CABOT

February 3, 2004

Theodore Smith
United States Nuclear Regulatory Commission
Division of Waste Management
Mail Stop T-7F27
Washington, DC 20555-0001

Subject: Cabot Reading Site, Reading, Pennsylvania (License No: SMC-1562)

Dear Mr. Smith:

This letter responds to your letter dated March 21, 2003, requesting additional information regarding the Decommissioning Plan and Radiological Assessment for the Reading Site (DP/RA). Cabot Corporation (Cabot) has carefully considered the NRC's request for additional information in light of the substantial amount of information Cabot has already submitted regarding the Reading Site and the current activities in the Reading community to develop the properties in the immediate vicinity of the slag pile for commercial use. This includes a recent proposal to utilize the existing right-of-way adjacent to the Site for enhanced vehicular access to the area.

The current commercial development activities call for a prompt resolution of the outstanding issues to remove the appearance of uncertainty and give the developers needed assurance that there will be no changes that could affect the development plans. Although detailed technical analyses would likely demonstrate that the DP/RA should be approved without change, it is apparent that such analyses and the subsequent review of them by the NRC and the public, could take considerable time. Consequently, subject to the concurrence of the City of Reading, Cabot proposes to place a rip-rap cover on the slag pile in order to resolve the questions posed by the March 21, 2003 requests for information. The enclosure to this letter explains how each of the pending questions will be resolved by the proposed placement of a rip-rap cover. This voluntary proposal, which would represent a significant cost to Cabot, should resolve any and all outstanding issues at the Reading site.

Cabot believes that this proposal should result in NRC's approval of the DP/RA, removal of the entire site from the Site Decommissioning Management Plan and release of the site for unrestricted use at the earliest possible time. Cabot requests that the NRC provide a preliminary response to the approach presented in this letter before Cabot commences the time consuming and expensive task of revising the DP/RA. Cabot anticipates that a prompt NRC response to this letter would enable Cabot to submit the revised DP/RA by May 31, 2004.

Sincerely,

Wayne M. Reiber
Manager, Environmental Assessment & Remediation

Enclosure

Enclosure

Response to NRC Request for Information Dated March 21, 2003

Introduction

By letter dated March 21, 2003, from T. Smith to W. Reiber, the Nuclear Regulatory Commission (NRC) sent Cabot Corporation (Cabot) a request for additional information concerning the Decommissioning Plan (DP) and Radiological Assessment (RA) for the Reading, Pennsylvania Slag Pile Site. Although the request suggests the need for further analysis, Cabot has concluded that the concerns underlying each of the requests can be resolved without the need for extensive further analysis by a decision to place rip-rap on the slag pile. If the NRC agrees with Cabot's conclusion, as a voluntary measure to resolve the remaining questions and expedite release of the site for unrestricted use, Cabot will submit a revision to the Decommissioning Plan that provides for placement of rip-rap on the slag pile, subject only to the City of Reading concurring with the placement of the rip-rap. The rip-rap would be compliant with design standards in NUREG-1623, "Design of Erosion Protection for Long Term Stabilization", and would need to meet with the approval of the City, as landowner. Such rip-rap would not require active maintenance, and thus would not require any restrictions to assure its continued effectiveness throughout the period of interest. The following discussion summarizes the NRC's three requests for additional information and explains the basis for Cabot's conclusion that the addition of a rip-rap cover, when combined with the extensive information and analysis that already has been provided to the NRC, will be adequate to resolve the concerns summarized in the NRC's letter of March 21, 2003.

Source Term

Summary of NRC request: The NRC concern is that the composition and variable thickness of overburden may make the material susceptible to erosion over the 1,000-year period of interest in a way that exposes large pieces of slag bearing elevated concentrations of radioactive materials. Because the concentrations of radioactive materials in such slag are substantially higher than in other materials in the slag pile, the result of such erosion could be average radionuclide concentrations in near-surface materials higher than assumed in the DP and RA, and radiation doses higher than those calculated for the bounding scenario for dose modeling, the trespasser to the site in eroded conditions.

Cabot Response: Even without the addition of a rip-rap cover, the RA already shows that for the bounding scenario of a trespasser on the site with postulated erosion, potential doses would be well within the NRC limits. The existing the physical properties and configuration of the slag and the site virtually preclude future doses over the regulatory limit. The slope is stable in its current configuration, which has been unchanged for approximately 30 years, and there is no sign that it is eroding. In addition, the presence of large pieces of non-radiological materials in the fill covering the radiological slag

limits the potential for erosion to expose large areas of radiological slag at the surface. Despite these characteristics, the RA assumes that erosion could increase the potential dose to a trespasser by a factor of three. In view of the limited potential for erosion, this assumption is believed to be conservative.

If the slag pile is protected by an engineered rip-rap cover compliant with design standards in NUREG-1623, the potential for erosion would be eliminated. Consequently, the addition of a rip-rap cover would resolve the concern identified by the March 21, 2003 letter.

Site Characterization

Summary of NRC request: The NRC concern is that there are uncertainties about the ability of the split-spoon sampling method to sample large blocks of slag. While the NRC notes that the concentration of radioactive material in the slag itself is well documented, the use of this method may have resulted in estimates of average radionuclide concentrations in near-surface materials that are not representative of the actual distribution of the radiological slag within the slag pile.

