INSPECTION RECORD

Region: III **Inspection Report No.** 2016001 **License No.** 24-12728-01
Docket No. 030-05146

Licensee: United States Department of the Interior
U.S. Geological Survey
Columbia Environmental Research Center
4200 E. New Haven Road
Columbia, Missouri 65201

Locations Inspected: Same as above

Licensee Contact: Frank C. Proa, Radiation Safety Officer **Telephone No**. 573-876-1879

Program Code: 03620 **Priority**: 5

Type of Inspection: ( ) Initial (X) Routine ( ) Announced
( ) Special (X) Unannounced

Last Inspection Date: July 14-19, 2011 **Date of This Inspection**: October 18-19, 2016, with continued in-office review through February 23, 2017

Next Inspection Date: October 18, 2021 (X) Normal ( ) Reduced

Summary of Findings and Actions:

( ) No violations cited, clear U.S. Nuclear Regulatory Commission (NRC) Form 591 or regional letter issued
( ) Non-cited violations (NCVs)
( ) Violation(s), Form 591 issued
(X) Violation(s), regional letter issued
( ) Follow-up on previous violations

Inspector: Dennis P. O'Dowd, Health Physicist

/RA/ Date 3/9/2017
Signature

Approved Aaron T. McCraw, Chief, MIB

/RA/ Date 3/9/2017
Signature

PART I – LICENSE, INSPECTION, INCIDENT/EVENT AND ENFORCEMENT HISTORY

1. AMENDMENTS AND PROGRAM CHANGES SINCE LAST INSPECTION:

AMENDMENT #	DATE	SUBJECT
27	02/23/2016	License Renewal
26	06/10/2015	New Radiation Safety Officer (RSO)
25	03/04/2014	Decay-in-storage authorization; removal of certain radionuclides from the license
24	04/20/2012	Release of two former use buildings for unrestricted use

2. INSPECTION AND ENFORCEMENT HISTORY:

The last inspection of this licensee was on July 14-19, 2011. No violations of NRC requirements were identified. The previous inspection on September 22, 2005, also did not identify any violations.

3. INCIDENT/EVENT HISTORY:

No open items or events since the last routine inspection.

PART II – INSPECTION DOCUMENTATION

1. ORGANIZATION AND SCOPE OF PROGRAM:

The licensee was the Columbia Environmental Research Center (CERC), a United States Department of the Interior, U.S. Geological Survey, research laboratory, focusing on aquatic systems, as well as conducting research on air, soil, fish and other aquatic species, and critical habitats. CERC is located in Columbia, Missouri. The licensee was authorized under NRC Materials License No. 24-12728-01 to possess and use a variety of radionuclides in any form in millicurie quantities in tracer studies in fish and other aquatic organisms, and tritium (H-3) and nickel-63 in millicurie quantities as foil sources in gas chromatography devices, at its facility in Columbia, Missouri. The licensee employed around 150 people, half of whom were scientists. Approximately 10 individuals are approved as authorized users and are actively involved in the use of licensed materials.

Total inventory including waste was less than 45 millicuries of carbon-14 and H-3. Annual activity of licensed material used averaged less than 100 microcuries (uCi). The licensee also was in possession of several generally licensed gas chromatographs containing Ni-63. Unsealed isotope use was confined to laboratory areas identified in the license. Radioactive wastes were confined to a waste facility on the property. All radioactive waste was collected and handled by the RSO. The licensee's radiation safety program was periodically audited by Department of Interior's radiation safety staff based in Denver, Colorado.

2. SCOPE OF INSPECTION:

Inspection Procedure(s) Used: 87126

Focus Areas Evaluated: All

The inspector toured the licensee's facility to review and evaluate the licensee's use of byproduct material, including measures for material security, hazard communication, and exposure control. No licensed activities were performed during the inspection. Licensee personnel demonstrated and explained ordering and receipt of licensed material, laboratory use of licensed materials, safety precautions during use, tracking of materials, storage and disposal of licensed materials, contamination surveys, inventory procedures, and training. Interviews with licensee personnel indicated adequate knowledge of radiation safety concepts and procedures. The inspector also reviewed a selection of licensee records.

3. INDEPENDENT AND CONFIRMATORY MEASUREMENTS:

Using a Ludlum 2403 survey meter with a model 44-9 energy-compensated GM detector calibrated on April 20, 2016, the inspector conducted independent and confirmatory surveys at the location inspected which indicated results consistent with licensee survey records and postings. The inspector found no readings which would indicate residual contamination or exposures to members of the public in excess of regulatory limits.

4. VIOLATIONS, NCVs, AND OTHER SAFETY ISSUES:

On October 18, 2016, while touring the licensee's waste facility, the RSO stated to the inspector that while recently conducting radiation surveys in the waste storage area, he had identified an area indicating a higher than expected measurement, and that upon further investigation, he had isolated a lead-shielded container containing a vial labeled as containing cesium-137 (Cs-137). There were several pellets in the opaque vial. At the time, the RSO had concluded that the Cs-137 source (or sources) possibly had been removed from one or more liquid scintillation counters (generally licensed devices), as long ago as the late 1980s. The RSO pointed out the container with its vial to the inspector. It was the RSO's misunderstanding that the source or sources were considered either as exempted from the regulations or generally licensed, and that they would be ultimately disposed of as part of its radioactive wastes. This issue that was identified was the focus of the inspector's second day conducting the onsite portion of the inspection at the licensee's facility; subsequent efforts since the onsite inspection through the in-office review concluding on February 23, 2017, was to determine whether the material identified was in fact Cs-137, whether this was the only material in the vial, and whether the material was in licensable quantities. During the in-office review, the licensee provided several written and telephonic reports of its findings from record reviews and analysis of the materials in the vial. In conclusion, the licensee confirmed that it possessed only one Cs-137 source with an approximate activity of 17 microcuries (uCi), a licensable quantity.

Title 10 of the *Code of Federal Regulations*, Section 30.3, states, in part, that except for persons exempted, no person shall manufacture, produce, transfer, receive, acquire, own, possess, or use byproduct material except as authorized in a specific or general license issued in accordance with the regulations in this chapter.

Items 6, 7, and 8 of NRC Materials License 24-32774-01 lists the radioactive material authorized in the license by radionuclide, chemical and/or physical form, and amount that may be possessed at any one time under the license.

Contrary to the above, on October 18–19, 2016, and for an indeterminate period of several years prior to those dates, the licensee possessed approximately 17 uCi of Cs-137, a radionuclide not authorized by a specific or general license.

The root cause of the violation was an oversight by licensee staff over a period of several years that this source was in the licensee's possession, and not specifically listed on the license. It was determined only recently by the new RSO that the licensee possessed this source. At the time the source was identified, it was in storage as part of the licensee's radioactive wastes in storage in the licensee's authorized waste storage facility, pending authorized transfer to a waste broker for radioactive waste disposal. The current RSO believed that the source had been removed from a generally licensed liquid scintillation counter over 20 years ago, although no records to confirm this were located.

5. PERSONNEL CONTACTED:

Carl Orazio – Deputy Director
Frank C. Proa – Radiation Safety Officer
Other staff including authorized users

Attended telephonic exit meeting on February 23, 2017.

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