U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 030-00582/91-001

Docket No. 030-00582

License No. 06-00183-03 Priority II Category F1A Program Code 01100

Licensee: Yale University
314 Wright Nuclear Structure Laboratory West
260 Whitney Avenue
New Haven, Connecticut 06520

Facility Name: Yale University

Inspection Conducted: June 11-13, and September 12, 1991

Inspectors: Judith A. Joustra
Judith A. Joustra, Senior Health Physicist — 10/21/91 date

Dave Everhart
Dave Everhart, Health Physicist — 10/21/91 date

Approved by: John D. Kinneman
John D. Kinneman, Chief
Nuclear Materials Safety Section B — 10-21-91 date

Inspection Summary: Special, Announced Safety Inspection on June 11-13, and September 12, 1991, to review an allegation concerning training of "casual" custodial workers in the Medical School Building and to review the unauthorized disposal of a package containing one millicurie of chromium-51 which occurred on June 4, 1991. (Inspection Report No. 030-00582/91-001)

Areas Inspected: Review of training programs, procedures for receipt and disposition of packages containing licensed radioactive material, notification and review of circumstances surrounding the unauthorized disposal of a package containing licensed radioactive material, corrective actions for previous violations.

Results: Two apparent violations were identified: (1) Unauthorized disposal of a package containing licensed radioactive material (Section 5); (2) Failure to secure licensed radioactive materials against unauthorized removal. (Section 7).

DETAILS

1. Persons Contacted

*E. A. Adelberg, Deputy Provost
*W. D. Stempel, Deputy General Counsel
*H. Aaslestad, Associate Dean Research Affairs, School of Medicine
*G. M. Shepherd, Deputy Provost Designate
*G. R. Holeman, Director, Radiation Safety Department
*L. Gibbs, Director, Office of University Safety
*F. W. Greenhalgh, Senior Health Physicist
*G. S. Andrews, Supervisor Radiation Safety Services
**T. V. Gaudioso, President, Local 35, Federation of University Employees
U. Carr, Director of Custodial Services, Medical School
G. Coleman, Supervisor, Department of Custodial Services Medical School
*J. Adams, Manager of Physical Plant, Medical School
T. Brisendine, Service Master (Manager)
L. Fleming, Supervisor, Department of Custodial Services, Medical School
"Casual" Custodians
Staff Custodians
M. I. Lorber, Ph.D., Director, Division for Organ Transplantation
K. Brusett, Post Doctorate Fellow, Division for Organ Transplantation
C. Coulboune, Service Masters (Former Manager by telephone)

*Present at exit
**Not present for entire exit

2. Organization and Scope of Licensed Activities

Yale University is authorized by NRC License No. 06-00183-03 to use various radioisotopes for research and development as defined by 10 CFR 30.4 as well as teaching of students and calibration of survey instruments. Yale has a total of 265 authorized users (PI's) supervising approximately 700-900 laboratories and receives approximately 6,000 packages containing radioactive material per year.

3. Licensee's Action in Response to Order to Show Cause

On September 26, 1989, the NRC issued an Order to Show Cause Why the License Should Not Be Modified. The Order required development and implementation of a comprehensive plan to improve performance and a detailed plan for correction of deficiencies, including an analysis of the human and financial resources required, and a timetable for implementation of the plan. The licensee responded to the Order in a letter dated January 16, 1990. The licensee stated that as a result of a review, performed by them, the University now provides for a direct reporting relationship between a new Office of University Safety, of which Radiation Safety Department is a part, and the Provost. The licensee also stated that the hiring of

additional radiation safety personnel had been authorized. In a letter dated May 11, 1990, the licensee described additional changes and improvements to their radiation safety program. These changes were incorporated as requirements in the license and the Order was rescinded on April 18, 1991.

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The licensee has made specific improvements to their applications to authorize use of licensed radioactive material and in their review of individual authorization requests. The inspectors reviewed the licensee's request for authorization form. The form requires detailed procedures for receipt, storage and disposal of radioactive material. In addition, the licensee now renews user authorizations every three years.