Cabot Response: As recognized in the discussion of the source term concern in the NRC's letter, the bounding dose would occur to a hypothetical trespasser when the exposed layer average concentration is at the maximum expected value over the 1000 year evaluation period. Thus, the issue of concern is the extent of mixing of slag with other materials if excavation in the slag pile is postulated, and how that mixing affects the average radionuclide concentrations in the material to which a receptor would be exposed.

Even without considering the effect of the addition of a rip-rap cover, the DP provides sufficient information to resolve questions regarding an excavation scenario. The physical context of this slag, the potential uses of the site, and the well established plans for future use of the site practically eliminate the potential for substantial excavation of this slag. This is particularly so because, except for its radioactive material content, the radiological slag is essentially indistinguishable from the much larger volume of other slag, industrial debris, and other materials. The slag of interest is on a slope where physical constraints limit access. The larger volume of material forms the basis for a flat area at the top of the slope that is suitable only for commercial or industrial development, and is, in fact, slated for commercial development in the municipal plan, which was provided to the NRC by representatives of the City of Reading in a public meeting on September 23, 2002. The addition of rip-rap as an erosion barrier over the portion of the slope containing the slag of interest would further discourage excavation in the affected area.

Whether or not a rip-rap cover is provided, there is no reasonable scenario that entails large-scale excavation of the radiological slag and other fill at the site because physical constraints greatly limit onsite redistribution and disposition options for the excavated

material. Large-scale onsite redistribution of the fill at the site would be senseless because the topography is already in an optimal configuration for site development.

If substantial excavation affecting the slag of interest is nevertheless postulated, it should be recognized that such excavation would almost certainly involve all of the fill at the site. The 600 tons of radiological slag (approximately 6,500 ft^3) represents only a small fraction of the approximately 3,000,000 cubic feet of other slag, debris, trash, and fill present at the site. Consequently, large-scale excavation would greatly dilute the radionuclide concentration through the mixing of the excavated material. Because of onsite physical constraints and because all of the excavated material would contain stable and easily identifiable industrial waste materials, the excavated material would most likely be sent to a similar commercial/industrial site or offsite disposal facility, where radiological impacts also would be negligibly low.

Nonetheless, Cabot will include in the revised RA an occupational exposure scenario involving excavation of this material as part of a much larger excavation and redistribution of the excavated material on the flat portion of the site at the top of the slope. This scenario will be included in the RA to provide the NRC with additional information to assess the risks of even very unlikely scenarios, as discussed in SECY-03-0069. These are exposure scenarios considered too unlikely to serve as a basis for evaluating compliance with radiological criteria for decommissioning in 10 CFR Part 20, Subpart E, but which can be useful in bounding doses estimates, although the likelihood of even a limited excavation would be greatly reduced by the proposed rip-rap cover.

In addition, the revised RA will provide an estimate of dose for a scenario involving an excavation of limited extent. Such a limited excavation could result in redistribution of a small quantity of the slag of interest over a small portion of the affected area of the slope. Radiation doses from exposure in such a situation can be expected to be small, but will be estimated in the revised RA.

ALARA

Summary of NRC request: The NRC letter notes the existence of several large pieces of slag containing elevated concentrations of radioactive material, and questions whether remedial action for these pieces and any others may be required under 10 CFR Part 20.1402, which includes a criterion that residual radioactive material be reduced to levels that are "As Low As Reasonably Achievable" (ALARA). The NRC letter specifically requests that Cabot address the application of good practices of the kind commonly applied to limited quantities of readily identifiable radioactive material subject to relatively easy remedial action. The NRC letter identifies removal, relocation, and application of erosion control barriers as possible actions to be considered.

Cabot Response: Cabot's review of potential remedial action to be applied to identified blocks of slag indicates such action would not be warranted because the slag pieces are too large to be considered removable. Nevertheless, a rip-rap cover over the entire affected area of the slope would resolve this concern by covering the exposed pieces of

slag. In fact, the NRC's letter identifies application of an erosion control barrier as an action that would resolve this concern.

Conclusion

Cabot proposes to modify the DP/RA to incorporate an erosion barrier if the City of Reading concurs and the NRC agrees that this action would resolve all of the concerns identified in the referenced NRC letter, and provide adequate assurance that the Reading Site is suitable for unrestricted use. In connection with the addition of the rip-rap cover, Cabot will revise the DP/RA as follows:

1. Addition of a DP section describing the engineered barrier design and installation procedure in detail sufficient to demonstrate effective long term performance in compliance with NUREG-1623 standards. This addition will include a discussion with references to NUREG-1757, Volume 2, Section 3.5 concerning the regulatory basis for license termination with no restrictions.

2. Addition of short DP sections addressing work management and radiation protection for engineered barrier installation.

3. Expansion of the DP source term discussion to incorporate in summary form information and conclusions developed and submitted to NRC since submittal of the DP regarding the concentration of radioactive materials in the slag of interest and the approximate quantity of the slag of interest.

4. Addition to the RA of new dose assessments for exposure scenarios for the site with an engineered barrier. These would include:
    - existing base case and sensitivity scenarios (excluding resident gardener scenario, which would be precluded by the erosion barrier),
    - a base case scenario for a worker installing the engineered barrier,
    - a new sensitivity scenario for minor excavation, in which excavated material remains on the slope,
    - a new sensitivity scenario for a worker involved in minor excavation,
    - a new sensitivity scenario that responds to the NRC interest in the bounding for highly unlikely exposure scenarios, as discussed in SECY-03-0069. This scenario will involve occupational exposure for substantial periods of time (~1000 hours per year) to excavated material containing highly diluted slag of interest, and
    - a new sensitivity scenario for a worker involved in major excavation.