



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-4005

February 8, 2006

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

FROM: Jack E. Whitten, Chief /RA/  
Nuclear Materials Licensing Branch  
Division of Nuclear Materials Safety  
Region IV

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

Attached please find one signed original, four copies, and an electronic version on a 3.5-inch diskette of the subject *Federal Register* Notice for transmittal to the Office of the Federal Register for publication.

ADM/DAS/RDB has been given owner's rights to the Notice in ADAMS **060400171**. Publicly available NRC documents referenced in the Notice have been finalized in ADAMS and profiled for public release. ADAMS accession numbers for all such documents are provided in the text under **Further Information**. The **Further Information** section also tells the public how to obtain the documents, which are referenced in the Notice, if the public does not have access to ADAMS electronically.

Docket No.: 30-00873                      Staff Contact: Rachel S. Browder  
License No.: 25-07093-01                Phone No.: (817) 276-6552

Enclosures: 1. One original and four copies  
2. One 3.5-inch diskette (electronic version)

Mr. Michael T. Lesar

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cc (via ADAMS e-mail distribution):  
LDWert  
ENJensen, OGC  
JEWhitten  
DBSpitzberg  
RSBrowder  
RJEvans  
RIV Materials Docket Files - 5th Floor

SUNSI Review Completed: RSB3 ADAMS:  Yes  No Initials: RSB3  
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Document Name: E:\Filenet\ML060400171.wpd final: s:\dnms\Ltrs-memos\2006\

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**NUCLEAR REGULATORY COMMISSION**

**Docket No. 030-00873**

**Notice of Availability of Environmental Assessment and Finding of No Significant Impact  
for License Amendment for Carroll College, Helena, Montana**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Notice of availability.

**FOR FURTHER INFORMATION CONTACT:** Rachel Browder, Project Manager, Nuclear Materials Licensing Branch, Division of Nuclear Materials Safety, Region IV, U.S. Nuclear Regulatory Commission, 611 Ryan Plaza Drive, Suite 400, Arlington, TX 76011.

Telephone: (817) 274-6552; fax number: (817) 860-8188; e-mail: [rsb3@nrc.gov](mailto:rsb3@nrc.gov).

**SUPPLEMENTARY INFORMATION:**

**I. Introduction**

The Nuclear Regulatory Commission (NRC) is issuing a license amendment to Material License No. 25-07093-01, issued to Carroll College, to authorize release of its site located in Helena, Montana, for unrestricted use and license termination. In support of the license amendment, the NRC has prepared an Environmental Assessment (EA) in accordance with the requirements of 10 CFR Part 51. Based on the EA, the NRC has concluded that a Finding of No Significant Impact (FONSI) is appropriate. This license amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended, and NRC's rules and regulations for license termination as set forth in 10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination." Accordingly, this license amendment was issued on January 17, 2006, and is effective immediately.

**II. EA Summary**

The purpose of the license amendment is to allow for the release of the licensee's

facility at Carroll College, Helena, Montana, for unrestricted use and license termination. Carroll College was authorized by the U.S. Atomic Energy Commission (AEC) in the 1960's to use radioactive materials for training purposes in biology and chemistry courses. By letter dated October 10, 2005, with enclosed NRC Form 314, Carroll College requested that NRC release the facility for unrestricted use. The licensee submitted surveys of the facility and provided information to the NRC to demonstrate that the site meets the license termination criteria in Subpart E of 10 CFR Part 20 for unrestricted use.

The staff has prepared an EA in support of the proposed license amendment. The Carroll College site did not require any remediation of the land, buildings or water. The majority of radionuclides authorized were small quantities of beta emitters with short half-lives, less than 162 days, with the exception of tritium, cobalt-60, strontium-90, and carbon-14. The licensee's renewal application dated June 20, 1984, states in part that the licensee was using only phosphorus-32 and sulfur-35, which are considered low-beta emitters with short half-lives. Historical records indicate that the radioisotopes were used during four months of the year for laboratory instruction in the handling and use of radioisotopes and chemistry courses.

