



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

MAY 19 1993

Docket No. 070-00139

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

Dear Mr. Chabot:

On January 5, 1993, the Nuclear Regulatory Commission issued an information notice related to revisions in 10 CFR Part 20, Standards for Radiation Protection. In the information notice, NRC staff explained that the implementation date for the new radiation protection standards was extended to January 1, 1994. I am enclosing a copy of the information notice for your information. Please be aware that the amended 10 CFR Part 20 contains substantive revisions from the current version to update our radiation protection standards to adopt recommendations from the International Commission on Radiological Protection (ICRP) and the National Council on Radiation Protection and Measurements (NCRP).

Please review the new 10 CFR Part 20 changes and their applicability to your operations. If you have any questions, please contact me at 301-504-2565.

Sincerely,

A handwritten signature in cursive script that reads "Jack D. Parrott".

Jack D. Parrott, Project Manager  
Facilities Decommissioning Section  
Decommissioning and Regulatory  
Issues Branch  
Division of Low-Level Waste Management  
and Decommissioning  
Office of Nuclear Material Safety  
and Safeguards

Enclosure: As stated

cc: Attached list

B/2

## Engelhard Corporation

### 1. Site Identification

Engelhard Corporation  
Plainville, MA

License No.: None  
Docket No.: 070-00139 (old)  
License Status: Terminated by AEC in 1962  
Project Manager: J. Parrott

### 2. Site and Operations

A subsidiary of Engelhard Corporation called D.E. Makepeace was licensed by the Atomic Energy Commission (AEC) to use enriched uranium for the fabrication of fuel elements from the late 1950s to the early 1960s. During this period, the licensee was allowed to discharge uranium contaminated effluent to an on-site septic system and to incinerate uranium contaminated solid waste on-site. At license termination, only indoor areas were surveyed for release. The outdoor contamination was not discovered until the site became subject to characterization for the presence of hazardous wastes on-site under the Resource Conservation and Recovery Act (RCRA). Because the contamination was from special nuclear material, and therefore not subject to regulation by RCRA, the U.S. Environmental Protection Agency (EPA) contacted the Nuclear Regulatory Commission (NRC) in late 1991.

The site is currently operating but does not use licensable material. The majority of the approximately 10 hectare (25 acre) site is covered by buildings and parking lots. This site is adjacent to a small reservoir called Turnpike Lake. Engelhard is in the process of shutting down this facility.

### 3. Radioactive Wastes

Very little data on the radioactive wastes at this site exists. A gamma survey was done by Engelhard in 1988 on the buildings that existed at the time that licensed activities took place, and also around the septic system and pump house. Inside the buildings, maximum readings of  $1.8 \times 10^{-8}$  to  $2.1 \times 10^{-8}$  C/kg/hr (70 to 80  $\mu$ R/hr) were found in isolated areas. Sludge inside the unused septic tank was also found to be contaminated. Preliminary sampling in the area of the old septic system have yielded gross alpha values as high as 2.4 Bq/g (66 pCi/g) in the soil and 48 Bq/l (1300 pCi/l) in the groundwater. Areas of the site are also contaminated with heavy metals and organic solvents, so the potential for mixed wastes exists.

*unverified*

### 4. Description of Radiological Hazard

Access to indoor areas suspected of being radiologically contaminated is not controlled. The ~~known~~ outdoor contaminated areas are under pavement.

*suspected*

Access to the old septic tank is possible through a man-hole in the parking lot. The radiological contamination detected so far is confined to the site. Hazardous waste has been detected in on-site soil and groundwater and in off-site groundwater.

5. Financial Assurance/Viable Responsible Organization

Since no license exists for this site, compliance with financial assurance regulations does not apply. Engelhard appears to be a financially viable company and seems willing to properly decommission this site. Engelhard has received an administrative order from EPA's Region I RCRA office to characterize and remediate the hazardous contamination associated with this site.

