# CWRU

# Radiation Safety Committee

# Annual Report Fiscal Year

# 2001-2002

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## INTRODUCTION

This report is submitted to the president and appropriate members of the administrative staff of the university, as required by the Radiation Safety Committee (RSC) operating guidelines and Case Western Reserve University's (CWRU) Broadscope State of Ohio (Nuclear Regulatory Commission Agreement State) License. Its contents cover the period from July 1, 2001 through June 30, 2002.

## OHIO DEPARTMENT OF HEALTH (ODH) LICENSE

At present, CWRU has one Ohio Department of Health (ODH) Broadscope license. The license incorporates possession and use of both naturally accelerator-produced radioactive material (NARM) and naturally occurring radioactive material (NORM) for experimental purposes, as well as three irradiators.

| ODH LICENSE | EXPIRATION DATE | PURPOSE |
|---|---|---|
| 011-011800-11 | January 1, 2005 | Broadscope License |

## RADIATION SAFETY COMMITTEE (RSC)

Listed below is the 2001-2002 Radiation Safety Committee membership. Changes to the voting membership must be approved by the president of the University, and sent to the ODH before the new member can be a "voting member".

VOTING MEMBERS

| | |
|---|---|
| Dr. David Boothman<br>Dept. of Radiation Oncology | Dr. Hue-Lee Cheng Kaung<br>Dept. of Pediatrics/Anatomy |

| | |
|---|---|
| BRB 347<br>Term Expires: 3/11/2002 | BRB B32<br>Term Expires: 8/30/2002 |
| David Danielpour<br>Dept. of Medicine<br>UCRC II Suite 200<br>Term Expires: 3/11/2005 | Dr. Irene Lee<br>Dept. of Chemistry<br>Millis 4N<br>Term Expires: 10/1/2003 |
| Dr. Cathleen R. Carlin<br>Dept. of Physiology/Biophysics<br>Med East 564B<br>Term Expires: 2/1/2004<br>Chairperson: 1/1/2002 | Dr. David McPheeters<br>Dept. of Biochemistry<br>Wood 432<br>Term Expired: 5/1/2001 |
| Dr. Helen Evans<br>Dept. of Radiology<br>BRB 325<br>Term Expires: 8/8/2004 | Dr. Ellen Rorke<br>Dept. of Environmental Sciences<br>BRB B04<br>Term Expires: 2/1/2004<br>Chairperson: 3/11/2003 |
| | Dr. David Sedwick<br>Radiation Safety Officer<br>DOES<br>Service Building, 1st Floor |

EX-OFFICIO MEMBERS

| | |
|---|---|
| Kenneth Basch<br>Asst VP of Facilities Mgmt. Oper.<br>Crawford Building, 215 | Dr. William Stephany<br>Asst. Radiation Safety Officer<br>Service Building, 1st Floor |
| Shirley Xu<br>University Hospital Asst. RSO<br>Dept. of Radiology<br>Bishop S-629 | |

SUPPORT STAFF

| | |
|---|---|
| Karen Janiga<br>Technical Support Manager<br>Service Building, 1st Floor | Felice T. Porter<br>Quality Assurance Specialist<br>Service Building, 1st Floor |
| Gwendolyn Cox-Johnson<br>Department Assistant<br>Service Building, 1st Floor | Shirley Mele<br>Office Supervisor<br>Service Building, 1st Floor |

The committee met on nine occasions during the last fiscal year to review applications for radioisotope usage and act on other business. A total of seven new authorized users were approved during the period covered by this report.

Fourteen requests for additional radioisotope usage were approved. One new request for radioisotope use in animals was considered. The minutes of the RSC meetings and Executive Committee actions are available in the RSOF, through the RSC, or through the university administration.