The licensee has improved communications between authorized users (PI's) and the Radiation Safety Officer (RSO). The inspectors reviewed a recent memorandum from the RSO to all PI's which requested specific information regarding the PI's procedures for receipt, storage and disposal of radioactive material. During the inspection, the inspectors questioned individuals in 10 laboratories concerning these procedures. Those questioned were knowledgeable concerning the specific procedures.

The licensee has also hired additional staff for the Radiation Safety Office. There has been staff turnover, but efforts to hire additional staff continue to be made.

The inspectors reviewed the licensee's actions regarding sanctions placed on users to discourage violations. The inspectors reviewed licensee's documentation which contained at least three instances in which users had been sanctioned. These sanctions have included actions such as suspending the users authorization to use licensed radioactive material.

4. Notification of Unauthorized Disposal

On June 6, 1991, NRC Region I received a telephone call from Mr. George Holeman, Radiation Safety Officer (RSO). The RSO stated that the licensee had inadvertently disposed of a package which contained one millicurie of chromium-51 (Cr-51). The package had been opened and all labels which indicated the presence of radioactive material had been removed from the box by the investigator who was authorized to use the material. The radioactive material Cr-51 was in ts lead shielded container surrounded by a styrofoam insert, and inside a cardboard box when last seen by the investigator on the evening of June 4, 1991.

The RSO informed Region I that a formal report concerning the disposal was being prepared and would be forwarded to the NRC. The report was received by Region I on July 5, 1991.

5. Review of Unauthorized Disposal

The inspector interviewed the investigator involved in the unauthorized disposal. The investigator stated that the package containing one millicurie of Cr-51 was received on May 24, 1991 and that he performed the required wipe test, removed the radiation labels from the box which contained the Cr-51, and placed the material in the hood located in Room 310. On June 4, 1991, late in the day, he took the Cr-51 in its shielded container, styrofoam insert and box from the hood and went across the hall to Room 307. In Room 307 he noted that the cells for his experiment were not ready, so he decided to return the package to Room 310. As he walked toward Room 310 he saw his dinner on top of a cart, which was propped against the laboratory door, in the hallway. He placed the package containing the Cr-51 on the cart and picked up his dinner (it was about 6:00 or 7:00 p.m.) and proceeded down the hall to eat. When he returned from dinner he didn't think about the package and proceeded with other experiments. At 2:00 a.m. on June 5, 1991 he locked the laboratory and left the area. He arrived back at the laboratory about 10:00 a.m. on June 5, 1991. The laboratory doors were already open and other researchers were present. About 11:00 a.m. to 12:00 noon he thought that he might start the experiment with Cr-51, but he could not locate the package, so he assumed he had placed it in the storage area (an assigned hood). At 1:00 p.m. to 2:00 p.m. he decided to use the Cr-51 and discovered it was not in the storage area. The investigator then questioned others in the laboratory. No one knew where the package was. At that point the investigator thought that possibly the custodians may have picked up the package and disposed of it in the non-radioactive trash.

The investigator determined that the trash was placed in a dumpster (Brady Dumpster) located in the courtyard. The investigator went to the dumpster, but could not locate the package. At approximately 4:00 p.m. on June 5, 1991 the Radiation Safety Office was notified. Radiation Safety staff conducted an investigation into the package disposal and determined that two custodians were involved with the disposal of normal trash from that laboratory area. These individuals were contacted, interviewed, surveyed, and bioassays were performed and no contamination was found. It was determined that they likely removed the unlabeled package containing the Cr-51 and placed it in the dumpster. The contents of the dumpster had been taken to the New Haven landfill on the morning of June 5, 1991. Results of the licensee's investigation and evaluations of the incident are as described in the licensee's report dated July 2, 1991.

The inspector questioned the investigator regarding the licensee's procedures for receipt and storage of licensed radioactive material. The investigator was knowledgeable in the licensee's approved procedures. The investigator stated that he failed to follow the required procedure because he was in a hurry. He knew that placing the package on the cart, in the hall, was not an acceptable procedure.

