning project will be conducted in two phases. Phase 1 will decommission the buildings and equipment to the extent that whatever remains on-site will be released for unrestricted use based on an industrial use scenario. Phase 2 will complete the decommissioning of the building slabs and foundations, paved surfaces, and all subsurface materials to the extent that they can be released for restricted use.

In addition to the CTDP, remediation of radiological constituents in other areas of the St. Louis Plant is being performed by the U.S. Army Corps of Engineers (USACE) under the Formerly Utilized Sites Remedial Action Program (FUSRAP).

The licensee submitted a January 18, 2001 revision to its initial Phase 1 submission. In addition to this routine inspection, general discussion with the licensee and its consultants regarding the CTDP Plan was conducted.

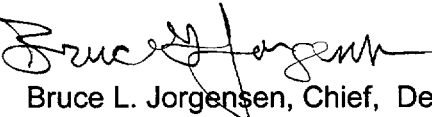
Brief Description of Findings and Actions: Licensee appeared to be in compliance with their license commitments.

Summary of Findings and Action:

- No violations cited, regional letter issued
- Violation(s), clear NRC Form 591 issued
- Violation(s), regional letter issued

Follow up on previous violations Not applicable

Inspector: G.M. McCann, Senior Radiation Specialist Date: August 16, 2001
J. Buckley, Project Manager, Division of Waste Management

Approved:  Date 8/17/01
Bruce L. Jorgensen, Chief, Decommissioning Branch

1. **SUMMARY OF DECOMMISSIONING STATUS**

- A. Licensee ceased operational program. (X)Y () N
- B. Required decommissioning financial assurance mechanisms in place. (X) Y () N
- C. Decommissioning Plan (DP) required. (X) Y () N
- D. Licensee final survey required (X) Y () N
- E. NRC confirmatory survey required. (X) Y () N
- F. NRC closeout inspection required. (X) Y () N
- G. Licensee doing decommissioning planning and preparation before dismantlement. (X)Y () N
- H. Licensee actively remediating site. () Y (x) N
- I. Licensee completed site remediation. () Y (X) N

2. **INSPECTION OF KEY DECOMMISSIONING ACTIVITIES**

This area not completed since no decommissioning activities other than surveillance and maintenance were being performed.

A. LICENSEE ACTIVITIES INSPECTED BEFORE DISMANTLEMENT

- 1. Licensed material used during operations has been removed from site. () Y (X) N
- 2. Facility license conditions are in place and met by licensee. () Y () N
- 3. Site security and control of contaminated material being maintained in compliance with 1801 and 20.1802. () Y () N
- 4. Support systems and services (e.g., lighting, water supply) are in place () Y () N
- 5. Decommissioning schedules are consistent with timeliness requirements in 10 CFR 30.36, 40.42, and 70.38. () Y () N
- 6. Licensee's record keeping is consistent with 10 CFR 30.35, 40.36, and 70.25. () Y () N
- 7. Financial assurance requirements are being maintained in accordance with 10 CFR 30.35, 40.36, and 70.25. () Y () N N/A
- 8. Licensee is conducting site characterization in accordance with applicable radiation protection procedures. () Y () N
- 9. Construction of new site features (e.g., roads, rail spurs, staging areas, sediment control ponds) conforms to DP and does not compromise health

and safety of workers and public. () Y () N
N/A

10. Licensee activities conform to specific license conditions and licensee programs and procedures. (X) Y () N

11. Other licensee activities: () Y () N

Basis for Findings: **This area was not reviewed during this inspection.**

B. LICENSEE ACTIVITIES INSPECTED DURING DECONTAMINATION, DISMANTLEMENT, AND SITE REMEDIATION

1. Site security and control of contaminated material being maintained in compliance with 10 CFR Part 20. () Y () N

2. Decontamination and dismantlement of structures are being performed consistent with DP and sound industry practice (structures include buildings, utilities, treatment lagoons, etc.). () Y () N

