



Pennsylvania Department of Environmental Protection

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February 1, 2001

Bureau of Radiation Protection

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Mr. Larry Camper, Chief  
Decommissioning Branch  
Division of Waste Management  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: Comments on Cabot-Revere Site Decommissioning Plan and  
Radiological Assessment, License No. SMC-1562

Dear Mr. Camper:

The Pennsylvania Bureau of Radiation Protection, Department of Environmental Protection (PA-DEP/BRP) has reviewed the available information on the Cabot Performance Metals Inc. facility in Revere, PA, and we have comments that are summarized below. The NRC Request for Additional Information (RAI) dated December 27, 2000 covers many of the concerns of PA-DEP, and we endorse the RAI and consider that satisfactory responses by Cabot to be essential before any action can be taken on the licensee's proposal of November 17, 2000.

PA-DEP/BRP has comments regarding Cabot's proposal that no decommissioning activities are required to allow license termination under current NRC criteria for unrestricted release of the site. These comments are discussed in more detail in the enclosure to this letter and are summarized below.

1. We are concerned that there remains significant uncertainty about the radiological conditions in the known impacted areas at the Revere site and the potential risks from residual contamination. The basis of our concern is that: (a) numerous investigations undertaken at this site have found contaminated pieces of slag, both on the surface and underground, and (b) that the licensee's assessment has not properly considered the potential risks from this material over the long term.
2. We are also concerned that areas not suspected of being impacted by past operations have not been adequately investigated for possible contaminated slag beneath the surface. Only a relatively small area of the entire site has been investigated, and we believe a systematic survey on a statistical basis is necessary to provide reasonable confidence that contaminated slag does not exist outside the known impacted areas.



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Mr. Larry Camper, Chief

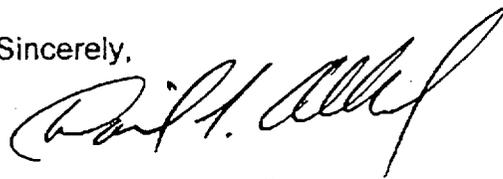
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3. No explanation has been provided by the licensee for the direct gamma exposure readings in the warehouse loading dock area that are 2-3 times background.
4. The dose scenarios used in the Cabot Risk Assessment that preclude significant agricultural or residential use over the long term have been too narrowly defined.

If you have any questions on these comments, please contact Mr. Robert Maiers at 717-783-8979.

Sincerely,



David J. Allard, CHP  
Director  
Bureau of Radiation Protection

Enclosure

cc: T. Smith, NRC (via e-mail)  
R. Maiers, BRP  
B. Werner, BRP  
I. Shanbaky, BRP  
B. Snyder, BRP Consultant

Mr. Larry Camper, Chief

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bcc: Rennard, Reading File Rennard, Reading File

# PA DEP/BRP Comments

## Cabot, Revere Site Decommissioning Plan

### 1. Radiological Conditions in Impacted areas

BRP/DEP is concerned that there remains significant uncertainty about the radiological conditions at the Revere site. It is our understanding that a number of surveys and some limited remediation have been done in the past, as documented in the following reports by Cabot contractors, and others:

- Applied Health Physics, Inc. Letter Report to KBI (Cabot), dated May 1975.
- Bullinger Mill, Inc. Letter Reports to Cabot, dated April and October 1990.
- ORISE (Berger and Smith), "Confirmatory Radiological Survey for Portions of the Cabot-Revere Site", dated April 1993.
- Enserch Environmental Corp., "Radiological Characterization Survey Report for the Cabot-Revere Site", dated April 1994.
- NES, Inc., "Radiological Subsurface Sampling Report for Cabot-Revere Site", dated August 1994.

Every investigation undertaken at this site has found contaminated slag pieces that exceeded then current NRC limits for unrestricted release. This contaminated slag is not localized on the site but has been found in each of the identified impacted areas throughout the site. Contaminated slag has even been found on the surface. Although the contaminated slag has been shown to have very low leaching characteristics, this material represents a potential exposure hazard, and if not remediated may preclude release of the site for long-term unrestricted public access.