The inspector interviewed the custodian who removed the package and its contents from the cart. The custodian stated that she moved the box from the cart to the end of the hall where another custodian took it to the dumpster. She also stated that the box's security seal was broken and that no radiation labels were on the box. The custodian also informed the inspector that the box did not appear to be damaged. The custodian stated that she had been trained that she should only dispose of boxes which were opened and not labeled as radioactive.

10 CFR 20.301 requires that no licensee dispose of licensed material except by certain specified procedures.

On June 4, 1991, the licensee inadvertently disposed of one millicurie of Cr-51 in the "normal" non-radioactive trash, a method not authorized by 10 CFR 20.301.

Failure to dispose of radioactive material by authorized methods is an apparent violation of 10 CFR 20.301.

6. Corrective Actions

The licensee described their corrective actions in a letter to the NRC dated July 2, 1991. The researcher was instructed to discontinue use of radioactive material pending a Radiation Safety Committee review. The Radiation Safety Committee at its June 25, 1991 meeting sanctioned the researcher. As a result, he is no longer permitted to use radioactive material at Yale and if he wishes to use radioactive material again, he must personally apply for reinstatement by the Committee. The Committee at that time will review the situation and require appropriate control of his activities.

7. Tour of the Facility

The inspector toured the following laboratory areas: Brady Memorial Laboratory; Clinic Building; Farnam Memorial Building; Fitkin Memorial Pavilion; Lippard Laboratory of Clinical Investigation; Laboratory of Medicine and Pediatrics; and Laboratory for Surgery, Obstetrics and Gynecology. Within these areas the inspector identified at least five laboratories which were posted with Caution Radioactive Materials signs and were either open or unlocked and unattended. This was observed by the inspector during the early evening hours. The inspector returned

the next day and noted that these laboratories were now either secured or attended. Access to the buildings in which these laboratories are located is restricted for reasons other than the presence of radioactive materials. The buildings are either locked or have a guard posted at the main entrance. However, not all individuals who gain access to these buildings are authorized or trained to work with or in the vicinity of radioactive materials, and, therefore, radioactive materials, if not in use, must be secured from unauthorized use and/or disposal. The amounts of radioactive material available in the various laboratories are small and the persons who gain access are employees or students at the University. The actual potential for an exposure under the conditions observed appears small. The fact that an investigator left a package containing Cr-51 in an unrestricted area, (hallway) on a cart, which was used to prop open the laboratory door did result in the unauthorized disposal of the Cr-51.

10 CFR 20.207(a) requires that licensed materials stored in an unrestricted area be secured against unauthorized removal from the place of storage. 10 CFR 20.207(b) requires that materials not in storage be under constant surveillance and immediate control of the licensee. As defined in 10 CFR 20.3(a)(17), an unrestricted area is any area access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.

Failure to secure licensed materials against unauthorized removal from the place of storage and failure to maintain constant surveillance and immediate control of licensed material not in storage is an apparent violation of 10 CFR 20.207(a) and (b).

8. Receipt of Allegation

As part of the inspection the inspector evaluated an allegation received by Region I on February 15, 1991. The President of the Federation of University Employees Local #35, AFL-CIO, alleged that "casual" custodian workers assigned to the Medical School and working in and/or frequenting restricted areas where radioactive materials are used had not been trained in safety aspects as required by 10 CFR 19.12. "Casual" custodians are non-union custodians who are employed by the licensee.

The alleger subsequently sent a letter to Region I dated February 25, 1991, which repeated the concerns he expressed during his telephone call on February 15, 1991. The alleger also sent a letter to Region I, dated February 27, 1991 which enclosed a copy of a Yale police report dated February 7, 1991. On February 7, 1991, the alleger contacted the Yale police concerning "hazardous conditions". When the police arrived, according to the police report, the alleger informed the police that "casual" employees were working in the laboratories without receiving safety training. The alleger also stated to the police that hazardous and

contaminated materials were being carried in the hallways and being disposed of incorrectly and that this was dangerous to anyone around and in the area.

9. Review of Allegation and Training Program

The inspector discussed with members of the Radiation Safety Office the training programs available to employees of the University.

