

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 040-06213 (retired)

License No.: STB-00058 (retired)

Report No.: STB-00058/96-01

Licensee: E. I. Du Pont de Nemours & Co., Inc.
Du Pont Agricultural Products

Locations: 901 West Dupont Avenue
Belle, WV

Date: August 12, 1996

Inspector: Jay L. Henson, Radiation Specialist

Approved by: John P. Potter, Chief
Materials Licensing/Inspection Branch 2
Division of Nuclear Materials Safety

Enclosure 1

EXECUTIVE SUMMARY

E. I. Du Pont de Nemours & Co., Inc.
Du Pont Agricultural Products
NRC Inspection Report No. STB-00058/96-01

This routine, announced inspection was conducted to evaluate the current radiological status of facilities utilized by the licensee under their former License No. STB-00058, which expired in January, 1965. This included discussions with cognizant licensee representatives, reviews of documents, and direct observations of the site where activities associated with the terminated license were performed.

The inspector found that Building 202, identified in the former license as the facility where licensed activities were conducted, no longer existed. The building had been demolished several years prior to this inspection, and a much larger facility, Building 291, had been erected at the site. Based upon his observations of the site and discussions with licensee personnel, the inspector determined that no original structure remained from Building 202, and that the construction of Building 291 had apparently included the entire removal of Building 202, and excavation of the area where Building 202 had existed to allow construction of the foundation for Building 291.

The inspector also determined that, as stated in documents contained in the terminated license docket file, the licensee had buried thorium contaminated waste at a site across from the main facility. A licensee document dated October 4, 1961, indicated only three drums of contaminated waste (two 55 gallon and one 30 gallon) were buried at the site on September 29, 1961. This document also stated that the material was buried under six feet of earth and that the radiation levels measured on the surface of the drums prior to burial ranged from 0.5 to 0.7 millirem per hour. The licensee's current radiation safety staff were aware of the site. The inspector visited the burial site and observed that the licensee controlled access to this area and that the area was posted with a sign indicating that radioactive material was buried at the site. The licensee's staff stated that as much as sixteen more feet of earth cover had been added to the area since the material was first buried. The licensee periodically inspected the site, but did not perform any radiological surveys in the area or analyze the groundwater obtained from monitoring wells in the area for radioactive material.

No violations or concerns were noted during the inspection.

LIST OF PERSONS CONTACTED

Licensee

*K. Harbert, Jr., Radiation Safety Officer

*L. Price, Alternate Radiation Safety Officer

Tim Albert, Environmental Office

G. Arthur, former employee with Environmental Office

*Attended August 12, 1996, Exit Meeting

In addition, other licensee staff were interviewed during the inspection.

REPORT DETAILS

01. Background (TI 2800/026)

License No. STB-00058 was issued on January 30, 1961, for the possession of 1,000 pounds of thorium for use in dispersions of thorium oxides in metal. The license was amended in January, 1962, and the possession limit was changed to 500 pounds.

In its December, 1960 application, the licensee described the source material as a thorium salt, probably thorium nitrate, in a crystal form containing 33 to 48 percent thorium by weight. The facility where the source material would be used was described as a restricted area of dimensions 40 feet by 100 feet with a steel frame and sheet metal building approximately 15 feet by 50 feet. Processing equipment contained in the building included tanks for dissolving, mixing and reacting the thorium salts with metal salts, a plate and frame filter press, a combination drying and calcining oven, and a controlled atmosphere furnace. A sink and other laboratory type of equipment was also employed. A hood was also used when source material was handled manually and for exhausting the calcining furnace. The exhaust from the hood was 15 feet above ground and the licensee projected that 18 grams of thorium would be exhausted each day of operations. After handling of the dry source material in the hood, it was mixed with water to limit airborne contamination. The licensee stated it would use air samplers to monitor airborne material and conduct radiation surveys with a portable survey instrument and obtain wipes in work areas to monitor removable contamination. To illustrate its experience with handling hazardous materials, the licensee stated that it had many years of experience in producing catalysts containing chromium compounds which are strongly toxic.

