

Donald Chabot
 Senior Environmental Engineer
 Engineered Materials Group
 Engelhard Corporation
 Route 152
 Plainville, MA 02762

March 2, 1995

Dear Mr. Chabot:

We have reviewed the "Radiological Health and Safety Plan for Radiological Exterior Characterization Survey at the Engelhard Corporation at Plainville, Massachusetts" and the "Radiological health and Safety Plan for the Building Interior Decontamination at the Engelhard Corporation Site at Plainville, Massachusetts," prepared by Enserch Environmental Corporation, Engelhard's contractor for performance of the decommissioning program. We have identified several sections within the reports in which we are requesting additional information and further clarification. Our comments are provided in the enclosed document.

In addition, we have enclosed "GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL." This material may be of help to you during characterization and decommissioning activities at your facility.

We ask that you provide the requested information within 45 days. Should you have additional questions concerning this request, please contact me at (301) 415-6721.

Sincerely,

[ORIGINAL SIGNED BY:]

Richard Turtill, Project Manager
 Low-Level Waste and Decommissioning
 Projects Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

Enclosures:

- (1) Comments Concerning Radiological Health and Safety Plans for Exterior Characterization and Interior Decontamination at the Engelhard Site
- (2) GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL

Docket No. 070-00139

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Donald Chabot
 Senior Environmental Engineer
 Engineered Materials Group
 Engelhard Corporation
 Route 152
 Plainville, MA 02762

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We have reviewed the "Radiological Health and Safety Plan for Radiological Exterior Characterization Survey at the Engelhard Corporation at Plainville, Massachusetts," prepared by Enserch Environmental Corporation, Engelhard's contractor for performance of the decommissioning program. We have identified several sections within the report in which we are requesting additional information and further clarification. Our comments are provided in the enclosed document.

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Plainville Toxic Waste & Radiation Watch Group
399 South St.
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Robert W. Brackett, RCRA Project Manager
U.S. Environmental Protection Agency, Region 3
JFK Federal Building, Room 2203
HRR-CAN3
Boston, MA 02203-2211

William Burt, Director
Plainville Board of Health
140 South Street
Plainville, MA 02762

Donald P. Chabot, Senior Environmental Engineer
Engelhard Corporation
Route 152
Plainville, MA 02762

Jeffrey Chormann, Project Manager
Massachusetts Department of Environmental Protection
Bureau of Waste Prevention
One Winter Street, 5th Floor
Boston, MA 02108

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COMMENTS CONCERNING RADIOLOGICAL HEALTH AND SAFETY PLANS FOR EXTERIOR
CHARACTERIZATION AND INTERIOR DECONTAMINATION AT THE ENGELHARD SITE

EXTERIOR CHARACTERIZATION PLAN

1. Section 6.4

Provide additional information about the radiation safety training program pertaining to the subjects to be presented, and other requirements in 10 CFR Part 19.

2. Section 7.0

The Health and Safety Plan needs to address posting and controls as required under 10 CFR Part 20.

3. Section 7.2

The Health and Safety Plan needs to address the 10 CFR Part 20 requirements for respirator use.

4. Section 8.1

Air sampling should be performed during operations involving radioactive materials at the site perimeter and in the vicinity of the operations. Filter samples from the air samplers should be directly assayed for radioactivity. The approach in Appendix I of applying a radioactivity correction factor to dust levels is unacceptable. Provide the details of your proposed approach for assessing 10 CFR Part 20 airborne effluent releases.

5. Appendix B

NRC requests a more recent resume for James Mayberry. Since Mr. Mayberry is the primary health physicist responsible for application of the Radiological Health and Safety Plan (RADHASP) at the Engelhard site, Mr. Mayberry's resume should be current and reflect more recent experience and professional activity.

Les Skoski's resume has been included in the RADHASP. However, it is unclear from details contained in the report the extent to which Dr. Skoski will be involved in the characterization project. Please identify Dr. Skoski's current role and his responsibilities in the exterior characterization at the Engelhard site.

6. Table 8-1

NRC guidance for unrestricted release of contaminated personnel and equipment is contained in NRC's "GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL." This document has been enclosed for your use. Please incorporate these guidelines in Table 8-1, "ACTION LEVELS," located on

Enclosure 1

page 25 of the RADHASP.

Table F-1 refers to use of an Alpha Probe for measuring levels of contamination on personnel, by frisking. Readings of greater than 25 counts per minute above background would require further decontamination. NRC notes that beta-measuring instruments typically provide better sensitivity than do alpha-measuring instruments in determining compliance with radiological limits. NRC recommends that Engelhard consider beta-measuring instruments for determining compliance with the action levels identified in Table 8-1.