**RSC PERFORMANCE & RECORD AUDITS OF RSOF ACTIVITIES IN 2001-2002**

RSC members conducted a systemic audit of the following areas of the radiation safety program during this fiscal year.

| AREA AUDITED | # OF INDIVIDUAL FILES EXAMINED | OTHER AREAS AUDITED |
|---|---|---|
| Authorized user files | 10 | |
| Radioactive isotope inventory | 10 | |
| RPE inventory & training | 10 | |
| Ancillary staff training | 7 | |
| AU & worker training | 6 | |
| Radiation survey meters | 5 | |
| Waste disposal facility | 5 | |
| Shipping papers | | X |
| Radioisotope security checks | | X |
| Bioassays | 5 | |
| Monthly mailings | 10 | |
| Sealed source leak tests | 5 | |
| Radiation generating equipment | | X |

These audits were conducted in October - December 2001 and April - June 2002. This process resulted in audit of more than 60 files and examination of the program areas listed above during the year.

During this year's audit of the radiation safety program it became apparent that there is a need to update several of the bi-annual audit formats, as they did not always reflect current procedures. Program areas for which audits required

modification included support staff training, sealed source leak tests, and shipping papers. These changes to audit procedures will be implemented by the Radiation Safety Committee.

The bi-annual audits were successful. Records were easily accessed and reviewed. The program was found to be efficient. Productive interaction among committee members and RSOF staff during the audit process helped expedite the process.

**ANNUAL RADIATION SAFETY PROGRAM AUDIT REPORT**

The RSC met on July 17, 2002 to conduct the annual audit of the CWRU radiation safety program. The committee members participating in the audit were Drs. David Danielpour, Helen Evans, Hue-Lee Kaung, Irene Lee, and Ellen Rorke.

This memo summarizes results of the RSC audit of seven areas that were reviewed.

1. **Compliance reviews**: Approximately 50 files were reviewed to verify that laboratories were audited within the last six months and, when needed, follow-ups were done on non-compliance issues. Seven files were identified that required follow-up. Areas highlighted for specific review included surveys, meter calibration, and documentation maintenance.

2. **Inventory and mailings**: Approximately 50 files (Greenspan-Marengo) were reviewed to verify receipt of semi-annual mailings for the last 6 months. One investigator had no report filed for either December 2001 or June 2002, two files were identified which lacked the December 2001 inventory report and 16 files were identified which lacked the June 2002 inventory report. Upon

speaking to the support staff it was apparent that the staff was dealing in a timely fashion with the July non-responders.

3. **Applications for use of radioactive materials and training of AU and radiation workers**: Approximately 50 files were examined to verify that valid RAM applications were in order. Several files were identified that lacked signatures by members of the RSC or RSO, all of these files were submitted at the time that CWRU was reorganizing its Radiation Safety office in the mid 1980's. All of the files for the last 12 years had all necessary signatures. The same laboratories were also checked for current training of AU and personnel. According to the files, 31 AUs were found to have a total of 75 people who needed training including 8 AUs. It was unclear to what extent this reflected a training problem or if the information was up to date on the computer files and not yet filed.

4. **Correspondence between isotope orders, AU possession limits, and the Helix database**: Approximately 50 files were inspected to verify that the amount of RAM ordered is within AU possession limits and that the orders are in the Helix database. All but five were in compliance. One investigator made an internal transfer of 2.5 mCi 32P while having a possession limit of 1.0 mCi. Only one AU was not listed on the Helix database. Another AU had no information as to limit or isotope possession on the Helix database. The inventory of one AU shows both 14C and 3H in his inventory without any record of either order or transfers. Finally, one order placed by an AU in written records did not appear on the Helix database.

5. **Calibration of survey meters**: Approximately 50 files were examined to verify that meters have been calibrated within the last 12 months. Six survey meters belonging to five AUs were found to be out of compliance and not calibrated

within the last 12 months. This audit was particularly difficult, since the survey meter list was organized alphabetically by AU name, but the meters are filed by manufacturer. Prior to next years audit, the survey meter list should be resorted by manufacturer and instrument serial number for the purpose of the audit. This change was suggested after last years audit but was not implemented. It was suggested that the file be placed in Excel or a similar program to facilitate this process.