The University offers annual radiation safety training to all who wish to attend. The Radiation Safety Office holds two training sessions per month for principal investigators and associated users. Training for new custodians is provided by the supervisors of custodial services. During this inspection, the training program in radiation safety for custodial services in the Medical School was reviewed for both "casual" and staff custodians.

Yale employs both "casual" and staff custodians in the Medical School. "Casual" employees started working in the Medical School late in December 1990. Since that time approximately 53 workers have been employed in this capacity in addition to regular staff custodians. Custodial supervisors are responsible for providing radiation safety training to custodians when employment is initiated. Approximately one year ago the University contracted with Service Masters to provide Management oversight of custodial workers.

The inspector interviewed 7 "casuals" and 9 staff custodians as well as two supervisors, two Service Master representatives and the Director of Custodial Services. Of those "casuals" interviewed, one stated he had not received training concerning radioactive material. He also stated that he recalls removing several yellow trash bags (yellow indicating radioactive) from laboratories and disposing of them as normal trash. The inspector was unable to determine when this occurred or what the bags actually contained, but did provide this information to the licensee's management.

The Manager of Physical Plant for the Medical School stated that the individuals who remove waste from the building and place it into the dumpsters have been trained to report and do not dispose of yellow bags if located in the trash He also added no reports of yellow bags being discarded in the normal trash have been made. Another "casual" stated in a notarized letter that he had not received radiation safety training. The other "casuals" and staff custodians interviewed by the inspector stated that they had received training and had no concerns regarding radiation or unsafe working conditions. The inspector questioned the supervisors and workers concerning the content of the training given. All workers stated that they were shown radiation signs, told specifically what to stay away from and what not to touch or dispose. Sample containers are provided to the supervisor for training purposes. The inspector also observed several posters with caution instructions for radiation hazards these were posted near the custodian's time clock.

The inspector determined that documentation of training given had only been maintained for the annual training provided and training for principal investigators and users. It was learned that prior to the incident on February 7, 1991, as described by the alleger, records of training, provided by the custodial supervisor, had not been maintained. The alleger indicated that several "casuals" had not been provided training. Of those named by the alleger, the inspector was able to interview one of the individuals.

The alleger stated he had been provided an attendance list for training given to "casuals". He implied that the "casuals" only signed the attendance list to maintain their employment and that they acutally did not receive the training. Based on discussions with licensee and contractor's personnel, the form provided to the alleger was a form recently created by Service Masters for their own records. This form was not provided to the licensee. The form was filled-in after the February 7, 1991 incident. The alleger and a "casual" indicated to the inspector that the casual's name appears on the form indicating he received training. He stated he did not get the training nor did he sign the form. The custodial supervisor was again interviewed regarding the form and signatures. She stated that the form was created and filled-in after the February 7, 1991 incident and after the training had been given.

She stated that when the form was available she took it to each worker and had them sign and indicate the date they received training. Two names on the form were written in by the supervisor and initialed by her and dated. She stated this was done because the two individuals were no longer working there. Yale's management concluded that this was an attempt to initiate a method to maintain training records and that it may not have been the best method. The licensee added that documentation should have been maintained and not created after the fact.

Since the February 7, 1991 incident the need for training records became apparent to custodial management. A training record has been created and will continue to be used.

The inspector reviewed the training records now maintained by the custodial department. Each record was signed and dated by the worker. Of the 52 names of "casuals" provided to the inspector three did not have a training form on file. The inspector also noted that annual training had been conducted on April 2, 1991.

10. Exit Interview

The inspector met with the individuals identified in Section I at the conclusion of the inspection and discussed the findings of the inspection. Representatives of the licensee stated that written records of training for all custodians will be maintained. The inspector briefly reviewed the NRC's Enforcement Options.

