



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PA 19406-1415

October 24, 2000

Docket No. 04009027

License No. SMC-1562

Timothy M. Knapp  
Radiation Safety Officer  
Cabot Corporation  
P.O. Box 1608  
Boyertown, PA 19512

SUBJECT: INSPECTION 04009027/20000001, CABOT CORPORATION, READING AND  
REVERE, PENNSYLVANIA

Dear Mr. Knapp:

On July 13, 2000 and August 17, 2000, Anthony Dimitriadis of this office conducted a safety inspection at the above locations of activities authorized by the above listed NRC license. The inspection was an examination of your licensed activities as they relate to radiation safety and to compliance with the Commission's regulations and the license conditions. The inspection consisted of observations by the inspector, interviews with personnel, and a selected examination of representative records. The findings of the inspection were discussed with you at the conclusion of the inspection on October 16, 2000.

Within the scope of this inspection, no violations were identified.

In accordance with 10 CFR 2.790, a copy of this letter will be placed in the NRC Public Document Room and will be accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html>. No reply to this letter is required.

Your cooperation with us is appreciated.

Sincerely,

***Original signed by Ronald R. Bellamy***

Ronald R. Bellamy, Chief  
Decommissioning and Laboratory Branch  
Division of Nuclear Materials Safety

cc:  
Commonwealth of Pennsylvania

T. Knapp  
Cabot Corporation

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DATE	10/17/2000		10/29/2000					

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**APPENDIX A**

**MATERIALS DECOMMISSIONING INSPECTION RECORD**

**FOR FACILITIES NEEDING SIGNIFICANT DECOMMISSIONING EFFORT**

**Region I**

Licensee (Name & Address): Timothy Knapp, Radiation Safety Officer Cabot Corporation P.O. Box 1608 Boyertown, PA 19512		Inspection Report No. : 2000-01 License No.: SMC-1562 Docket No. : 040-09027 Telephone No.: (610) 369-8520	
Licensee Contact:	Timothy Knapp	Priority:	1
		Date of Last Inspection:	March 1999
Program Code:	11900	Date of This Inspection:	July 13, 2000 & August 17, 2000
Type of Inspection:	<input checked="" type="checkbox"/> Announced <input type="checkbox"/> Routine <input type="checkbox"/> Initial Decommissioning	<input type="checkbox"/> Unannounced <input type="checkbox"/> Special <input checked="" type="checkbox"/> Reinspection of Decommissioning	
Next Inspection:	May 2001	<input checked="" type="checkbox"/> Normal	<input type="checkbox"/> Reduced <input type="checkbox"/> Extended

**Brief Description of Inspection Activities:**

Inspection to determine status of sites located in Reading and Revere, Pennsylvania, and to discuss the revised decommissioning plan submitted to NRC in March 2000.

**Brief Description of Findings and Action:**

The licensee's activities with respect to processing of licensed material for the extraction of precious metals and slags had been inactive for many years. A revised decommissioning plan was submitted to the NRC in March 2000 which includes additional information to support the licensee's plan to leave the material on site. The submittal is under review by NRC.

**Summary of Findings and Action:**

- ☒ No violations cited, clear NRC Form 591 or regional letter issued  
☐ Follow up on previous violations

Inspector:	Anthony Dimitriadis, Health Physicist, Decommissioning and Laboratory Branch (DLB) (Type Inspector's Name)	Date:	October 24, 2000
Approved:	<i>/RA/</i> Ronald R. Bellamy, Chief, DLB Division of Nuclear Materials Safety, RI	Date:	October 24, 2000

[Field notes are to be used by the inspector to assist with the performance of the inspection. Note that all areas indicated in the field notes are not required to be addressed during each inspection. However, for those areas not covered during the inspection, a notation ("Not Reviewed") should be made in each section where applicable. Additionally, all areas covered during the inspection should be documented in sufficient detail to describe what activities and/or records the inspector observed. The field notes to the "Decommissioning Inspection Procedure for Materials Licensees" should be supplemented with: (1) the applicable inspection procedures for operating facilities provided in the Inspection Procedure (IP) 87100 series; and (2) other written documentation of the inspection, as necessary.]

## 1. SUMMARY OF DECOMMISSIONING STATUS

The checklist below is intended to provide, in a written outline format, summary documentation of the status of the licensee's facility in the decommissioning process. This documentation will be filed as part of the inspection report. The inspector should use this information to develop each inspection plan(s) for the various stages of decommissioning, namely, before dismantlement, during dismantlement and site remediation, and after site remediation.