6. **Security checks by the RSOF (July 1, 2001 to June 30, 2002):** It was verified that security checks by the RSOF were conducted on a monthly basis and that follow-ups were completed. Security checks were not carried out for all of the buildings in May and June of 2002 due to shortages of radiation office staff. As a follow-up, AUs cited were sent notices of violations found. Although the violations were corrected in the following month's checks, they should be checked and recorded the next day following the survey.

7. **RSOF Laboratory Survey**: The laboratory was found to be orderly and no apparent violation was noted.

In summary, the auditing committee was impressed with the efficient way that the Radiation Safety Office (RSOF) conducts its business. No serious faults were found.

**RSOF FOLLOW-UP OF ANNUAL AUDIT 2001-2002 OPERATIONS**

Two layers of audit are utilized on an ongoing basis to ensure that the Radiation Safety Office program and procedures are working smoothly. In addition to the Radiation Safety Committee, the auditing specialist within the department

reviews all programs, audits all departmental records on a periodic basis and assists in the Radiation Safety Office. This year, in response to audit queries, the Radiation Safety Office presents the following explanations and will implement the following changes to procedures that can be considered by the Radiation Safety Committee in subsequent follow-up audits.

During the audit of the compliance reviews and the inventory reports, minor inconsistencies were found. These areas are audited on a monthly basis and corrected as they occur. Those individuals requiring retraining were within the normal time frame. Inconsistencies noted by the RSC were corrected in a timely manner after the audit.

An audit of the applications for use of radioactive materials revealed an area that will need to be reviewed by the RSC in the future. There are numerous applications that have not been reviewed or updated since the 1980's. Several of these applications were identified that lacked RSC signatures. Over the coming year, the RSC will review old applications to ensure that they are in compliance with current programs.

The possession limit of one AU was found to have exceeded the level of present usage in the laboratory. At this time the university is well within the boundaries of its license allocations so there is no need for action that alters general procedures. However, the Radiation Safety Office's current policy is to review isotope allocation levels at the time that alterations are made to AU files. The office also makes reductions in isotope authorization levels at other times following usage review after consultation with AUs. In this case, the communication concerning reduction of isotope authorization levels was either not adequately communicated to the AU or the AU failed to make note of the

authorization level change. Reduction in isotope authorization levels does not require RSC action.

Further, the Radiation Safety Office is in the process of implementing on-line access for AUs to their radiation safety records. On-line AUs that do not have inventory information would not have received data by date if they have not ordered isotope or use sealed sources only.

Although there were few problems with security checks over the past year, two incomplete security checks by one individual impeded the security audit system in May and June. In the coming year, however, a new staff person will join the Department of Occupational and Environmental Safety and work evening hours to assume responsibility for all security audits. Stronger oversight will be implemented in the future.

The Radiation Safety Office thanks the Radiation Safety Committee for the audit of its safety activities over the past year.

## RADIATION SAFETY OFFICE (RSOF)

### STAFFING

The RSOF operates under university approval with the following positions:

Radiation Safety Officer (1)
Assistant Radiation Safety Officer (1)
Specialist Positions (6)
Department Administrator (1)
Department Assistant (1)

Reorganization of the RSOF infrastructure continues to incorporate more individuals into the specialist position to improve the department's knowledge base and provide for more flexible response to emergencies and other issues. Henry Wayne Justice and Joanna Bielawski were hired to specialist I positions in 2001-2002 over the past year. On the last day of this fiscal year, William Stephany, Ph.D. retired as the assistant RSO. A search for his replacement will be an early reorganization task for the coming year.