Routine inspection 2/1 [illegible]

REGION I
NMSS LICENSEE EVENT REPORT

License No. 06-00183-03

Docket No. 030-00582

MLER-RI 92-82

1. ACTION CONTROL DATA

Licensee Yale University

Event Description Loss of Cr-51 (~ 1 mCi)

Event Date 6-4-91 Report Date 7-2-91

2. REPORTING REQUIREMENT

(✓) 10 CFR 20.402 Theft or Loss
( ) 10 CFR 20.403 Overexposure/Release
( ) 10 CFR 35.33 Misadministration
( ) License Condition
( ) 10 CFR 20.405 30 Day Report

( ) Other ______

3. REGION I RESPONSE

( ) Immediate Site Inspection Inspector/Date ______
( ) Special Inspection Inspector/Date ______
( ) Telephone Inquiry Inspector/Date ______
( ) Preliminary Notification ( ) Daily Report
(✓) Information entered on the Region I log
(✓) Review at next routine inspection
( ) Report referred to ______

4. REPORT EVALUATION

(✓) Description of event
(✓) Levels of RAM involved
(✓) Cause of event
(✓) Corrective actions
( ) Calculation adequate
( ) Letter to licensee requesting additional information

Completed by S. Neidner Date 5-29-92

Reviewed by [signature] Date 7/2/92

5. SPECIAL INSTRUCTIONS OR COMMENTS

AKS

OCT. 22 1991

Docket No. 030-00582

License No. 06-00183-03

Yale University
ATTN: Edward A. Adelberg, Ph.D.
Deputy Provost
Provost Office
New Haven, Connecticut 06520

Dear Dr. Adelberg:

Subject: Special Inspection No. 91-001

This letter refers to a special safety inspection conducted by Ms. Judith A. Joustra of this office on June 11 - 13, 1991 and by Ms. Joustra and Mr. Dave Evernart on September 12, 1991 of events surrounding the unauthorized disposal of one millicurie of chromium-51 which occurred on June 4, 1991 and the review of an allegation received by Region I concerning training of "casual" custodian workers in the Medical School. This also refers to the discussions of our findings held by Ms. Joustra with you and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the NRC Region I Inspection Report which is enclosed with this letter. Within these areas, the inspection consisted of selective review of procedures, representative records, interviews with personnel, and observations by the inspectors.

Based on the results of this inspection, it appears that your activities were not conducted in full compliance with NRC requirements. A Notice of Violation is enclosed as Appendix A and categorizes each violation by severity level in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (Enforcement Policy). You are required
to respond to this letter and in preparing your response, you should follow the instructions in Appendix A.

From discussions held during the inspection with members of custodial management and the discussion of our findings at the conclusion of the inspection, we understand that written records of the training for all custodians in radiation safety will be maintained in the future. Please confirm our understanding in your reply to this letter.

Items A and B described in the attached Notice of Violation involving storage, control and disposal of licensed material are classified as Severity Level IV violations. As indicated in Supplement IV of the NRC Enforcement Policy, significant violations of this type are normally classified as Severity Level III.

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However, after careful consideration of the specific circumstances surrounding these violations, we have concluded that these violations posed a minimal health and safety problem. Therefore, we exercised our judgment under the NRC Enforcement Policy and have classified these violations as Severity Level IV. As you are aware, similar violations in the future may result in additional enforcement action. While we concluded that these violations are not Severity Level III, they are similar to violations which have been identified previously at your facil ty. In your response to this letter, please discuss, in particular, the programmatic actions you plan to assure that such violations are detected and corrected.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and the enclosures will be placed in the Public Document Room.

The responses directed by this letter and the accompanying Notice are not subject to the clearance procedures of the Office of Management and Budget as required by the Paperwork Reduction Act of 1980, PL 96-511.

Your cooperation with us in this matter is appreciated.

Sincerely,

Ronald R. Bellamy, Chief
Nuclear Materials Safety Branch
Division of Radiation Safety
and Safeguards

Enclosures:
1. Notice of Violation
2. NRC Region I Report No. 030-00582/91-001

cc:
Public Document Room (PDR)
Nuclear Safety Information Center (NSIC)
State of Connecticut
George Holeman, Radiation Safety Officer, Yale University

bcc:
Region I Docket Room (w/concurrences)
Management Assistant, DRMA

RI:DRSS	RI:DRSS	RI:DRSS
Joustra	Kahneman	Bellamy
10/18/91/ca	10/21/91	10/22/91

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10/17/91

APPENDIX A

NOTICE OF VIOLATION

Yale University
New Haven, Connecticut 06520

Docket No. 030-00582
License No. 06-00183-03

As a result of the inspection conducted on June 11 - 13, and September 12, 1991, and in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (Enforcement Policy) (1991), the following violations were identified:

A. 10 CFR 20.207(a) requires that licensed materials stored in an unrestricted area be secured against unauthorized removal from the place of storage. 10 CFR 20.207(b) requires that materials not in storage be under constant surveillance and immediate control of the licensee. As defined in 10 CFR 20.3(a)(17), an unrestricted area is any area access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.

Contrary to the above, on June 11, 1991, several laboratories, posted with caution radioactive material signs and which contained licensed materials, were neither locked nor under constant surveillance and immediate control of the licensee. In addition, on June 4, 1991, a package containing one millicurie of chromium-51 was left unattended in an unrestricted area (hallway).

This is a Severity Level IV violation. (Supplement IV)

B. 10 CFR 20.301 requires that no licensee dispose of licensed material except by certain specified procedures.

Contrary to the above, on June 4, 1991, one millicurie of chromium-51 was sent for disposal in the normal trash, a method not authorized by 10 CFR 20.301.

This is a Severity Level IV violation. (Supplement IV)

Pursuant to the provisions of 10 CFR 2.201, Yale University is hereby required to submit to this office within thirty days of the date of the letter which transmitted this Notice, a written statement or explanation in reply, including: (1) the corrective steps which have been taken and the results achieved; (2) corrective steps which will be taken to avoid further violations; and (3) the date when full compliance will be achieved. Where good cause is shown, consideration will be given to extending this response time.

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U. S. NUCLEAR REGULATORY COMMISSION
REGION I

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Nuclear Materials Safety Section B — 10-21-91 date

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5. Review of Unauthorized Disposal

The inspector interviewed the investigator involved in the unauthorized disposal. The investigator stated that the package containing one millicurie of Cr-51 was received on May 24, 1991 and that he performed the required wipe test, removed the radiation labels from the box which contained the Cr-51, and placed the material in the hood located in Room 310. On June 4, 1991, late in the day, he took the Cr-51 in its shielded container, styrofoam insert and box from the hood and went across the hall to Room 307. In Room 307 he noted that the cells for his experiment were not ready, so he decided to return the package to Room 310. As he walked toward Room 310 he saw his dinner on top of a cart, which was propped against the laboratory door, in the hallway. He placed the package containing the Cr-51 on the cart and picked up his dinner (it was about 6:00 or 7:00 p.m.) and proceeded down the hall to eat. When he returned from dinner he didn't think about the package and proceeded with other experiments. At 2:00 a.m. on June 5, 1991 he locked the laboratory and left the area. He arrived back at the laboratory about 10:00 a.m. on June 5, 1991. The laboratory doors were already open and other researchers were present. About 11:00 a.m. to 12:00 noon he thought that he might start the experiment with Cr-51, but he could not locate the package, so he assumed he had placed it in the storage area (an assigned hood). At 1:00 p.m. to 2:00 p.m. he decided to use the Cr-51 and discovered it was not in the storage area. The investigator then questioned others in the laboratory. No one knew where the package was. At that point the investigator thought that possibly the custodians may have picked up the package and disposed of it in the non-radioactive trash.

The investigator determined that the trash was placed in a dumpster (Brady Dumpster) located in the courtyard. The investigator went to the dumpster, but could not locate the package. At approximately 4:00 p.m. on June 5, 1991 the Radiation Safety Office was notified. Radiation Safety staff conducted an investigation into the package disposal and determined that two custodians were involved with the disposal of normal trash from that laboratory area. These individuals were contacted, interviewed, surveyed, and bioassays were performed and no contamination was found. It was determined that they likely removed the unlabeled package containing the Cr-51 and placed it in the dumpster. The contents of the dumpster had been taken to the New Haven landfill on the morning of June 5, 1991. Results of the licensee's investigation and evaluations of the incident are as described in the licensee's report dated July 2, 1991.