A. Licensee ceased operational program	<input checked="" type="checkbox"/>	Y	<input type="checkbox"/>	N
B. Required decommissioning financial assurance mechanisms in place.	<input checked="" type="checkbox"/>	Y	<input type="checkbox"/>	N
C. Decommissioning Plan (DP) required.	<input checked="" type="checkbox"/>	Y	<input type="checkbox"/>	N
D. Licensee final survey required.	<input checked="" type="checkbox"/>	Y	<input type="checkbox"/>	N
E. NRC confirmatory survey required.	<input checked="" type="checkbox"/>	Y	<input type="checkbox"/>	N
F. NRC closeout inspection required.	<input checked="" type="checkbox"/>	Y	<input type="checkbox"/>	N
G. Licensee doing decommissioning planning and preparation before dismantlement	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
H. Licensee actively remediating site.	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
I. Licensee completed site remediation.	<input checked="" type="checkbox"/>	Y	<input type="checkbox"/>	N

Description of Facility Status:

Radioactive contamination in low concentrations remains on both sites. One embankment containing the contamination is located at the Reading, Pennsylvania site, and 4 locations remain at the Revere, PA site.

(1): The licensee does not plan to perform any further remediation and has proposed leaving the source materials in place at the current locations. The licensee has developed a model that estimates a dose to a residential farmer which illustrates that leaving the material in place would result in doses below the regulatory requirements.

## 2. INSPECTION OF KEY DECOMMISSIONING ACTIVITIES

The following is a generic checklist of major licensee activities occurring at various stages of decommissioning. From this generic checklist and from facility-specific activities you identify, develop the set of licensee activities to be inspected - for each individual inspection throughout the decommissioning process. Plan to inspect licensee activities that present potential high-risk conditions. Then apply the standard health and safety inspection areas in Section 3 of these field notes (taken from the applicable 87100 series IP for the licensee's operational program) to the specific licensee decommissioning activities that are being inspected.

To complete the licensee activities checklist, the inspector will need to obtain information from the Licensing Project Manager, review the DP, make observations at the licensee's facility, review licensee records, take measurements and samples of contaminants, and undertake other investigative measures, to determine whether the licensee is meeting all regulatory and DP commitments for each decommissioning activity the licensee is performing.

- A. LICENSEE ACTIVITIES INSPECTED BEFORE DISMANTLEMENT ☐ N/I ☐ N/A
1. Licensed material used during operations has been removed from site. ☒ Y ☐ 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 10 CFR 20.1801 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
  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. ☐ N/A Y ☐ N
  10. Licensee activities conform to specific license conditions and licensee programs and procedures. ☒ Y ☐ N
  11. Other licensee activities(describe below):

Basis for findings:

Discussions with licensee representatives and direct observation.

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

☐ N/I ☐ N/A

- |    |  |                                     |   |  |   |
|----|--|-------------------------------------|---|--|---|
| 1. | Site security and control of contaminated material being maintained in compliance with 10 CFR Part 20.   | <input checked="" type="checkbox"/> | Y | <input type="checkbox"/>                           | N |
| 2. | Decontamination and dismantlement of structures are being performed consistent with DP and sound industry practice (structures include buildings, utilities, treatment lagoons, etc.). | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| 3. | Decontamination and remediation of the following are being performed consistent with DP and sound industry practice:   | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| a. | Soil.  | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| b. | Sediment.  | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| c. | Surface waters.  | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| d. | Groundwater.   | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| e. | Other mediums (describe below):<br><div style="border: 1px solid black; height: 20px; width: 100%;"></div>   | <input type="checkbox"/>            | Y | <input type="checkbox"/>                           | N |
| 4. | Licensee release and disposal of decommissioning wastes are consistent with DP and approved by NRC for:  | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| a. | Liquid wastes (e.g., groundwater, surface water, liquid from treatment ponds, process liquids).  | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| b. | Solid wastes (e.g., building materials, process and other facility equipment, concrete rubble, soil).  | <input type="checkbox"/> N/A        | Y | <input type="checkbox"/>                           | N |
| c. | Other wastes (describe below):<br><div style="border: 1px solid black; height: 20px; width: 100%;"></div>  | <input type="checkbox"/>            | Y | <input type="checkbox"/>                           | N |
| 5. | Temporary, on-site storage of low-level radioactive wastes from decommissioning meets license conditions and guidance in IP 84890.   | <input checked="" type="checkbox"/> | Y | <input type="checkbox"/>                           | N |
| 6. | Packaging and shipment of radioactive waste materials meet requirements in 40 CFR Parts 173-178 and 10 CFR Part 71.  | <input type="checkbox"/>            | Y | <input checked="" type="checkbox"/> X <sup>1</sup> | N |
| 7. | Restoration of site-Licensee has restored site to meet license conditions and NRC-approved plans.  | <input type="checkbox"/>            | Y | <input checked="" type="checkbox"/> X <sup>1</sup> | N |
| 8. | Licensee survey of material and equipment for free release sufficient to demonstrate compliance with release criteria.   | <input type="checkbox"/>            | Y | <input checked="" type="checkbox"/> X <sup>1</sup> | N |
| 9. | Other licensee activities:   | <input type="checkbox"/>            | Y | <input type="checkbox"/>                           | N |