The methods of disposal of source material included burial and discharge to plant sewage and water effluent stream. As described in the license application, all solid or semisolid thorium-containing materials would be accumulated, stored and periodically buried. The burial would be in the plant dump which was located remotely from the plant and was separated from inhabited areas by a nest of mountains. All solutions containing thorium would be treated chemically to precipitate as much of the thorium as possible before discarding them. The restricted area was located adjacent to one of the plants water outfalls which had a minimum flow rate of 20,000 gallons per minute. The resulting concentration of thorium was stated to be below detectable limits and several orders of magnitude below those specified in AEC regulations (Part 20).

An AEC inspector found no items of noncompliance during an inspection conducted on April 23, 1963. No other details of the inspection were in the retired docket file.

The license expired on January 31, 1965. In a memo dated June 6, 1965, an AEC employee stated that he had contacted the licensee on May 27, 1965, and was informed that the licensee had not procured or used thorium since the last inspection (date of inspection not identified). The licensee had 0.43 pounds of thorium which it possessed under a general license since the specific license expired. The retired docket file does not contain any information on the final disposition of the material or surveys performed by either the licensee or the AEC after the license expired and was terminated.

02. Management Oversight (87100)

The original licensee, E. I. Du Pont, is still operating at the Belle, WV complex and is a current NRC licensee (License No. 47-01449-01). The current license is in no way related to the licensed activities formerly authorized in License No. STB-00058. The licensee's Radiation Safety Officer (RSO) is knowledgeable of the former licensed activities performed at the site and is familiar with the former burial site. Du Pont maintains control over the burial site, but recently sold that part of the complex where Building 202, the building where licensed activities were conducted under License No. STB-00058, had been located.

03. Facilities (87100)

Building 202 was the facility where the source material was used and was described as a restricted area of dimensions 40 feet by 100 feet with a steel frame and sheet metal building approximately 15 feet by 50 feet. Licensee personnel stated that this building had been demolished several years prior to the inspection and that a much larger, multi-story building had been erected at the site. The inspector visited the site and found that Building 291 was located on the site where Building 202 was previously located. Building 291 was a multi-storied process building with a much larger foundation than that described for Building 202. The inspector determined that none of the original structure from Building 202 remained at the site and that most of the ground that surrounded the building had been excavated and removed when the foundation was established for Building 291. Building 291 is currently owned and operated by ICI.

The other area where material was used or stored under License No. STB-00058 was the burial site across from the main industrial complex. As described in the original application, the licensee planned to bury solid thorium waste materials in the plant dump located in a nest of mountains adjacent to the complex. The licensee showed the inspector a document dated October 4, 1961, which stated that on September 29, 1961, three drums of contaminated waste (two 55 gallon and one 30 gallon) were buried at a location behind the hill opposite the plant, which would be marked by a sign forbidding unauthorized digging in the area. It further stated that the drums were buried under about six feet of earth cover versus the four feet required by the Atomic Energy Commission (AEC). The radiation level measured from the surface of the drums ranged from 0.5 to 0.7 millirem per hour prior to burial,

and the radiation level measured above the ground after burial was 0.02 millirem per hour, which was described as the background radiation level in the area. There was also a handwritten annotation to a copy of this 1961 memorandum made by a former RSO in February, 1985, which stated that the material contained in the drums was mostly filter paper with thoria residues from the expanded metals venture.

The inspector visited the former burial site. The licensee controlled access to the roads leading to the site with two secured gates. The area where the material was buried was posted with a sign warning that thoria material was buried at the site and that access to the site was controlled. Licensee personnel stated that since the burial in 1961, an additional earth cover of approximately fourteen feet had been added to the burial site. The inspector used a Ludlum Model 19 microR meter (SN No. 101703, calibrated February 13, 1996) to survey the burial site area. The radiation levels measured over the burial site ranged from 10 to 15 microrem/hour, which was similar to the background radiation level range measured in areas near the burial site.