### SPACE AND EQUIPMENT

The RSOF is located in the Service Building on the 1st Floor at 2200 Circle Drive. The laboratory is equipped with a Packard Model 1900C Liquid Scintillation Counter (a duplicate machine is located at the Radioactive Waste Facility) and a Packard 5000 Gamma Counter. The RSOF maintains bioassay equipment consisting of a single-channel analyzer and a detector for monitoring thyroid uptake of $^{125}I$. The department also has a multi-channel analyzer with both an intrinsic germanium detector and a sodium iodide detector. These instruments are used for the quantification of air samples for EPA audits in addition to identifying unknown isotopes.

**FLOWSHEET FOR RADIOACTIVE MATERIALS**

Radioisotope use for biomedical research requires continuous receipt and shipment of radioactive materials to and from the campus. In the past fiscal year, 3144 isotope shipments (totaling 2.62 Curies) were approved by the RSOF for receipt on campus. The Ohio Department of Health (ODH) and our Broadscope license require that shipments be surveyed within three hours of arrival. The surveys are performed by the RSOF. Special printouts are attached to each package to facilitate recording of laboratory surveys of radioisotope shipments after delivery to the user.

Excluding decay of isotope in the laboratories and minor inventory changes, isotopes were removed from the laboratories either by 1170 isotope waste pickups by the RSOF staff (561.26 mCi) or by AU-directed disposal into the sanitary sewers (105.22 mCi). The following page tabulates a breakdown by isotope of the radioactive materials entering and leaving laboratories.

**LABORATORY ISOTOPE FLOW**

| Isotope | Orders | | Waste Pickups | | Sewer Disposals | |
|---|---|---|---|---|---|---|
| | # | mCi | # | mCi | # | mCi |
| $^{14}C$ | 121 | 31.99 | 64 | 4.10 | 16 | 3.47 |
| $^{45}Ca$ | 2 | 1.04 | | | 1 | 0.04 |
| $^{36}Cl$ | 18 | 0.79 | 14 | 0.27 | 3 | 0.02 |
| $^{57}Co$ | 13 | 5.89 | 9 | 0.89 | 1 | 0.001 |
| $^{51}Cr$ | 34 | 32.34 | 15 | 4.34 | | |
| $^{55}F$ | 7 | 1.88 | 6 | 0.881 | | |
| $^{3}H$ | 595 | 498.24 | 390 | 177.47 | 50 | 55.59 |
| $^{125}I$ | 187 | 107.79 | 74 | 32.84 | 7 | 2.17 |

| | | | | | | |
|---|---|---|---|---|---|---|
| $^{54}$Mn | 9 | 0.38 | 8 | 0.38 | 1 | 0.001 |
| $^{63}$Ni | 10 | 3.87 | 9 | 1.87 | | |
| $^{32}$P | 1710 | 1263.67 | 420 | 168.59 | 97 | 12.37 |
| $^{33}$P | 118 | 44.38 | 24 | 12.51 | 15 | 0.99 |
| $^{86}$Rb | 53 | 35.28 | 24 | 8.38 | 3 | 0.9 |
| $^{35}$S | 267 | 592.33 | 113 | 148.74 | 24 | 29.67 |

**SEALED RADIOACTIVE SOURCES**

CWRU has 179 sealed sources regulated by the ODH. Among these sources, 166 are exempt from a leak test and require only a physical inventory once every six months. Fifteen sources were disposed to ADCO this year. Three of the sealed sources are high-level dose irradiators, and one is used to irradiate objects with neutrons. These are the only radioactive material sources that could produce significant external dose hazards if their shielding were violated during an emergency. A list of the sealed sources on campus is in Appendix A. These sources are not included in the general summary reports for radioactive materials.

**PERSONNEL DOSIMETRY**

Users of radioactive materials and other individuals potentially exposed to occupational radiation sources are monitored in order to determine if any significant radiation doses were received. There are 1050 workers regularly monitored with radiation badges, in addition to badges temporarily assigned to miscellaneous visitors. Of all the workers issued badges, only 180 are required to wear badges by the CWRU's Broadscope ODH license or the radiation-generating machine programs because of the potential of the workers to receive

more than 10% of his or her applicable dose limits. No significant exposures were noted in 2001/2002. During the past year, 13 pregnant radiation workers received additional monitoring for fetal doses. All fetal doses were at background levels of radiation.