Licensee has not packaged any of the soil and proposes to leave in place.

Basis for Findings:

C. LICENSEE ACTIVITIES INSPECTED AFTER COMPLETION OF  
SITE REMEDIATION

☐ N/I ☒ N/A

1. Licensee has submitted NRC Form 314 for disposition of 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

5. Other licensee activities:

☐ Y ☐ N

Quarterly surveys and surveillance conducted on sites.

Basis for Findings:

Based on a review of the final survey report, and prior in-process observations and confirmatory measurements the inspector determined that the licensee had adequately implemented its radiation safety procedures for monitoring the site. The licensee's proposed action is not a final action and the licensee has been informed by the NRC that the data and results from the submitted decommissioning plan, including the RESRAD computer code results are being evaluated by an NRC contractor.

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

Identify the standard inspection areas (from the inspection program of the licensee's operational program) to be covered during each decommissioning inspection. [Inspection areas A through L below correspond to the typical inspection areas in the 87100 series IPs that are applicable to decommissioning.] Then identify the new activities within the standard inspection areas undertaken by the licensee during decommissioning. Some of the new activities given below, as well as any other activities the inspector identifies, should be considered inspection items under the general set of health and safety inspection areas used in the applicable 87100 series IP.

**Minimum inspection areas for the initial decommissioning inspection:** decommissioning organization (A.1); decommissioning activities in compliance with NRC-approved DP (A.2); licensee procedures for implementing the DP (A.3); Radiation Safety Committee (RSC) and Radiation Safety Officer (RSO) responsibilities (A.4); and the licensee's decommissioning training program (E.1).

## A. GENERAL OVERVIEW

1. Describe the licensee's decommissioning organizational structure:

Radiation Safety Officer and senior management make decisions regarding decommissioning. Consulting firm used to perform survey and document survey reports.

2. Licensee is performing decommissioning activities in compliance with its approved DP. ☐ Y ☒ N

Licensee has implemented procedures for the decommissioning activities identified in the DP. ☒ Y ☐ N

The RSC and RSO fulfill license requirements to deal with all decommissioning activities. ☒ Y ☐ N

### Basis for Findings:

Licensee has conducted characterization work and has documented decisions regarding limited decommissioning activities.

## B. FACILITIES

1. Describe, from field observation, the licensee-identified facilities and outdoor areas to be decommissioned:

The Reading, PA site is completely surrounded by chain link fence and the area is properly posted. The Revere, PA site is an operating facility using non-licensed material and is typically occupied and patrolled by workers. The four contaminated locations are not directly visible from the entrance to the plant on the site and are properly posted. The locations of interest appear like small hills of dirt and rock debris to the casual observer.

2. The licensee's remediation plan includes all the contaminated facilities and areas on-site and off-site ☒ 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. ☐ Y ☒ N

4. Licensee's emergency plan is in place and operative for the duration of decommissioning. ☐ Y ☒ N

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:



(1) The licensee's plan proposes leaving the soil in place at both sites.

6. Licensee's characterization activities performed in conformance with good industry practice. ☒ X ☐ Y ☐ N

Basis for Findings:

Surveys and soil sampling results from previous inspections.

#### 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:

Direct observation and comparison of radiation levels with consulting firm. Consultant provided appropriate survey instruments for the contaminants of interest.