3. Decontamination and remediation of the following are being performed consistent with DP and sound industry practice:

- a. Soil. () Y () N
- b. Sediment. () Y () N
- c. Surface waters. () Y () N
- d. Groundwater. () Y () N
- e. Other mediums: **(incinerator ash)** () Y () N
- f. Ground water is being monitored () Y () N

4. Licensee release and disposal of decommissioning wastes are consistent with DP and approved by NRC for:

a. Liquid wastes (e.g., groundwater, surface water, liquid from treatment ponds, process liquids). () Y () N

b. Solid wastes (e.g., building materials, process and other facility equipment, concrete rubble, soil). () Y () N

c. Other wastes: () Y () N

5. Temporary, onsite storage of low-level radioactive wastes from decommissioning meets license conditions and guidance in IP 84890. () Y () N

6. Packaging and shipment of radioactive waste materials meet requirements in 40 CFR Parts 173-178 and 10 CFR Part 71. () Y () N

7. Restoration of site - Licensee has restored site to meet license conditions and NRC-approved plans. () Y () N

Basis for Findings: **This area was not reviewed during this inspection.**

C. LICENSEE ACTIVITIES INSPECTED AFTER COMPLETION OF SITE REMEDIATION

1. Licensee has submitted NRC Form 314 for inspection licensed material in accordance with 10 CFR 30.36, 40.42, and 70.38. () Y () N
2. Licensee's final survey program is acceptable (see Appendix B for inspection items for final Surveys). () Y () N
3. NRC confirmatory survey performed. () Y () N
4. Site maintenance activities (if any, for restricted use) conform to license conditions and NRC-approved plans and are in place and functional. () Y () N

Basis for Findings: **This area was not reviewed during this inspection.**

3. **INSPECTION OF STANDARD HEALTH AND SAFETY AREAS FROM THE OPERATIONAL INSPECTION PROGRAM**

A. GENERAL OVERVIEW

- A. Describe the licensee's decommissioning organizational structure:
- B. Licensee is performing decommissioning activities in compliance with DP. () Y () N N/A
- C. Licensee is performing decommissioning activities in compliance with its approved DP. () Y () N N/A
- D. Licensee has implemented procedures for the decommissioning activities identified in the DP. () Y () N N/A
- E. The RSC and RSO fulfill license requirements to deal with all decommissioning activities. () Y () N N/A

Basis for Findings: **Inspector observations. The licensee's decommissioning plan has not been approved yet. The license does not require a radiation safety committee.**

B. FACILITIES

1. Describe, from field observation, the licensee-identified facilities and outdoor areas to be decommissioned: **the facilities are as described by the licensee in previous correspondence to the NRC. The licensee has erected a security fence around the DT Buildings, effectively securing the areas.**
2. The licensee's remediation plan includes all the contaminated facilities and areas onsite and offsite. (X) Y () N
3. All essential systems and services (e.g., electrical power, water supply, communications systems) are in place and functional for the planned decommissioning activities (X) Y () N
4. Licensee's emergency plan is in place and operative for the duration of decommissioning. () Y () N N/A

5. For complex sites needing site characterization, describe the key site characterization activities to be performed by the licensee to determine the nature and extent of contamination. **The licensee's characterization has been thorough, and reviewed by the NRC HQ Project Manager and Health Physicist.**

6. Licensee's characterization activities performed in conformance with good industry practice. **THIS AREA NOT INSPECTED DURING THIS INSPECTION.** () Y () N

Basis for Findings: **Inspector observations.**

C. EQUIPMENT AND INSTRUMENTATION

1. Survey instruments are applicable to contaminants of interest. (X) Y () N

2. Use of survey instruments appropriate for site. (X) Y () N

Basis for Findings: **Inspector observation. The Inspector observed a Health Physics Technician perform an exit survey of personnel exiting the CT Plant. The instrument was appropriate, timely calibrated, and used correctly.**

D. MATERIALS

1. Radioactive materials licensed during operations have been removed offsite; residual quantities conform to license conditions. () Y () N

This area not inspected.

