



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
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March 22, 2005

MEMORANDUM TO: Michael T. Lesar, Chief  
Rules and Directives Branch  
Division of Administrative Services  
Office of Administration

FROM: D. Blair Spitzberg, Ph.D., Chief */RA PKHolahan for/*  
Fuel Cycle & Decommissioning Branch  
Division of Nuclear Materials Safety  
Region IV

SUBJECT: PUBLICATION OF ENVIRONMENTAL ASSESSMENT AND FINDING  
OF NO SIGNIFICANT IMPACT IN THE FEDERAL REGISTER

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Contact: Robert Evans, Region IV, DNMS  
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Docket No.: 030-01063  
License No.: 40-06921-03

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**NUCLEAR REGULATORY COMMISSION**

**[Docket No. 030-01063]**

**Notice of Environmental Assessment and Finding of No Significant Impact of License  
Amendment for Augustana College at Sioux Falls, SD**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Environmental Assessment and Finding of No Significant Impact for license amendment.

**FOR FURTHER INFORMATION CONTACT:** D. Blair Spitzberg, Ph.D., Fuel Cycle and Decommissioning Branch, Division of Nuclear Materials Safety, Region IV, U.S. Nuclear Regulatory Commission, 611 Ryan Plaza Drive, Suite 400, Arlington, TX 76011. Telephone: (817) 860-8100; email *dbb@nrc.gov*.

**SUPPLEMENTARY INFORMATION:**

**I. Introduction**

The U.S. Nuclear Regulatory Commission (NRC) is considering the issuance of an amendment to NRC Materials License No. 40-06921-03 to remove a former burial site from the license. This licensing action will allow Augustana College to release the property for unrestricted use. If approved, Augustana College will continue to possess radioactive materials in accordance with the conditions of its license but will not be required to maintain radiological control over the burial site. The NRC has prepared an Environmental Assessment (EA) in support of this action in accordance with the requirements of 10 CFR Part 51. Based on the EA, the NRC has determined that a Finding of No Significant Impact (FONSI) is appropriate.

## **II. Environmental Assessment**

### *Background*

The radioactive burial site is located on the campus of Augustana College (the licensee) in the central part of Sioux Falls, South Dakota. The burial site is located in a grove of crabapple trees on the east side of the Gilbert Science Center near the corner of 33<sup>rd</sup> Street and Summit Avenue. Based on the licensee's records, the burial site consists of a line of six pits (holes) containing radioactive material. The holes were dug using manual equipment (post-hole digger & shovel) to a depth of 5 feet (1.5 meters) and are arranged in 6-foot (1.8-meter) intervals.

The licensee has been authorized by the NRC and its predecessor, the U.S. Atomic Energy Commission (AEC), to possess radioactive material since 1958. The docket file records indicate that Augustana College first began possessing radioactive material during 1963. The licensee's records document that about 12 millicuries (0.44 gigabecquerels) of carbon-14, a long-lived beta particle emitter, were disposed at the burial site between 1968 and 1969.

### *Review Scope*

By letters dated February 17, April 25 and August 25, 2003, the licensee requested that the former radioactive materials burial site located on campus property be released for unrestricted use. Prior to January 28, 1981, the NRC permitted licensees to dispose of small quantities of licensed materials by burial in soil without specific NRC authorization. This was authorized pursuant to 10 CFR 20.304. This regulation has since been rescinded by the NRC. The NRC is considering the issuance of an amendment to Materials License No. 40-06921-03 to release the burial site for unrestricted use. In accordance with 10 CFR 30.36 and NUREG-1757, Volume 1, Revision 1, a decommissioning plan was not required from the

licensee. The purpose of this EA is to assess the environmental consequences of this licensing action using the guidance provided in NUREG-1748.

*Proposed Action*

The proposed action would approve the licensee's request to amend its license to release the former burial site located at Augustana College in Sioux Falls, South Dakota, for unrestricted use. The licensee would not be required to remediate the burial site if the NRC approves the license amendment request.

*Purpose and Need for Proposed Action*

The proposed action is necessary to release the burial site from the license for unrestricted use. The need for the proposed action is for the licensee to be in compliance with the requirements of 10 CFR 30.36, "Expiration and Termination of Licenses and Decommissioning of Sites and Separate Buildings or Outdoor Areas." By releasing the site for unrestricted use, the applicant will not be burdened with additional regulations that would no longer be applicable to them.

*Alternatives*

The alternatives to the proposed action are (1) the no-action alternative, or (2) to deny the amendment request and require the licensee to take additional actions such as the remediation of the burial site.