The inspector questioned the investigator regarding the licensee's procedures for receipt and storage of licensed radioactive material. The investigator was knowledgeable in the licensee's approved procedures. The investigator stated that he failed to follow the required procedure because he was in a hurry. He knew that placing the package on the cart, in the hall, was not an acceptable procedure.

The inspector interviewed the custodian who removed the package and its contents from the cart. The custodian stated that she moved the box from the cart to the end of the hall where another custodian took it to the dumpster. She also stated that the box's security seal was broken and that no radiation labels were on the box. The custodian also informed the inspector that the box did not appear to be damaged. The custodian stated that she had been trained that she should only dispose of boxes which were opened and not labeled as radioactive.

10 CFR 20.301 requires that no licensee dispose of licensed material except by certain specified procedures.

On June 4, 1991, the licensee inadvertently disposed of one millicurie of Cr-51 in the "normal" non-radioactive trash, a method not authorized by 10 CFR 20.301.

Failure to dispose of radioactive material by authorized methods is an apparent violation of 10 CFR 20.301.

6. Corrective Actions

The licensee described their corrective actions in a letter to the NRC dated July 2, 1991. The researcher was instructed to discontinue use of radioactive material pending a Radiation Safety Committee review. The Radiation Safety Committee at its June 25, 1991 meeting sanctioned the researcher. As a result, he is no longer permitted to use radioactive material at Yale and if he wishes to use radioactive material again, he must personally apply for reinstatement by the Committee. The Committee at that time will review the situation and require appropriate control of his activities.

7. Tour of the Facility

The inspector toured the following laboratory areas: Brady Memorial Laboratory; Clinic Building; Farnam Memorial Building; Fitkin Memorial Pavilion; Lippard Laboratory of Clinical Investigation; Laboratory of Medicine and Pediatrics; and Laboratory for Surgery, Obstetrics and Gynecology. Within these areas the inspector identified at least five laboratories which were posted with Caution Radioactive Materials signs and were either open or unlocked and unattended. This was observed by the inspector during the early evening hours. The inspector returned

the next day and noted that these laboratories were now either secured or attended. Access to the buildings in which these laboratories are located is restricted for reasons other than the presence of radioactive materials. The buildings are either locked or have a guard posted at the main entrance. However, not all individuals who gain access to these buildings are authorized or trained to work with or in the vicinity of radioactive materials, and, therefore, radioactive materials, if not in use, must be secured from unauthorized use and/or disposal. The amounts of radioactive material available in the various laboratories are small and the persons who gain access are employees or students at the University. The actual potential for an exposure under the conditions observed appears small. The fact that an investigator left a package containing Cr-51 in an unrestricted area, (hallway) on a cart, which was used to prop open the laboratory door did result in the unauthorized disposal of the Cr-51.

10 CFR 20.207(a) requires that licensed materials stored in an unrestricted area be secured against unauthorized removal from the place of storage. 10 CFR 20.207(b) requires that materials not in storage be under constant surveillance and immediate control of the licensee. As defined in 10 CFR 20.3(a)(17), an unrestricted area is any area access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials.

Failure to secure licensed materials against unauthorized removal from the place of storage and failure to maintain constant surveillance and immediate control of licensed material not in storage is an apparent violation of 10 CFR 20.207(a) and (b).

8. Receipt of Allegation

As part of the inspection the inspector evaluated an allegation received by Region I on February 15, 1991. The President of the Federation of University Employees Local #35, AFL-CIO, alleged that "casual" custodian workers assigned to the Medical School and working in and/or frequenting restricted areas where radioactive materials are used had not been trained in safety aspects as required by 10 CFR 19.12. "Casual" custodians are non-union custodians who are employed by the licensee.

The alleger subsequently sent a letter to Region I dated February 25, 1991, which repeated the concerns he expressed during his telephone call on February 15, 1991. The alleger also sent a letter to Region I, dated February 27, 1991 which enclosed a copy of a Yale police report dated February 7, 1991. On February 7, 1991, the alleger contacted the Yale police concerning "hazardous conditions". When the police arrived, according to the police report, the alleger informed the police that "casual" employees were working in the laboratories without receiving safety training. The alleger also stated to the police that hazardous and

contaminated materials were being carried in the hallways and being disposed of incorrectly and that this was dangerous to anyone around and in the area.