The inspector asked the licensee staff if there were any ground water monitoring wells in the area where Building 202 was formerly located and around the burial site. The licensee stated that there were several monitoring wells in and around the complex and that some wells were near both sites. The licensee stated that these wells were sampled on at least an annual basis, but that the analysis of the samples did not include a measurement for the presence of radioactive material.

EXIT MEETING SUMMARY

The inspector presented the inspection results to licensee representatives at the conclusion of the inspection on August 12, 1996. The inspector informed those licensee representatives present that no violations of NRC requirements were identified. The inspector informed the licensee that since Building 202 had been demolished and the area excavated and a new building constructed at the site, it did not appear that there were any further concerns regarding the radiological status of the building. However, the inspector informed the licensee that the NRC may require additional information regarding the burial site and that the NRC planned to publish guidance regarding former burial sites in an Information Notice which was due to be published in August or September. Licensee representatives did not identify any documents or processes as proprietary in nature, and no dissenting comments were received from the licensee.

INSPECTION PROCEDURES USED

IP 87100: Licensed Materials Program
IP 83890: Closeout Inspection and Survey

TEMPORARY INSTRUCTIONS USED

TI 2800/026: Followup Inspection of Formerly-Licensed Sites Identified As Potentially Contaminated

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, D.C. 20555

August 19, 1996

NRC INFORMATION NOTICE 96-47: RECORDKEEPING, DECOMMISSIONING NOTIFICATIONS
FOR DISPOSALS OF RADIOACTIVE WASTE BY LAND
BURIAL AUTHORIZED UNDER FORMER 10 CFR 20.304,
20.302, AND CURRENT 20.2002

Addressees

All U.S. Nuclear Regulatory Commission licensees.

Purpose

NRC is issuing this information notice to: (1) inform addressees of problems identified at several sites where disposals of radioactive waste by land burial were made under the authorization of former 10 CFR 20.304 and 10 CFR 20.2002 (revision to the former 10 CFR Section 20.302); (2) emphasize recordkeeping requirements of such burials; and (3) remind licensees of the submittal dates (September 15, and October 15, 1996) for compliance with "Final Rule on Timeliness in Decommissioning of Materials Facilities" (59 FR 36026, effective August 15, 1994) (hereafter called the "Timeliness Rule"). This information notice emphasizes the current NRC position on recordkeeping and notification requirements for such disposals. NRC expects that recipients will review the information for applicability to their facilities and consider actions, as appropriate, to avoid similar problems to those identified. However, suggestions contained in this information notice are not NRC requirements; therefore, no specific action or written response is required, other than as specified for compliance with the regulations described herein.

Description of Circumstances

On-site burials have been problematic for licensees during their decommissioning of sites containing such burials. A limited number of past burial sites have been required to be exhumed during decommissioning, even though the materials in these sites were disposed of in accordance with former 10 CFR 20.304 requirements. In certain cases, portions of the buried materials were required to be shipped off-site to a licensed disposal facility, before NRC released the site for unrestricted use. Based on this experience, NRC regulations now require licensees to notify NRC if they have burial sites that may require decommissioning and to maintain records of these burials.

Discussion

The Timeliness Rule includes requirements pertaining to buildings and outside areas that have been unused for a period of 24 months, at facilities licensed under 10 CFR Parts 30, 40, 70, and 72. Outside areas include those where disposals made pursuant to former 10 CFR 20.304, 20.302, and current 20.2002, which is the focus of this information notice. Further, this information notice reiterates the NRC position on the applicability of its present decommissioning rules. This NRC position was first stated in the Final Rule on the "General Requirements for Decommissioning Nuclear Facilities" (53 FR 24021), published June 27, 1988 (hereafter called "Decommissioning Rule"), and repeated in NRC NUREG-1444, "Site Decommissioning Management Plan."

