

**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

<p>1. LICENSEE/LOCATION INSPECTED:</p> <p>Michigan State University Office of Environmental Health &amp; Safety 1449 Engineering Research Court, C-125 East Lansing, MI 48824</p> <p>REPORT NUMBER(S) 2016001</p>	<p>2. NRC/REGIONAL OFFICE</p> <p>Region III U. S. Nuclear Regulatory Commission 2443 Warrenville Road, Suite 210 Lisle, IL 60532-4352</p>
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<p>3. DOCKET NUMBER(S)</p> <p>030-00806</p>	<p>4. LICENSE NUMBER(S)</p> <p>21-00021-29</p>	<p>5. DATE(S) OF INSPECTION</p> <p>11/29/16 - 12/01/16</p>
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**LICENSEE:**  
The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

1. Based on the inspection findings, no violations were identified.

2. Previous violation(s) closed.

3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, to exercise discretion, were satisfied.

One Non-cited violation(s) were discussed involving the following requirement(s):

Contrary to 10 CFR 20.1802, on November 30, 2016, during a laboratory audit, the licensee identified the failure to maintain constant surveillance of approximately 347 microcuries of zinc-65, and 449 microcuries of carbon-14.

As corrective action, the licensee documented the finding on the lab audit form, secured the lab from unauthorized access, instructed the laboratory staff in the requirements for materials security, and notified the principal investigator of the findings.

4. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited in accordance with NRC Enforcement Policy. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.  
(Violations and Corrective Actions)

Contrary to Condition 15.B of NRC Materials License no. 21-00021-29, as of November 30, 2016, the licensee failed to retain records of the disposal of animal bedding containing radioactive material that had been generated by diagnostic administrations at the Veterinary Medical Center (VMC) and held for decay-in-storage as authorized by this License Condition.

As corrective action, the licensee committed to revise its standard operation procedure for diagnostic administrations at the VMC and to develop a log for documentation of future disposals.

**Statement of Corrective Actions**

I hereby state that, within 30 days, the actions described by me to the Inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
LICENSEE'S REPRESENTATIVE	Jean A. Chisnell	<i>Jean A. Chisnell</i>	12/28/16
NRC INSPECTOR	Ryan Craffey	<i>Ryan Craffey</i>	12/16/16
BRANCH CHIEF	Aaron McCraw	<i>Aaron McCraw</i>	12/16/16

**Docket File Information**

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6. INSPECTION PROCEDURES USED  87126, 87130	7. INSPECTION FOCUS AREAS  All
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**SUPPLEMENTAL INSPECTION INFORMATION**

1. PROGRAM CODE(S)  01100	2. PRIORITY  3	3. LICENSEE CONTACT  Jean A. Chisnell - RSO	4. TELEPHONE NUMBER  (517) 355-6734
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Main Office Inspection      Next Inspection Date: 11/29/2019  
 Field Office Inspection \_\_\_\_\_  
 Temporary Job Site Inspection \_\_\_\_\_

**PROGRAM SCOPE**

This was an unannounced routine inspection of a public research university (50,500 students, 5,300 faculty) authorized by its broad scope license to use radioactive material for scientific research and development, medical diagnosis, and veterinary diagnosis and therapy at its campus in East Lansing, Michigan, at a biological research station in Hickory Corners, Michigan, and in limited applications at temporary job sites in NRC jurisdiction. The licensee had approximately 110 users approved by the University's RSC for research and development, routinely conducted diagnostic administrations at one of two departments (SPECT and PET) in the University's Clinical Center, and conducted diagnostic and therapeutic administrations (using Tc-99m and I-131, respectively) at the Veterinary Medical Center (VMC). The licensee possessed numerous sealed sources, including but not limited to a Sr-90 eye applicator at the VMC (last used in 2013), numerous ECDs stored at the Hickory Corners location and used in mobile laboratories at temporary job sites, and a wide variety of reference and calibration sources at the National Superconducting Cyclotron Laboratory (NSCL). In November 2016, the licensee completed the removal of all fixed measuring gauges from its coal-fired power plant on-campus as part of its conversion to a gas-fired facility; an authorized vendor packaged and shipped these gauges, each of which contained Cs-137. The licensee operated an incinerator on-campus for disposal of solid radioactive waste, but disposed of liquid waste via sanitary sewer, and mixed waste via pickup by an authorized waste hauler. The licensee's radiation safety department received non-medical licensed material, calibrated survey instruments, and conducted initial radiation worker training at their office.