9. Review of Allegation and Training Program

The inspector discussed with members of the Radiation Safety Office the training programs available to employees of the University.

The University offers annual radiation safety training to all who wish to attend. The Radiation Safety Office holds two training sessions per month for principal investigators and associated users. Training for new custodians is provided by the supervisors of custodial services. During this inspection, the training program in radiation safety for custodial services in the Medical School was reviewed for both "casual" and staff custodians.

Yale employs both "casual" and staff custodians in the Medical School. "Casual" employees started working in the Medical School late in December 1990. Since that time approximately 53 workers have been employed in this capacity in addition to regular staff custodians. Custodial supervisors are responsible for providing radiation safety training to custodians when employment is initiated. Approximately one year ago the University contracted with Service Masters to provide Management oversight of custodial workers.

The inspector interviewed 7 "casuals" and 3 staff custodians as well as two supervisors, two Service Master representatives and the Director of Custodial Services. Of those "casuals" interviewed, one stated he had not received training concerning radioactive material. He also stated that he recalls removing several yellow trash bags (yellow indicating radioactive) from laboratories and disposing of them as normal trash. The inspector was unable to determine when this occurred or what the bags actually contained, but did provide this information to the licensee's management.

The Manager of Physical Plant for the Medical School stated that the individuals who remove waste from the building and place it into the dumpsters have been trained to report and do not dispose of yellow bags if located in the trash. He also added no reports of yellow bags being discarded in the normal trash have been made. Another "casual" stated in a notarized letter that he had not received radiation safety training. The other "casuals" and staff custodians interviewed by the inspector stated that they had received training and had no concerns regarding radiation or unsafe working conditions. The inspector questioned the supervisors and workers concerning the content of the training given. All workers stated that they were shown radiation signs, told specifically what to stay away from and what not to touch or dispose. Sample containers are provided to the supervisor for training purposes. The inspector also observed several posters with caution instructions for radiation hazards these were posted near the custodian's time clock.

The inspector determined that documentation of training given had only been maintained for the annual training provided and training for principal investigators and users. It was learned that prior to the incident on February 7, 1991, as described by the alleger, records of training, provided by the custodial supervisor, had not been maintained. The alleger indicated that several "casuals" had not been provided training. Of those named by the alleger, the inspector was able to interview one of the individuals.

The alleger stated he had been provided an attendance list for training given to "casuals". He implied that the "casuals" only signed the attendance list to maintain their employment and that they acutally did not receive the training. Based on discussions with licensee and contractor's personnel, the form provided to the alleger was a form recently created by Service Masters for their own records. This form was not provided to the licensee. The form was filled-in after the February 7, 1991 incident. The alleger and a "casual" indicated to the inspector that the casual's name appears on the form indicating he received training. He stated he did not get the training nor did he sign the form. The custodial supervisor was again interviewed regarding the form and signatures. She stated that the form was created and filled-in after the February 7, 1991 incident and after the training had been given.

She stated that when the form was available she took it to each worker and had them sign and indicate the date they received training. Two names on the form were written in by the supervisor and initialed by her and dated. She stated this was done because the two individuals were no longer working there. Yale's management concluded that this was an attempt to initiate a method to maintain training records and that it may not have been the best method. The licensee added that documentation should have been maintained and not created after the fact.

Since the February 7, 1991 incident the need for training records became apparent to custodial management. A training record has been created and will continue to be used.

The inspector reviewed the training records now maintained by the custodial department. Each record was signed and dated by the worker. Of the 52 names of "casuals" provided to the inspector three did not have a training form on file. The inspector also noted that annual training had been conducted on April 2, 1991.

10. Exit Interview

The inspector met with the individuals identified in Section I at the conclusion of the inspection and discussed the findings of the inspection. Representatives of the licensee stated that written records of training for all custodians will be maintained. The inspector briefly reviewed the NRC's Enforcement Options.