#### A. MATERIALS

1. Radioactive materials licensed during operations have been removed offsite; residual quantities conform to license conditions. ☐ ☐ Y ☒ X ☐ N
2. Security and control of licensed materials, including contaminated areas, is being maintained. ☒ X ☐ Y ☐ N

Basis for Findings:

All licensed material remains onsite. Licensee plans to decommission using in-situ disposal.

#### E. TRAINING

1. Licensee has developed training program for new decommissioning activities (e.g., demolition of structures, excavation of soil); program is adequate. ☒ X ☐ Y ☐ N
2. Training program being effectively implemented. ☒ X ☐ Y ☐ N

Basis for Findings:

Licensee using consulting firm for surveys. Staff at Revere site have been briefed on material and to keep clear of areas.

F. AREA RADIATION SURVEYS AND CONTAMINATION CONTROL

Area surveys are being performed in areas being decommissioned.

☒ X Y ☐ N

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.

☒ X Y ☐ N

Basis for findings:

Inspector measured and confirmed that exposures are less than 2 mrem in any one hour in the areas of interest.

G. RADIATION PROTECTION

The licensee's approved health physics program is being implemented in the field for new decommissioning activities.

☒ X Y ☐ N

Site security and control of contaminated material are in compliance with 10 CFR 20.1801 and 20.1802.

☒ X Y ☐ N

Basis for findings:

Areas were posted as required. Access to site controlled by entering through entry of fence where numerous workers can see and challenge visitors. No personnel contaminations or other unusual circumstances reported.

H. RADIOACTIVE WASTE MANAGEMENT/EFFLUENTS/ENVIRONMENTAL MONITORING

1. Offsite disposal of decommissioning wastes conforms to free release criteria and disposal site requirements.

☐ N/A Y ☐ N

2. All new effluent releases conform to DP and applicable regulations.

☐ N/A Y ☐ N

3. The licensee's environmental monitoring program is being implemented in conformance with the DP and all applicable limits are being met.

☐ N/A Y ☐ N

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:

Direct observation.

I. RECORD KEEPING FOR DECOMMISSIONING

- |    |   |                                     |   |                          |   |   |
|----|---|-------------------------------------|---|--------------------------|---|---|
| 1. | Copies of the licensee's decommissioning cost estimates and funding methods are on file.  | <input checked="" type="checkbox"/> | Y | <input type="checkbox"/> | N | 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). | <input checked="" type="checkbox"/> | Y | <input type="checkbox"/> | N | N |
| 3. | Licensee's financial assurance conforms with the financial assurance requirements of NRC-approved possession limits and NRC regulations.  | <input checked="" type="checkbox"/> | Y | <input type="checkbox"/> | N | N |

Basis for Findings:

Financial Assurance was submitted to NRC on April 24, 1996 for 251,500 for Reading, PA site, and 563,000 for the Revere, PA site. Basis: Financial Assurance Instrument Custodian confirmed that the documents are secure and complete.

J. TRANSPORTATION

1. Describe the licensee's program to package and ship decommissioning waste materials:

No shipments made during since last inspection period.

- |    |   |                          |     |   |                          |   |
|----|---|--------------------------|-----|---|--------------------------|---|
| 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. | <input type="checkbox"/> | N/A | Y | <input type="checkbox"/> | N |
|----|---|--------------------------|-----|---|--------------------------|---|

Basis for Findings:

K. POSTING AND LABELING

- |    |  |                                     |     |                          |                          |   |
|----|--|-------------------------------------|-----|--------------------------|--------------------------|---|
| 1. | All contaminated areas, waste processing areas, and waste handling areas are posted in conformance with regulations. | <input checked="" type="checkbox"/> | Y   | <input type="checkbox"/> | N                        |   |
| 2. | Packaged radioactive waste materials are labeled in accordance with regulations.                                     | <input type="checkbox"/>            | N/A | Y                        | <input type="checkbox"/> | N |

Basis for Findings:

Inspector observed radioactive material postings.

L. OCCUPATIONAL HEALTH AND SAFETY

1. Describe the occupational health and safety observations made at the licensee's facilities:

Nothing significant.

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:

4. **VIOLATIONS, NON-CITED VIOLATIONS, FOLLOW UP ITEMS, AND OTHER ISSUES**

Briefly state (1) the requirements and (2) how and when the licensee violated the requirement. For non-cited violations, indicate why the violation was not cited. Briefly describe follow up items and other issues.

None.