In the past, partial excavation and removal of slag was reported (Bullinger), but only in the four identified impacted areas. Subsequent surveys (ORISE, Enserch, NES) confirm that significant quantities of contaminated slag remain within the impacted areas at the Revere site. We are unaware of any systematic activities undertaken at this site to find and remove this contaminated slag, some of which was found to have a maximum total concentration as high as 1300 pCi/g of uranium and 800 pCi/g of thorium (Enserch).

NRC criteria for unrestricted release include a requirement that an assessment be made of the radiological hazards that may exist at a site up to 1000 years in the future. Cabot has not made an assessment of the likely future scenario where there is excavation on the site and the uranium and thorium contaminated slag is encountered. They have also not considered that sometime during the 1000-year period the slag maybe used as fill or building material. Scenarios that include excavation, and either, or both of these uses of the slag material are reasonable over this long time period. Cabot's approach to this problem is to assume that an undisturbed soil cover will be retained over the buried contaminated slag for this long period. As the NRC has pointed out to Cabot

several times in the past, this approach is inconsistent with the regulatory concept of unrestricted release. We agree with the NRC position that a soil cover cannot be assumed to remain undisturbed during this period, without some maintenance activities and restrictions on the use of the site. Furthermore, we believe that future excavation and use of the slag material should be considered in the scenarios for assessment of the risks if the site is not remediated.

Cabot should more fully characterize the site to determine the extent of contaminated slag distribution on, and beneath the surface in the known impacted areas. Cabot should either demonstrate that the proposed residual slag material would be within the NRC's unrestricted release criteria, or take remediation actions to remove the contaminated slag to an approved offsite disposal facility. In demonstrating that the NRC criteria are met using RESRAD, Cabot should provide justification of their analytical approach for modeling the discrete pieces of contaminated slag both on, and below, the surface.

## **2. Radiological Conditions Outside Known Impacted Areas**

Several of the previous investigations indicated that large pieces of contaminated slag might be scattered in areas outside the identified impacted areas (Bullinger, ORISE). We share these concerns. Even though some limited surface exposure surveys were performed for selected areas that were not considered impacted (Enserch), no subsurface investigations were undertaken in these areas that were presumably not impacted.

Subsurface investigations have been focused on the known impacted areas, which represent only relatively small areas of the site. While it is appropriate to concentrate on those areas with the highest potential for contamination, there appears to have been no attempt to check that other areas with a lower contamination potential have not been impacted.

Cabot should perform a statistical survey of all areas of the site that have not been comprehensively surveyed to date. The guidance of MARSSIM, Section 5.5.2, should be followed for measurements, and subsurface samples in survey areas that should be taken at random locations. However, we understand that a recent NRC research report has shown that statistical core borings or split-spoon investigations may not be appropriate to detect discrete pieces of subsurface contaminated slag, so limited trenching or other excavations may be necessary.

As a prerequisite to NRC taking action on the Cabot proposals, including use of the characterization surveys to meet the requirements for the Final Status Survey, adequate surface and subsurface investigations should be undertaken to demonstrate with adequate confidence that the radiological conditions are well characterized.

### **3. Warehouse Loading Dock Area**

An explanation should be provided for the direct gamma exposure readings in the warehouse loading dock area that are 2-3 times background. Apparently this area was not considered to be impacted for purposes of conducting the original site characterization surveys. This is another area that demonstrates that the characterization surveys done to date may not be adequate to meet the requirements for a final status survey, as proposed by Cabot.

### **4. Bounding Dose Assessment**

As pointed out by NRC and in comment number 1, above, the dose scenarios used in the Cabot risk assessment have not been adequately justified. For example, the STEP 1997 Radiological Assessment indicates on page 3-2 that the resident and resident-farmer scenarios are unlikely, at least in the near future, because of the present and likely future use of the site for industrial purposes. This approach does not consider the 1000-year time period used in NRC's criteria, during which many changes in land use cannot be ruled out. It is suggested that an analysis using a resident-farmer scenario with RESRAD 6.0 be performed as a bounding analysis. If this most restrictive scenario can demonstrate compliance with the criteria for unrestricted release, and appropriate modeling has been done for discrete pieces of contaminated slag, then Cabot could avoid further time-consuming analyses.