Burial of certain quantities of radioactive waste in soil by licensees without prior Agency approval was authorized on January 29, 1959 (22 FR 548). Originally, this authorization was codified in former 10 CFR 20.304. On January 28, 1981, the Commission concluded that it was inappropriate to continue generic authorizations of burials pursuant to 10 CFR 20.304 without regard to factors such as location of burial, concentrations of radioactive material, form of packaging, and notification of NRC, and therefore NRC rescinded 10 CFR 20.304 (45 FR 71761). As of January 28, 1981, licensees wishing to perform on-site disposals of the type previously authorized under 10 CFR 20.304 were required to obtain prior NRC approval in accordance with 10 CFR 20.302. The current requirements of 10 CFR 20.2002 (revised from 10 CFR 20.302) remain in force.

The evaluations required before the Commission terminates a license or makes a regulatory decision related to disposed material were discussed in the supplemental information to the Decommissioning Rule. There, the Commission stated that it "...will take a hard look at the extent to which the site has been previously used to dispose of low-level radioactive waste by land burial and decide what remedial measures, including removal of such soil off-site, are appropriate before the site can be released for unrestricted use and the license terminated." The Timeliness Rule established specific time periods for decommissioning unused areas of an operating site and for decommissioning the entire site, on termination of operations.

This information notice describes the recordkeeping requirements for disposals authorized under former 10 CFR 20.304 and 20.302 regulations, as well as the current 10 CFR 20.2002, and the notification requirements in the Timeliness Rule for these disposal sites. Note that, in this information notice, references to 10 CFR 20.2002, also apply to previous disposals under former 10 CFR 20.302.

1. Recordkeeping

At the time of decommissioning, complete records of 10 CFR 20.304, 20.302, and Section 20.2002 disposals are necessary for NRC to evaluate the acceptability of the disposals. Each licensee is required, per 10 CFR 20.2108, to maintain records of disposals made under 10 CFR 20.2002, and to preserve such records until the Commission terminates the license requiring these records. Former 10 CFR 20.401(c)(3) stated that records of disposals made pursuant to 10 CFR Section 20.302, and 20.304 should be maintained until the Commission authorizes their disposition. In addition, the final rule on "Decommissioning Recordkeeping and License Termination: Documentation Additions," issued July 26, 1993 (58 FR 39628), requires a single document listing (1) all areas outside restricted areas where current and previous wastes have been buried, (as documented under 10 CFR Section 20.2108); and (2) other information necessary to ensure that decommissioning is carried out in accordance with the Commission's regulations. This rule is applicable to licenses issued under 10 CFR Parts 30, 40, 70, and 72. See 10 CFR 30.35(g)(3), 40.46(f)(3), Part 70.25(g)(3), and 72.30(d)(3).

At present, 10 CFR 20.2002 states that the licensee must apply to the Commission for approval of proposed procedures to dispose of licensed material in a manner not otherwise authorized in 10 CFR Part 20. The former 10 CFR 20.302 required this also. After the application is approved by NRC, records of actual 10 CFR 20.2002 disposals must be maintained per 10 CFR 20.2108. These records should be sufficient to demonstrate compliance with the approved procedures contained in the application.

Pursuant to the former 10 CFR 20.401 requirements, the records of disposals performed under former 10 CFR 20.304 were required. The following requirements were placed on burials made under 10 CFR 20.304:

1. the total quantity of licensed and other radioactive material buried at any one location and time does not exceed, at the time of burial, 1000 times the amount specified in Appendix C to Part 20;
2. the burial is at a minimum depth of four feet, and
3. successive burials are separated by distances of at least 6 feet and not more than 12 burials are made in any year.

NRC expects that licensees who disposed of radioactive waste in accordance with Section 20.304, 20.302, and 20.2002, comply with the applicable recordkeeping requirements. Further, if the NRC determines that the minimum

records required for disposals that may pose a significant risk to the public after release have not been kept, the licensee may then be expected to characterize the disposal sites by compiling the necessary information (e.g., sampling and survey data). The acceptability of the timing and extent of characterization will be determined by the NRC on a case-by-case basis.