The licensee disposed of the remaining unsealed radioactive materials at the facility in accordance with the regulations for disposal by release into sanitary sewerage under 10 CFR 20.2003. NRC regulations in 10 CFR Part 20 specify the maximum amount of radioactive materials that a licensee may release from a site in the form of liquid effluents. Additionally, the licensee disposed of the sealed sources by transfer to an authorized recipient in accordance with 10 CFR 30.41. The sealed source inventory was either exempt material under 10 CFR 30.70 or non-NRC licensed material. The historical site assessment did not identify any short or long-term impacts to human health and the environment due to radiological exposures.

During the historical site assessment, the license identified one onsite burial of carbon-14, iodine-131, and gold-198 on June 30, 1961. Carbon-14 was the only isotope evaluated because the other two isotopes have short half-lives and have since decayed. The burial site was adjacent to the U.S. Geological Survey marker located on the northeast part of the campus near the gate in the fence that leads to the City of Helena Transfer Station. The burial site was within six feet of the marker and approximately four feet deep. Burial of certain quantities of radioactive waste in soil by licensees without prior NRC 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 NRC 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).

Carbon-14 is a low-energy beta emitter with an average energy of 50 keV and a half-life of 5,730 years. Carbon-14 has a transport value of 0.0 in RESRAD, which is indicative of its high mobility such that it essentially moves with ground water; therefore, it is considered readily transportable. The licensee submitted a dose modeling evaluation based on RESRAD Version 6.22 using the default parameters, for the carbon-14 burial site. The licensee calculated the radioactivity concentration of carbon-14 to be 0.25 F Ci/g, based on: 1) the log book record of 50 F Ci, and 2) interview with the professor who stated that a "coffee can size" was buried, which was assumed to be 200 grams. This conservative approach utilizes the resident farmer scenario, which is summed over all pathways. The model projected a peak dose of 30 mrem, due to water consumption pathway, to occur in 1965 with a sharp decline to less than 1 mrem in 1971, which is approximately 10 years. The NRC staff recognizes that the licensee's projected dose for the burial of carbon-14 is conservative based on the volume of the

animal containing the carbon-14 from the study, which was noted as being a "coffee can" size (which is variable.) The NRC staff performed a dose modeling evaluation based on a buried volume of 500 grams and using the default parameters in RESRAD, Version 6.22. The model projected a peak dose of 14 mrem to occur in 1965, with a sharp decline to less than 1 mrem in 1971. In either scenario, the calculated value beyond year seven (1968) is below the current 25 millirem limit for unrestricted use of the site as stipulated in 10 CFR 20.1402.

The NRC staff considered the potential impacts of leaching of radioactive material into the shallow groundwater due to the burial of carbon-14 in 1961. In 1965, the shallow surface groundwater on the Carroll College campus was not used as a drinking water source. Additionally, local members of the public obtained their drinking water from the city, whose source was several miles away. There were only two wells identified on the Montana Bureau of Mines and Geology website which were installed prior to 1965. The impact of potentially contaminated groundwater was considered as part of the RESRAD dose modeling evaluation and the primary pathway of concern was the direct consumption of water by the resident farmer scenario. Based on the evaluations, there was no impact to groundwater as a result of the one-time burial of carbon-14. The areas of the site where radioactive material had been stored and handled were surveyed on April 9, 2005, by the radiation safety officer from Montana State University. The surveys were performed using Ludlum survey meter with a GM probe and a low energy gamma (NaI) probe. In addition, survey wipes were taken and analyzed on a Packard Liquid Scintillation Counter. The results were less than twice background and adequately meet the criteria for unrestricted use.

The NRC has the option, depending on the licensee's survey and extent of radioactive material that was used at the facility, to perform a close out inspection of the facility. Based on the low-energy beta emitting radioisotopes and the length of time since the last use of radioactive material at the facility, the NRC staff determined that a close-out inspection of the

facility was not justified. The licensee's independent survey was sufficient to demonstrate that the facility was suitable for unrestricted use in accordance with 10 CFR Part 20. The environmental impacts resulting from the release of this site for unrestricted use are insignificant. There were no additional activities that resulted in cumulative impacts to the environment.

### **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 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 an Environmental Assessment (EA) in support of the requested license amendment. 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 Finding of No Significant Impact (FONSI) is appropriate.

### **IV. Further Information**

Documents related to this action, including the application for amendment and supporting documentation, are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, you may access the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The ADAMS accession numbers for the documents related to this notice are: Carroll College letter and NRC Form 314, dated October 10, 2005, (ML053040347); Carroll College letter dose modeling submittal, dated January 17, 2005