**PERFORMANCE OBSERVATIONS:** The inspector toured a number of facilities on-campus, including the Clinical Center, VMC, NSCL, Diagnostic Center for Population and Animal Health, and numerous research laboratories. The inspector observed the conduct of diagnostic administrations at the Clinical Center and the VMC, observed the incineration of solid radioactive waste, receipt of packages containing licensed material, and the conduct of initial radiation safety training. The inspector interviewed the licensee's radiation safety staff, a number of authorized users and trained radiation workers to discuss the implementation of the licensee's radiation protection procedures. The inspector also verified a selection of the licensee's inventory of sealed sources at the NSCL. The inspector conducted independent surveys at these facilities, and found no evidence of residual contamination or exposures to members of the public in excess of regulatory limits.

Continued on Part 2

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The inspector reviewed a selection of available records, including authorized user approvals, RSC meeting minutes, various program audits, laboratory surveys and audits, incident reports, incineration records including ash analysis, package receipt documentation at the VMC, laboratory utilization logs, sealed source leak test results, personnel dosimetry reports, survey meter calibration records, and documentation of recent fixed gauge disposals.

During a review of the licensee's conduct of diagnostic administrations at the VMC, the inspector identified a violation of Condition 15.B of NRC Materials License no. 21-00021-29 for the failure to retain records of the disposal of animal bedding containing radioactive material in patient excreta that had been generated during and after said administrations. The licensee's staff did hold this waste in the department's stalls for decay in storage, and did conduct surveys of it prior to disposal, but did not generate any records which provided evidence that any residual radioactivity in the bedding could not be distinguished from background prior to disposal as ordinary waste. The inspector determined that the root cause of the violation was a lack of understanding of regulatory requirements. As corrective action, the licensee committed to revise its standard operation procedure for diagnostic administrations at the VMC and to develop a log for documentation of future disposals.

During the observation of a laboratory survey and audit conducted by the licensee's radiation safety staff, the inspector noted that the licensee identified the failure to maintain constant surveillance of as much as 500 microcuries of zinc-65, and as much as 15 millicuries of carbon-14 in an authorized chemistry lab. The lab was normally locked at all times; however, the students responsible for the lab left the door open for a member of the licensee's maintenance staff to perform maintenance on equipment in the lab ceiling. The students, who were trained radiation workers, did not remain in the lab while the support staff did their work; instead, the licensee found the students conversing with others in an adjacent lab, in a location which did not provide for constant surveillance of any of the above-mentioned material. The inspector determined that the root cause of the violation was a lack of understanding of regulatory requirements. As corrective action, the licensee documented the finding on the lab audit form, secured the lab from unauthorized access once the maintenance staff completed their work, instructed the laboratory staff in the requirements for materials security, and notified the principal investigator of the findings. Since the violation was licensee-identified, non-repetitive, non-willful, and corrective action had been taken in a timely fashion, it meets the criteria for the NRC to consider it a non-cited violation.

The inspector also reviewed the licensee's corrective actions for a violation identified during a previous inspection (IR 03000806/2013001(DNMS)) regarding the failure to monitor the surface of incoming packages containing radioactive material at the VMC, as required by 10 CFR 20.1906(b)(1). The inspector identified no additional examples of this violation, and furthermore determined that the licensee had implemented adequate corrective actions to address the potential for recurrence of a similar violation. Therefore the NRC considers this violation to be closed.