

DL-030698-02

March 6, 1998

College of William and Mary
Department of Chemistry
ATTN: Richard L. Kiefer, Ph.D.
Radiation Protection Officer
P.O. Box 8795
Williamsburg, VA 23187-8795

SUBJECT: NRC INSPECTION REPORT NO. 45-03499-09/98-01

Dear Dr. Kiefer:

On February 5, 1998, the NRC completed an inspection and confirmatory survey at Rogers Hall on the campus in Williamsburg, Virginia. The enclosed report presents the results of that inspection, which were discussed with you at the conclusion of the inspection on February 5, 1998, and also by telephone on February 17, 1998.

During the inspection, records were reviewed, procedures were discussed with personnel, and direct confirmatory measurements were taken in Rooms 203, 217, and other areas within Rogers Hall. Based on those reviews, discussions, and measurements, no violations were identified. Therefore, we can conclude that the area meets the criteria for release for unrestricted use. We have no further concerns regarding the radiological status of areas used within Rogers Hall under NRC License No. 45-03499-09.

The inspector also obtained several samples which have been analyzed and found to meet the unrestricted use criteria.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this letter, please contact us.

Sincerely,

original signed by Thomas Decker

Thomas R. Decker, Chief
Materials Licensing/Inspection Branch
Division of Nuclear Materials Safety

Docket No. 030-31503
License No. 45-03499-09

Enclosure: NRC Inspection Report
No. 45-03499-09/98-01

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Commonwealth of Virginia

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.: 030-31503
License No.: 45-03499-09
Report No.: 45-03499-09/98-01
Licensee: College of William and Mary
Location: Williamsburg, Virginia
Date: February 5 and 17, 1998
Inspector: Bryan A. Parker, Radiation Specialist
Approved by: Thomas R. Decker, Chief
Materials Licensing/Inspection Branch 1
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

College of William and Mary
Department of Chemistry
Rogers Hall, Williamsburg, Virginia
NRC Inspection Report No. 45-03499-09/98-01

This special, announced inspection was conducted to evaluate the licensee's closeout survey in support of releasing Rogers Hall for unrestricted use. All areas surveyed were found below the release criteria for unrestricted use as delineated in NRC Regulatory Guide 1.86 titled "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated August 1987. The conduct of this inspection included discussions with cognizant licensee representatives, review of documents, and direct observations and radiological surveys of the site.

REPORT DETAILS

01. Scope

This routine, announced inspection was conducted to evaluate the current radiological status of those portions of Rogers Hall which were utilized by the Department of Chemistry under NRC License No. 45-03499-09 to determine if the building could be released for unrestricted use. The release criteria used were those delineated in Regulatory Guide 1.86 published in August 1987 titled "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, source, or Special Nuclear Material." These limits are as follows: 5,000 dpm/100 cm² average and 15,000 dpm/100 cm² maximum for fixed contamination and 1000 dpm/100 cm² for removable contamination. The method for the NRC confirmatory survey was that described in NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination," published in June 1992. The inspector reviewed all records pertaining to the decommissioning of this facility. The affected area and portions of the unaffected area were surveyed. Selecting at least ten percent of the licensee's data points, confirmatory fixed point measurements were made for fixed contamination and smears were taken for removable contamination.

02. Observations and Findings

The licensee provided the results of its closeout survey by letters dated May 2, and December 30, 1997, as part of its request to terminate the license. These documents conclude that none of the direct measurements for fixed contamination or swipes for removable contamination exceed Regulatory Guide 1.86 limits.

The inspector discussed the licensee's decommissioning activities with the Radiation Safety Officer and reviewed the licensee's history of using radioactive materials. All sealed sources and other radwaste was properly disposed through a waste broker, and there was no history of leaking sealed sources or major spills. An aqueous source of selenium-75 was calculated to have decayed through greater than 40 half-lives; thus, that source was of no concern. The licensee surveyed only for residual tritium and carbon-14. The inspector conducted a closeout survey based on those same isotopes.

The inspector's fixed point measurements and area scans were done using a Bicorn 2000 survey instrument with a Bicorn 50 "pancake" probe (last calibrated November 17, 1997). No areas of elevated activity were noted. All readings were comparable to those for background which were taken elsewhere in the building, that being 45 cpm. Swipes were taken for removable contamination and counted on a liquid scintillation counter. All of the swipes were well below the Regulatory Guide 1.86 limits. The results of the measurements are listed in the Attachment.

03. Conclusions

The levels of fixed and removable contamination are well below the release limits, consistent with background. The building may be released for unrestricted use.

EXIT MEETING SUMMARY

The inspector discussed the inspection results with the RSO following the inspection, and by telephone on February 17, 1998, after the swipes were counted. The licensee was advised that there was no residual contamination found in the building and that the building could be released for unrestricted use.

LIST OF PERSONS CONTACTED

R. Kiefer, Ph.D., Radiation Safety Officer

INSPECTION PROCEDURES USED

IP 83890	Closeout Inspection and Summary
IP 87104	Decommissioning Inspection Procedure for Materials Licensees

ATTACHMENT

CONFIRMATORY FIXED POINT MEASUREMENTS

Measurements were taken in various areas within Rogers Hall, principally in Rooms 203 and 217. Some measurements were taken as one-minute fixed measurements, and others consisted of scanning surveys of specific areas such as inside the fume hood. No elevated readings above background were found.

Survey Instrument Used: Bicron 2000 with Bicron 50 pancake probe (15 cm²)

Serial (Tag) No. 057114 Probe Serial (Tag) No. 046236

Background: 45 cpm Efficiency: 4% (C-14)

Minimum Detectable Activity:

 Ratemeter Mode: 1.470 dpm/100 cm²

 Scanning Mode: 22.000 dpm/100 cm²

CONFIRMATORY SURVEY RESULTS

REMOVABLE CONTAMINATION SMEARS

Removable contamination smears were counted for H-3 and C-14 on a United Technologies Packard 2000 CA/LL Liquid Scintillation Laboratory Analyzer. The efficiencies for H-3 and C-14 were approximately 70% and 80%, respectively. MDAs for H-3 and C-14 were 5 and 4 dpm, respectively. All smears were found to be well below the 1000 dpm/100 cm² release criteria for removable contamination.

LOCATION	DPM/100 cm ²
Hallway by Elevator - 2nd floor	6
Water Fountain - 2nd floor	3
Hall floor in front of Room 203	6
Door/knob - Room 203	7
Counter around sink - Room 203	7
Floor under desk - Room 203	6
Corner of countertop - Room 203	5
Middle of Floor - Room 203	7
Hall floor in front of Room 217	8
Hood sill - Room 217	6
Hood back wall - Room 217	6

LOCATION	DPM/100 cm ²
Hood - inside sash glass - Room 217	6
Around sink drain - Room 217	6
Cabinet door of hood - Room 217	6
Floor in front of hood - Room 217	7
Countertop around small sink - Room 217	12
Floor under desk (near door) - Room 217	
Inside refrigerator - Room 217	5
Floor in front of refrigerator - Room 217	7
Middle of floor (back half of room) - Room 217	5
Top edge of backsplash (far counter) - Room 217	7
Floor in front of men's room - 2nd floor	7
Floor of RSO office - Room 226	8