6. Status of Decommissioning Activities

On November 10, 1992, NRC Headquarters personnel participated in a public meeting in Plainville involving representatives of EPA Region I, the Massachusetts Department of Environmental Protection (DEP) and Engelhard Corporation. This meeting was held in conjunction with the release of the Public Involvement Plan prepared jointly by DEP and EPA. The Public Involvement Plan is applied to sites which are designated Public Involvement Plan sites by DEP in response to community interest in becoming involved in the remediation process.

<sup>NRC</sup> ~~A letter~~ <sup>a letter</sup> was sent to Engelhard on November 23, 1992, requesting that all samples taken for RCRA site characterization be analyzed for gross alpha and gross beta, or isotopic uranium in areas where elevated gross alpha readings have already been found. This letter also outlined the residual clean-up criteria that should be applied to the site soil as 1.1 Bq/g (30 pCi/g) total uranium, and 1.1 Bq/l (30 pCi/l) total uranium in groundwater.

Engelhard is currently negotiating with EPA on the specifics of site characterization/remediation under the RCRA order. So that the characterization/remediation of this site goes as efficiently as possible, NRC is requesting that Engelhard combine their RCRA site characterization efforts with the site characterization requested by NRC. However, if the EPA RCRA order process becomes unreasonably delayed in the negotiating phase, NRC will require Engelhard to act independently on the NRC request.

Engelhard plans to submit the characterization data and a decommissioning plan for the building contamination by March 15, 1993.

7. Other Involved Parties

The EPA Region I RCRA office and Massachusetts DEP are involved at this site due to the hazardous waste contamination.

8. NRC/Licensee Actions and Schedule

A. Actions/Milestones

- Engelhard submits characterization data and decommissioning plan for

the building interiors, 3/15/93

- NRC approves building interior decommissioning plan, 5/15/93
- Engelhard submits radiological site characterization plan concurrent with RCRA site characterization plan, 10/1/93
- NRC approves site characterization plan, 12/1/93
- Engelhard submits site characterization data and decommissioning plan, 6/1/94
- NRC approves decommissioning plan, 9/1/94
- Engelhard completes decommissioning, submits verification survey data, 12/31/94
- NRC performs confirmatory survey, 3/1/95
- NRC terminates license, 8/1/95 ? there is no license

**B. Problems**

No specific problems have been identified with this site as of yet. However, as mentioned above, there is a possibility for mixed waste at this site.

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- Engelhard completes decommissioning, submits verification survey data, 12/31/94
- NFC performs confirmatory survey, 3/1/95
- NFC terminates license, 8/1/95

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## UNC Recovery Systems

### 1. Site Identification

UNC Recovery Systems  
Wood River Junction, RI

License No.: SNM-777  
Docket No.: 070-00820  
License Status: Current (until termination by the Commission)  
Project Manager: J. Parrott

### 2. Site and Operations

The site is located in southwestern Rhode Island and occupies 451 hectares (1114 acres) on both sides of the Pawcatuck River. United Nuclear Corporation (UNC) operated an enriched uranium scrap recovery facility from 1964 until 1980. The site contained buildings, lagoons, and a burial ground. The operational portion of the site covered an area of 2.3 hectares (5.6 acres).

The facility processed various types of unirradiated scrap to reclaim uranium for reuse as fuel for nuclear reactor operations. Although primarily unirradiated fuel elements were processed, slightly irradiated fuel elements from zero power test reactors were processed from 1967 to 1980. Additionally, UNC experienced a nuclear criticality excursion in 1964. Therefore, fission products were present and had to be considered during decommissioning activities. Uranium-235 enrichment in the scrap ranged from a few percent to greater than 90 percent. The scrap processed in the facility for uranium recovery was received in several different matrices; included were zirconium, ceramics, aluminum, carbon, thorium, and contaminated wastes of varying kinds. The process used at the facility included acid digestion with nitric and hydrofluoric acids and organic separation with tributyl phosphate and kerosene. In addition to these, the following chemicals were used in the recovery process and were present in the wastes in varying concentrations: aluminum nitrate, calcium hydroxide, mercury, sodium carbonate, sodium hydroxide, and potassium hydroxide.