ODH regulations require that all monitored workers be advised annually of their occupational dose exposure. All workers were sent a copy of their prior calendar year's dose report in the spring of 2002.

CWRU radioactive materials users use Luxel badges, which employ the latest radiation detection technology for personnel dosimetry. The Luxel badges can measure minimum detectable limits of 1.0 mRem.

**AUTHORIZED USERS OF RADIOACTIVE MATERIALS**

CWRU has 171 principal investigators (PIs) authorized by the RSC to use radioactive materials in 256 laboratories. Laboratories are inspected by the RSOF at least three times per year. Audits are more frequent if there are particular concerns in a laboratory. During this fiscal year, one researcher that has stopped using isotopes became inactive, and nine researchers left CWRU.

**TRAINING SESSIONS**

Both new isotope user and retraining classes are offered at least three times per month. During the past year the office held 23 new user classes for 460 new isotope users. Five retraining classes were also presented for 75 users. Most retraining was accomplished over the Internet. **This year 840 individuals utilized our Internet retraining option.** The RSOF has also presented 20 ancillary training classes for 350 people. Further, both the X-Ray and the new

training classes have been converted to Powerpoint presentations. This is audited on a quarterly basis.

The X-Ray training classes are conducted on an as-needed basis. Last year there were 19 classes held for 95 new workers. Retraining classes are not presented by the RSOF for X-Ray users. The authorized users of the X-Ray equipment are responsible for annual machine and performance-specific refresher training for their workers who use X-ray equipment.

**RADIOACTIVE MATERIAL RELEASES**

a. SEWER

State and federal regulations permit CWRU to dispose of low levels of radioactive materials in the sanitary sewers. The Northeast Ohio Regional Sewer District (NEORSD) requires semiannual reports on radioactive material discharged to the sanitary sewer system. CWRU's sewer releases were in compliance with both federal and state regulations. In the past fiscal year, the report for July through December 2001 was filed on January 30, 2002 and the report for January through June 2002 was filed on July 26, 2002.

b. AIR

During the 2001 calendar year, radioactive material releases to the air were less that 10% of the maximum levels set by the EPA. Therefore, CWRU had no reports to file. As of December 1996, the NRC and EPA reached an agreement regarding the effluent concentration limits permitted from non-nuclear power plant facilities. Under the agreement, the university is now under one consistent rule. The university is, thus, in compliance with the air effluent releases stipulated by the EPA Clean Air Act, the NRC, and the ODH.

**BIOASSAYS**

Bioassays are conducted to monitor the internal disposition of radioactive materials due to inhalation or ingestion during experimental procedures. For example, some experiments require the use of volatile forms of radioactive iodine. Due to the potential for internal contamination, these identified users are required to have bioassays performed to determine if any radioactive materials were inhaled or ingested. In the past year, 88 thyroid bioassays for radioiodine were performed for a total of 35 iodination procedures, which included effluent air monitoring. No workers were found to have radioactive materials accumulated in their thyroids that exceeded 10% of the ODH limits.

**RADIATION PRODUCING EQUIPMENT**

Machines that produce ionizing radiation (RPE) are regulated by ODH for labeling, appropriate warning indicator systems and radiation leakage. CWRU has a total of 102 units on campus (19 are tubes only), of which 10 are in storage, 7 are disabled, and 7 are out of service. There are 51 X-Ray units used for analytical research that include electron microscopes, X-Ray diffraction and particle accelerators. There are also 32 X-Ray units for health care & diagnostic research, which consist of dental X-Ray units and veterinary X-Ray units. Four units were disposed and five units were purchased. These units are inventoried quarterly and surveyed annually for leakage. As listed above, the owners of the RPE, not the RSOF, offer specific training programs for workers using X-Ray producing equipment. The general X-Ray training program has been modified for Powerpoint slide presentation.

