

Mr. Tim Knapp, Radiation Safety Officer  
Cabot Performance Materials  
P.O. Box 1608  
County Line Road  
Boyertown, PA 19512

December 23, 1999

SUBJECT: SUMMARY OF DECEMBER 15, 1999, MEETING

Dear Mr. Knapp:

On December 15, 1999, representatives of Cabot Corporation (Cabot) met with Nuclear Regulatory Commission staff to discuss comments provided to Cabot in a letter dated October 19, 1999, regarding the decommissioning plan for the Reading facility. Enclosed is a copy of the meeting minutes.

If you have any questions or comments regarding the enclosed, please contact me at (301) 415-6613.

Sincerely,  
[original signed ~~by~~] R. Nelson for:  
Larry W. Camper, Chief  
Decommissioning Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 40-9027  
License No. SMC-1562

cc: C. Engleman, Rhoda, Stoudt & Bradley  
J. Rinde, Manko, Gold, and Katcher, LLP  
I. Shanbaky, PA-DEP  
R. Maiers, PA-DEP

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Enclosure: Meeting Summary

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in black ink, appearing to read "LW Camper".

Larry W. Camper, Chief  
Decommissioning Branch  
Division of Waste Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 40-9027  
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## MEETING REPORT

Date: December 15, 1999

Time: 9:30 - 11:15 am

Place: U.S. Nuclear Regulatory Commission  
Two White Flint North, Room T-7C1  
Rockville, Maryland 20852

Purpose: The meeting was held at the request of Cabot Corporation (Cabot) to discuss comments provided to Cabot in a letter dated October 19, 1999, regarding the decommissioning plan for the Reading facility.

Attendees: Refer to Attachment 1

### Discussion:

The October 19, 1999, letter, provides two major comments to Cabot on the Reading Decommissioning Plan (DP). Cabot was requested to evaluate a resident gardener scenario. The submitted DP evaluated worker and intruder scenarios. Based on its review, staff believes that a residential scenario may be more restricted and that a resident gardener scenario, as opposed to a residential farmer, would be appropriate. In addition, the DP did not address the contamination at the toe of the slope.

Cabot's consultants provided discussion points (Attachment 2) on proposed resident gardener and toe of slope scenarios. Staff generally agreed with the information presented and noted that adequate justifications for the selection of parameters should be provided in the revised DP. In particular, a narrative and calculation should be submitted to demonstrate that the shallow unconfined aquifer is not suitable for drinking water or irrigation use.

Staff also noted that a sensitivity analysis would be helpful in determining which parameters most affected the dose. Final guidance on sensitivity analyses and incorporating risk into regulatory decision making is currently being developed. Cabot's consultant indicated that he was familiar with the interim guidance dated February 11, 1999.

### Actions:

1. Cabot is to submit a revised DP by February 15, 2000.



## NOTES FOR PROPOSED DOSE ASSESSMENT SCENARIO DISCUSSION FOR CABOT READING SITE 12/15/99 MEETING WITH NRC

### RESIDENT GARDENER SCENARIO

#### SITUATION

Area containing radionuclides is a small area on one side of a large industrial site that is likely to remain industrial. Area of interest will likely remain isolated from residential area that partially bounds the larger industrial area. Important considerations:

- Area of interest is a small area (approximately 200' x 150') on southwest side of the industrial area;
- Area of interest is physically isolated (on embankment except for strip less than 15 feet wide along top);
- embankment slope is stable, but too steep for residences, gardens, other typical land uses (slag would most likely be diluted and covered in any attempt to make area useful for these purposes, but potential for regrading is low because there is no place to put excess material);
- radioactive material is bound in industrial slag particles of various sizes mixed with other industrial slag and debris;
- slag supports some vegetation, but is not suitable for garden;
- any attempt to make area usable for residence, gardening, etc. would most likely result in substantial dilution and covering, but potential for regrading is low because there is no place to put excess material;
- not likely suitable source for groundwater, particularly with alternates (city water and river) available

Average net radionuclide concentration in near-surface (top 2 feet) materials about 25 pCi/g total uranium and thorium, about 7.5 pCi/g thorium-232 and 5 pCi/g uranium-238 with progeny in equilibrium. Average through entire depth (considered representative for assessment of potential eroded state) about 3 times higher in same proportions. No radionuclide leach potential. Depth of elevated radionuclide concentrations variable, but 6 feet reasonable average for dose assessment purposes.