Solid wastes from the process were shipped offsite. Liquid wastes were originally discharged to the Pawcatuck River through a drain pipe. From 1966 to 1979, liquids were discharged into lined lagoons. From 1979 until *recovery* the facility closed, storage tanks were used for liquid wastes. *operations were terminated*

During the period from 1974 to 1977, the Rhode Island Water Resources Board drilled several test wells on UNC property to obtain water quality information. This testing program resulted in the discovery of above background levels of radioactivity and nitrates in the groundwater under UNC property. UNC responded by initially drilling 10 observation wells between the plant and the Pawcatuck River to assess the contamination problem. Additional wells were added later. The U.S. Geological Survey (USGS) also installed a number of wells. Review of the data revealed that the plume extended from the lagoons to the Pawcatuck River a distance of

about 457 m (1500 ft).

By letter dated April 29, 1980, UNC informed the NRC of its plans to terminate recovery operations and initiate decommissioning. UNC characterized and decontaminated the facility in conjunction with CRAU confirmatory surveys. These activities were completed in 1989. By letter dated July 19, 1990, UNC requested the site be released for unrestricted use and its license terminated.

### 3. Radioactive Wastes

The contamination consisted of enriched uranium and fission products on surfaces and in soil, and groundwater. In a few isolated unrestricted areas, peak total uranium residual soil concentrations above 1.1 Bq/g (30 pCi/g) were found by CRAU. However, when averaged over a grid block or adjacent ~~land areas~~ <sup>grid areas</sup> these isolated areas satisfied the release criteria. Likewise in the restricted area, some isolated hotspots satisfied the release criteria when averaged over their grid or over adjacent grids. The highest exposure rate measured at the site, after the completion of remediation activities, was  $2.58 \times 10^9$  C/kg/hr (10 uR/hr) at 1 m (3.2 ft) above the surface. *above background*

### 4. Description of Radiological Hazard

Surface and soil contamination has been remediated to the point of being acceptable for unrestricted release. Residual groundwater contamination by strontium-90 (Sr-90) and nitrate remains. The last groundwater sampling took place in 1990. The highest Sr-90 concentration measured at that time was 1.24 Bq/l (33.6 pCi/l) and the highest NO<sub>3</sub> was 257 mg/l. Due to natural flushing, the groundwater Sr-90 and nitrate concentrations have been going down over the years since the plant ceased operations. The contaminated groundwater plume is discharged into the Pawcatuck River on-site and is diluted to below detectable levels. Therefore, the contaminated groundwater does not leave the site. *what are the correct EPA limit*

### 5. Financial Assurance/Viable Responsible Organization

UNC has already financed the decontamination of the radiological contamination at this site.

### 6. Status of Decommissioning Activities

The site has been remediated to NRC specifications. CRAU's termination surveys of this site indicate that it is suitable for unrestricted release. However, nitrate contamination remains in the groundwater above U.S. Environmental Protection Agency (EPA) standards.

A meeting was held in Providence, R.I., on February 11, 1993, between staff from NRC, UNC and the State of Rhode Island's Departments of Administration and Environmental Management to try to resolve the impasse over this issue. The State is recommending against delicensing at this time unless certain conditions are met by the licensee. NRC is commencing to work with the State so that their concerns are met allowing NRC to

terminate the license.

7. Other Involved Parties

Parties involved in this site are the Rhode Island Departments of Administration, Environmental Management, and Health, the Narragansett Indian Tribe and the U.S. Department of Interior. Other interested parties are the Rhode Island Governor's Office and the Town of Charlestown, R.I.

8. NRC/Licensee Actions and Schedule

A. Actions/Milestones

- State of Rhode Island takes regulatory responsibility for the site, 6/1/93
- Public meeting on license termination, 8/1/93
- NRC terminates license, 9/1/93

B. Problems

The State of Rhode Island is concerned that there is nitrate contamination in onsite groundwater above EPA drinking water standards. Because of this, they may not recommend that the license be terminated.