*Affected Environment and Environmental Impacts of Proposed Action*

By letter dated March 25, 1968, the licensee requested information from the AEC on "...how and where to dispose of solid and liquid form carbon-14 wastes ... accumulated." The AEC responded in a letter dated April 1, 1968, stating that the disposal options available to the licensee at the time included disposal by burial in soil. Licensees were authorized to dispose of radioactive material by burial in accordance with 10 CFR 20.304 between 1959 and 1981. The

April 1, 1968, letter reminded the licensee of the regulatory requirements -- that each burial may not exceed 50,000 microcuries (50 millicuries, or 1.85 gigabecquerels) of carbon-14, each burial must be made at a depth of at least 4 feet (1.2 meters), and each burial must be separated from other burial sites by at least 6 feet (1.8 meters).

Based on the licensee's records, no more than 12 millicuries (0.44 gigabecquerels) of carbon-14 were buried. The licensee's estimate was based on available disposal records from the 1968 to 1969 time frame. Although the records do not clearly identify the amount of material buried, the licensee made the assumption from the records available that each hole contained the maximum amount of carbon-14 that could have been received under the licensee's authorization limit. Since six holes were constructed, the licensee assumed that the maximum possession limit of 2 millicuries (0.074 gigabecquerels) were buried in each hole. This total may be an overestimate of the amount buried but is below the regulatory limit of 50 millicuries (1.85 gigabecquerels) per year that was allowed during 1968 to 1969.

According to the licensee's records, only dry wastes were buried. Liquid wastes were disposed via the sewer as allowed by AEC regulations at that time. In addition, the experiments involved carbon-14 in a chemical form that would have resulted in a loss of carbon to the atmosphere during the experiments. Therefore, the actual amount of carbon-14 buried could be less than 12 millicuries (0.44 gigabecquerels). The NRC conducted a review of archived records to ascertain whether the licensee's estimate was accurate. Nothing was identified in the NRC's records that refuted the licensee's claim that only 12 millicuries (0.44 gigabecquerels), or less, of radioactive material were buried during 1968 to 1969.

The licensee's request to release the former burial site for unrestricted use was based on dose modeling calculations using the NRC-approved RESRAD Computer Code, Version 6.21. The licensee used the code's default values for its calculations, including a default value of 100 picocuries (3.7 becquerels) per gram of carbon-14. [The NRC and the

licensee's contractor estimated that the actual concentration was around 1-picocurie (0.037 becquerels) per gram based on the amount of material buried and the volume of the burial pit.] Using this conservative approach, the individual dose summed over all pathways was calculated at time zero (1969) to be 77.8 millirems (0.778 millisieverts) per year. At Year 10 (1979), the dose had fallen to less than 1 millirem (0.01 millisievert) per year, and by Year 30 (1999) the dose had fallen to 0.00 millirems (0.0 millisieverts) per year. These calculations were independently verified by the NRC. The NRC notes that the calculated values beyond Year 10 (1979) are below the 25-millirem (0.25 millisieverts) limit for unrestricted release of the site as stipulated in 10 CFR 20.1402. Furthermore, the radiological impacts of releasing the burial site for unrestricted use are bounded by the impacts evaluated in NUREG-1496, "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities."

The NRC staff considered the potential impacts of the leaching of radioactive and non-radioactive material into the groundwater. The licensee estimated that the groundwater table is at a depth of 20 feet (6 meters), and the depth of the disposed material was about 4-6 feet (1.2-1.8 meters) deep. The shallow surface groundwater in the vicinity of the site is not used as a drinking water supply. Local members of the public obtain water from the city. Further, the impacts that potentially contaminated groundwater would have on members of the public were considered as part of the RESRAD modeling scenario. The NRC believes that the burial site, if left undisturbed, will not have a radiological impact on the site groundwater.

#### *Environmental Impacts of Alternative Actions*

##### *1. Environmental Impacts of the No-Action Alternative*

The no-action alternative would result in impacts similar to or the same as the proposed action. However, this alternative would be inconsistent with the Commission's regulations, therefore, it is not a reasonable alternative.

## *2. Environmental Impacts of Alternative 2*

Alternative 2 to the proposed action is to deny the amendment request and require the licensee to take some additional action such as the remediation of the burial site. If the licensee were required to remediate the burial site, the potential harm to the workers or members of the public from exposure to radioactive material would be bounded by the RESRAD calculations. In other words, the remediation of the site would most likely have a minimal radiological impact on site workers and members of the public.

Remediation of the site may have short-term health and safety consequences caused by the excavation, packaging, and shipping of the residual radioactive material. These non-radiological impacts would include the normal risks of exhuming the wastes with earth-moving equipment and transportation of the material to an out-of-state disposal facility. The risks include death or injury from a construction or transportation accident.