#### SCENARIO

RESIDENT/GARDENER—resident lives in a house near, but not on the radionuclide-bearing slag and maintains a vegetable garden located entirely in radionuclide-bearing slag material.

Assumptions:

- Resident lives in a house on a lot that backs on the slag pile.
- Because of stability considerations, the house is placed toward the front of the lot and away from the slag pile material.
- Resident maintains a ~400 ft<sup>2</sup> vegetable garden, large by urban standards.
- Resident consumes some fraction of his maximum annual consumption of vegetables, as determined by the area of the garden and the mass yield.
- The garden may either be along the back of the lot (i.e., in slag material on the top of the pile) or in slag material on the slope, either in its current state, or in its potential eroded state.
- Resident spends 70 h/y (about 0.008 of his time) gardening. In this activity, he is exposed to direct gamma radiation, dust suspended at a concentration of 4E-4 g/m<sup>3</sup>, and soil ingested at a rate of 18.3 g/y (parameter values consistent with latest NRC guidance).

- The resident also spends 963 h/y (about 0.11 of his time) outdoors on his land. The portion of this time spent on slag material is assumed to be the fraction of the slag-bearing land on his lot to his total lot size, or because the slag material extends only about 15 feet from the edge of the bank, the ratio of 15 to the depth of the lot in feet. (The lot depth is assumed to be at least 100 feet, representative of typical lots in the area.) In this activity, he is exposed while on the slag material to direct gamma radiation, dust suspended at a concentration of  $3.1 \times 10^{-6}$  g/m<sup>3</sup>, and soil ingested at a rate of 18.3 g/y (parameter values consistent with latest NRC guidance).
- Resident does not use groundwater for any purpose.

## RIGHT-OF-WAY (TOE-OF-SLOPE) SCENARIO

### SITUATION

Area containing radionuclides is a small area on one side of a large industrial site that is likely to remain industrial. Important considerations:

- Area of interest is small 300' x 50' on southwest side of the industrial area.
- Area is physically isolated (river, canal remains, and railroad, slag bank, bridge abutments at ends).
- Area of interest is in road right-of-way.
- Area of interest is in 100-year flood plain.
- residential/agricultural/groundwater use not practical.

Average net radionuclide concentration about 25 pCi/g total uranium and thorium, about 7.5 pCi/g thorium-232 and 5 pCi/g uranium-238 with progeny in equilibrium. No radionuclide leach potential.

Maximum depth of elevated radionuclide concentrations decreases with distance from the slag pile from a maximum depth of about 1 to 2 feet (3 feet reasonable average for dose assessment purposes).

### SCENARIOS

**WORKER**—Worker spends 40 h/y in excavation activities in area containing radioactive materials. Exposure pathways:

- External—40 h/y, no shielding
- Inhalation--2.0 m<sup>3</sup>/h (17,400 m<sup>3</sup>/y), 0.0007 g/m<sup>3</sup>
- Soil ingestion—36.5 g/y
- Consistent with current NRC guidance

**WALKER**—Walker spends 5 min/d, 200 d/y (17 h/y) walking in area containing radioactive materials

- External—17 h/y, no shielding
- Inhalation--1.4 m<sup>3</sup>/h (12,200 m<sup>3</sup>/y), 0.0002 g/m<sup>3</sup>
- Soil ingestion—36.5 g/y
- Consistent with current NRC guidance