2. Security and control of licensed materials, including contaminated areas, is being maintained. (X) Y () N

Basis for Findings: **inspector observations.**

E. TRAINING

1. Licensee has developed training program for new decommissioning activities (e.g., demolition of structures, excavation of soil); program is adequate. () Y () N

2. Training program being effectively implemented. () Y () N

Basis for Findings: **This area not reviewed.**

F. AREA. RADIATION SURVEYS AND CONTAMINATION CONTROL

1. Area surveys are being performed in areas being decommissioned () Y () N N/A

2. Where active remediation (e.g., demolition of structures, excavation of soil) is being performed, radiation levels in unrestricted areas do not exceed 2 mrem in any one hour. () Y () N

Basis for findings: **This area not inspected.**

G. RADIATION PROTECTION

- 1. The licensee's approved health physics program is being implemented in the field for new decommissioning activities. **DP not approved yet.** () Y () N
- 2. Site security and control of contaminated material are in compliance with 10 CFR 20.1801 and 20.1802. (X) Y () N*

Basis for Findings: Inspector Observations. Security and postings met regulatory and license requirements.

H. RADIOACTIVE WASTE MANAGEMENT/EFFLUENTS/ENVIRONMENTAL MONITORING

- 1. Offsite disposal of decommissioning wastes conforms to free release criteria and disposal site requirements. () Y () N
This area not reviewed. DP not approved yet
- 2. All new effluent releases conform to DP and applicable regulations. () Y () N
DP not approved yet
- 3. The licensee's environmental monitoring program is being implemented in conformance with the Dand all applicable limits are being met. () Y () N
DP not approved yet
- 4. Temporary storage/staging areas for radioactive wastes from building demolition, equipment dismantlement, soil excavation, etc., are adequately posted and protected. (X) Y () N

Basis for Findings: Inspector observations. One issue was identified. The licensee indicated that they were going to use the Rail System currently being used by the Army Corp of Engineers to ship FUSRAP materials. This rail shipping and packaging is covered under a separate NRC license. The licensee will need to amend their license to cover the operation, or transfer the materials to the contractor who will need to process the waste under their license.

I. RECORD KEEPING FOR DECOMMISSIONING

- 1. Copies of the licensee's decommissioning cost estimates and funding methods are on file. () Y () N
- 2. Licensee has adequate records for decommissioning activities performed (e.g., for decontamination and dismantlement of structures; decontamination and remediation of soil, sediment, surface waters, groundwater; surveys of remediated facilities). NOT REVIEWED () Y () N
- 3. Licensee's financial assurance conforms with the financial assurance requirements of NRC-approved possession limits and NRC regulations. () Y () N

Basis for Findings: This area not reviewed. The licensee's financial information and submissions are being address by NRC Headquarters.

J. **TRANSPORTATION**

1. Describe the licensee's program to package and ship decommissioning waste materials:
2. Licensee's program meets all applicable 10 CFR and 49 CFR requirements for marking labeling, placarding, and shipping paper requirements for radioactive waste shipments. () Y () N

Basis for Findings: **This area was not reviewed during this inspection.**

K. **POSTING AND LABELING**

1. All contaminated areas, waste processing areas, and waste handling areas are posted in conformance with regulations. (X) Y () N
2. Packaged radioactive waste materials are labeled in accordance with regulations.
This area was not reviewed during this inspection. () Y () N

Basis for Findings: **NRC inspectors reviewed radiological postings, labeling and access procedures and controls put in place by the licensee and determined that they complied with NRC regulations.**

L. **OCCUPATIONAL HEALTH AND SAFETY**

1. Describe the occupational health and safety observations made at the licensee's facilities:
2. Licensee and Occupational Safety and Health Administration were informed of occupational health and safety issues observed during the inspection. () Y () N

Basis for Findings: **THIS AREA NOT REVIEWED DURING THIS INSPECTION.**

N/A = NOT APPLICABLE
N/R = NOT REVIEWED