The remediation of the former burial site would cause some environmental harm. The waste material would have to be excavated, packaged, and transported to an out-of-state disposal facility. The excavation process would be accomplished by heavy equipment and trucks that would disturb the general area. The prevailing winds will most likely disperse some of the excavated material offsite. The resulting surface void would have to be refilled with clean soil and contoured. Vegetation in the vicinity of the reclaimed site would be temporarily disturbed.

Since the licensee successfully demonstrated that the current dose is 0.00 millirems (0.0 millisieverts) using the RESRAD program, the NRC has determined that the remediation of the burial site is not a practical option.

### *Conclusion*

Based on its review, the NRC staff has concluded that there are no significant environmental impacts associated with the proposed action and the preparation of an

environmental impact statement is not warranted. The staff has determined that the proposed action, approval of the license amendment request to release the former burial site from the license for unrestricted use, is the appropriate alternative for selection.

*Agencies and Persons Contacted*

The NRC staff has determined that the proposed action is not a major construction activity and will not affect listed or proposed endangered species. Additionally, it is not an undertaking that will affect historic properties. Therefore, the U.S. Fish & Wildlife Service and the State Historic Preservation Office were not contacted.

The Department of Environment & Natural Resources, State of South Dakota, was consulted by the NRC. The State responded by letter dated September 23, 2004, and suggested that the NRC consider use of institutional controls to prevent the unintentional disturbance of the burial site. The NRC responded by letter dated October 27, 2004, stating that it was appropriate to release the site without restrictions, including institutional controls. The NRC contacted the Administrator, Waste Management Program, South Dakota Department of Environment & Natural Resources, for the State's response. The State accepted the NRC's position as documented in the October 27, 2004, letter, but plans to pursue the issue of institutional controls directly with the College.

**III. Finding of No Significant Impact**

The NRC staff concludes that the proposed action complies with the radiological criteria for unrestricted use as stipulated in 10 CFR 20.1402. The licensee demonstrated that any remaining residual radioactivity will not result in radiological exposures in excess of the 25 millirem (0.25 millisievert) total effective dose equivalent limit specified in §20.1402. Dose modeling indicates that current and future members of the public will not receive any radiological dose from the burial site. The NRC staff prepared this EA in support of the proposed action to amend the license. On the basis of this EA, the NRC has concluded that

there are no significant environmental impacts and the license amendment does not warrant the preparation of an Environmental Impact Statement. Accordingly, it has been determined that a FONSI is appropriate.

#### **IV. Further Information**

A copy of this document will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system. From this site, you can access the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The following references are available for inspection at NRC's Public Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room). ADAMS accession numbers are located in parentheses following the reference.

1. Wanous, Michael, Augustana College letter to NRC, February 17, 2003 (ML030850812).
2. Wanous, Michael, Augustana College letter to NRC, April 25, 2003 (ML031220675).
3. NRC, "Environmental Review Guidance for Licensing Actions Associated with NMSS Programs," NUREG-1748, August 2003 (ML032540811).
4. Wanous, Michael, Augustana College letter to NRC, August 25, 2003 (ML032400519).
5. NRC, "Consolidated Decommissioning Guidance," NUREG-1757, Volume 1, Revision 1, September 2003 (ML032530410).
6. NRC, "Generic Environmental Impact Statement in Support of Rulemaking on Radiological Criteria for License Termination of NRC-Licensed Nuclear Facilities," NUREG-1496, July 1997 (ML042310492).
7. Satorius, Mark, "Request for Comments Regarding Environmental Assessment of Former Burial Site at Augustana College," NRC letter to State of South Dakota, September 10, 2004 (ML042540432).

8. Lancaster, Rick, "Request for Comments Regarding Environmental Assessment of Former Burial Site at Augustana College," State of South Dakota letter to NRC, September 23, 2004 (ML042730227).
9. Satorius, Mark, "Request for Institutional Controls Over Former Burial Site at Augustana College," NRC letter to State of South Dakota, October 27, 2004 (ML043010521).
10. Evans, Robert, "Telephone Call With State of South Dakota Regarding Former Burial Site at Augustana College," NRC Memorandum To Docket File, December 8, 2004 (ML0434400520).

If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC Public Document Room (PDR) reference staff at (800) 397-4209, (301)415-4737 or by email to [pdr@nrc.gov](mailto:pdr@nrc.gov). Documents may also be viewed electronically on the public computers located at the NRC's PDR, O 1 F21, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852. The PDR reproduction contractor will copy documents for a fee.

Dated at Arlington, Texas this 22<sup>nd</sup> day of March 2005.

For the Nuclear Regulatory Commission.

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Patricia K. Holahan, Director  
Division of Nuclear Materials Safety  
Region IV