7. Appendix I

Please provide the assumptions you used to determine the ratios of U_{234} , U_{235} , and U_{238} , and to determine the accuracy of the average of alpha, beta, and gamma activity listed in Appendix I of the RADHASP. The alpha to beta ratio is presented as 19/2165. How will U_{234} be determined in volumetric samples (soil)?

The action level for airborne radiological contamination should be based on concentration volumes listed in 10 CFR Part 20, Appendix B, Table 1. In reference to Appendix I (page 2) of the RADHASP, the reporting of dust levels does not demonstrate compliance with Part 20 requirements. How will potential for off-site releases of airborne contamination be monitored?

8. General

A document should be provided that specifically designates the PM, HP, RSO, etc. The only information provided on possible personnel designations is on the Health and Safety Plan approval sheet on Page 2.

Confirm that all activities involving radioactive material will be conducted in compliance with 10 CFR Parts 19 and 20.

INTERIOR DECONTAMINATION PLAN

1. Section 8.1

You indicate that the dust monitor will be used periodically to monitor for ambient dust concentration. Please confirm that this periodic monitoring will be performed in areas that are representative of the air that workers will be breathing during activities that have the highest potential for generating airborne radiological contaminants.

2. Section 5.1

You indicate that the criteria for releasing a contaminated building for unrestricted use is 10 μ R/hour above background. The exposure rate

criterion that you should apply for the release of the building for unrestricted use is 5 μ R/hour above background. (Reference: Action Plan to Ensure Timely Cleanup of Site Decommissioning Management Plan Sites, 57FR 13389-92, April 16, 1992). Please modify your plan.

3. Section 5.5

You indicate that you do not expect to use respiratory protection equipment during routine operations, but will consider the use of respiratory protection equipment under certain circumstances. If you intend to take credit for the protection factors offered by the respiratory protection equipment, confirm that you will implement a respiratory protection program that meets the requirements specified in 10 CFR 20, Subpart H - Respiratory Protection and Controls to Restrict Internal Exposure in Restricted Areas.

4. General

Your plans do not address routine bioassay or air sampling evaluations to assess the committed effective dose equivalent from internal exposures of radioactive material. From a review of the scope of work and the radiological characterization survey of the interior of the facilities, it does not appear that the potential committed dose equivalent from sources of internal exposure personnel monitoring will exceed the limits in 10 CFR 20. However, confirm that your evaluation concludes that internal exposures will not exceed the values discussed in 10 CFR 20.1502(b).

Confirm that all activities involving radioactive material will be conducted in compliance with 10 CFR Parts 19 and 20.

GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT
PRIOR TO RELEASE FOR UNRESTRICTED USE
OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE,
OR SPECIAL NUCLEAR MATERIAL

U.S. Nuclear Regulatory Commission
Division of Industrial and
Medical Nuclear Safety
Washington, DC 20555

August 1987

Enclosure 2

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The instructions in this guide, in conjunction with Table 1, specify the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use. The limits in Table 1 do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control is considered on a case-by-case basis.

1. The licensee shall make a reasonable effort to eliminate residual contamination.
2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to the application of the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.
3. The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits.
4. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests must:
 - a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent, and degree of residual surface contamination.
 - b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table 1. A copy of the survey report shall be filed with the Division of Industrial and Medical Nuclear Safety, U. S. Nuclear Regulatory Commission, Washington, DC 20555, and also the Administrator of the NRC Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report shall:

- a. Identify the premises.
- b. Show that reasonable effort has been made to eliminate residual contamination.
- c. Describe the scope of the survey and general procedures followed.
- d. State the findings of the survey in units specified in the instruction.

Following review of the report, the NRC will consider visiting the facilities to confirm the survey.

TABLE 1
ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDES ^a	AVERAGE ^{b c f}	MAXIMUM ^{b d f}	REMOVABLE ^{b e f}
U-nat, U-235, U-238, and associated decay products	5,000 dpm α /100 cm ²	15,000 dpm α /100 cm ²	1,000 dpm α /100 cm ²
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm ²	300 dpm/100 cm ²	20 dpm/100 cm ²
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm ²	3000 dpm/100 cm ²	200 dpm/100 cm ²
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm $\beta\gamma$ /100 cm ²	15,000 dpm $\beta\gamma$ /100 cm ²	1000 dpm $\beta\gamma$ /100 cm ²

^aWhere surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

^bAs used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

^cMeasurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

^dThe maximum contamination level applies to an area of not more than 100 cm².

^eThe amount of removable radioactive material per 100 cm² of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

^fThe average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.