2. Decommissioning

Disposals made pursuant to former 10 CFR 20.304, 20.302, and current 20.2002 at facilities licensed under 10 CFR Parts 30, 40, 70, and 72, and that have been unused for NRC licensed operations for a period of 24 months, are subject to the requirements of the Timeliness Rule. For timing provisions see 10 CFR 30.36(d), 40.42(d), 70.38(d), and 72.54(d). The following guidance was provided in the Timeliness Rule, "Statements of Consideration" (59 FR 36033):

VII Implementation

The timing provisions of this rule begin on the effective date. Thus, licensees that currently have unused facilities at the time of publication of the final rule would not need to submit notifications required by this rule earlier than 2 years after the rule becomes effective. This provides these licensees with the same period of time (2 years) in which to determine whether the unused facility would be put into use again or submit notification as required by the rule.

Therefore, licensees who have unused outside areas (i.e., burial areas) that contain elevated levels of licensed radioactive materials, and have declared that licensed operations have ceased in those areas, are subject to the Timeliness Rule. In addition, for an outside area (i.e., burial area) that has been unused for NRC licensed operations for a period of 24 months prior to August 15, 1996, the licensee should:

1. No later than October 15, 1996, notify NRC of the above and either:
(1) begin decommissioning; or (2) submit, within 12 months of notification, a decommissioning plan, if required by the regulations; or
2. Submit a request to extend the above time periods by no later than September 15, 1996, in accordance with the provisions of the rule.

When notifying NRC, as stated above, the licensee should specify the type of outside area that is being considered for decommissioning (storage area, Section 20.304 burial, land application, etc.).

During decommissioning, NRC will evaluate disposals authorized under former Section 20.304, 20.302, and current 20.2002 to determine their potential impact on the health and safety of the public. The acceptability of a disposal will depend on two factors: (1) the potential for the disposed material to migrate and significantly contaminate the groundwater; and (2) the potential for significant exposure to members of the public who may, at some time in the future, develop and use the disposal site for a private residence, farm, business, or other purpose.

The NRC staff is currently developing a methodology that can be used to determine the acceptability of prior burials. This methodology will be used as a screening tool to determine which burial sites have the greatest potential to impact public health and safety. This screening tool will be based on the total activity disposed of in the burial ground and the potential for that activity to produce a significant dose to a member of the public. Staff will require no further effort on sites that pass this screening. Those sites that do not pass the screening would require more detailed environmental pathway analysis. This may require site characterization information and adose assessment. The staff will consider the magnitude of the projected dose, and existing radiological criteria for decommissioning, to determine in conjunction with the objective of keeping residual contamination levels as low as reasonably achievable if the waste may pose a significant risk to the public and if the burial requires remediation. This methodology will be completed and distributed for use by the licensees prior to September 15, 1996.

Currently NRC does not have a list of sites that contain former 10 CFR 20.304 burials. Therefore, it would be beneficial for licensees affected by this notice, to notify the staff that it is in possession of a burial site, by the October 15, 1996 deadline, even though many of those sites will not need to be remediated. In the alternative, NRC will acquire this information during routine inspections. Once the licensee has notified NRC, it can then use the screening methodology to determine if its burial site requires further action. If the burial site passes the screening method, the licensee would notify NRC that the site passed and would not need to take further action. If the site does not pass, then the licensee would have to further assess the prior burial through site characterization and/or radiological surveys and potentially submit a decommissioning plan and proceed with decommissioning in accordance with NRC's existing requirements.

This information notice requires no specific action or written response. However, licensees must comply with the notification requirements in the Timeliness Rule as stated above. As stated in NRC's revised enforcement policy (NUREG-1600), failure to meet requirements in the Timeliness Rule can be classified as a Severity Level III violation and subject to a civil penalty. Licensees who notify NRC should provide such notices to the appropriate offices listed in Sections 30.6, 40.5, 70.5, and 72.4 of the regulations. If you have any questions about the information in this notice, please contact the technical contacts listed below or the appropriate regional office.

Margaret V. Federline

Margaret V. Federline, Acting Director
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Technical contacts: David N. Fauver, NMSS
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Attachments:

1. List of Recently Issued NMSS Information Notices
2. List of Recently Issued NRC Information Notices