**RADIATION SURVEY METER CALIBRATIONS**

The University ODH Broadscope License requires annual calibration of portable survey meters. Properly calibrated meters are necessary for laboratories to perform accurate radiation surveys and provide results with proper radiation measurements.

**There are 286 survey meters on campus, of which the RSOF calibrated 215 meters in the last fiscal year**. Nine meters were returned for repair to the manufacturer while 25 meters were repaired in-house. The RSOF is licensed to perform electronic and isotope efficiency meter calibrations for the faculty and staff on campus, a procedure that saves AUs approximately $35 - $50 per instrument calibrated.

The creation of a calibration database has substantially lessened the meter calibration time by reducing data entry. Notification of meter calibration status via email gives the RSOF documentation that the authorized user was notified to pick up the meter and that repairs were performed as needed.

**MASTER ISOTOPE LIST**

The master isotope list shows the university's isotope inventory, the sum of the authorized users' inventory (excluding sealed sources), the sum of the authorized user (AU) authorized limits, and the NRC/ODH registration limit. A copy of this list is in the appendix.

**PRINCIPAL INVESTIGATOR (PI) RADIOISOTOPE INVENTORY**

The radioisotope inventory posting report lists the researchers authorized to use radioactive material, the authorized radioactive materials used, the AU's

possession limits, and activity on hand in AUs' laboratories. A copy of this list is in the Appendix.

**DOES WEB SITE & NEWSLETTER**

The RSOF has developed a revised DOES home web site (http://does.cwru.edu) and integrated web-based access to DOES services. Information on training classes, on-line retraining, and safety manuals are available. We have also converted the "Radiation Safety Manual" to an Adobe Acrobat format, allowing users to download the document, and either read, or print appropriate sections for use in their laboratories.

The DOES newsletter is filled with articles that are designed to keep the campus community abreast of safety issues and concerns. It covers the latest government regulations and addendums, addresses concerns that are found during laboratory inspections and answers questions frequently asked by laboratory personnel.

**RADIOACTIVE WASTE FACILITY**

The Barnwell Waste Facility remains open at a high price. However, we are required to use their services as long as they are available. Our Radiation Waste Facility decay-in-storage licensing with the NRC specifies that we must dispose of any interim generated waste as soon as practical when a waste site is open. Plans for locating Ohio's Midwest Compact Low-Level Radioactive Waste site have been recently reviewed, and the plans for locating radioactive waste in Ohio have been suspended.

The CWRU Radioactive Waste Facility is used to segregate waste streams and prepare the waste for disposal. The different waste streams include aqueous waste, scintillation vials, and dry solid waste. Some radioactive isotopes have relatively short half-lives and are decayed to background in our facility. Other radioactive isotopes have longer half-lives and must be stored on an interim basis before disposal. Short-lived waste types are picked up from laboratories by the RSOF staff for interim storage in the Radioactive Waste Facility.

Short-lived solid waste is held for decay in the Radioactive Waste Facility. A find survey is performed of the waste and subsequently sent to a commercial disposal facility for incineration. Reducing the volume of waste to be disposed remains a continuing aim of the waste program promoted by the RSOF. As part of the waste minimization program, isotope users are encouraged to reduce the volume of waste generated in the laboratory by minimizing the use of extraneous paper products, routine surveys of high energy beta emitter, using GN meters, and by insuring that non-radioactive waste is not included with radioactive waste.

In the past, significant amounts of radioactive waste were disposed through commercial vendors since time constraints on in-house disposal were caused by the length of time it took to unpack compacted waste, open and distribute bag contents, deface labels and survey barrel contents. Currently, surveying only the outside of the bags, followed by immediate disposal has eliminated these time constraints. This procedure has also greatly decreased the hazards consequent to handling of waste for Radiation Safety Office personnel.

**DISTRIBUTION OF WASTE GENERATED IN JULY 1, 2001 - JUNE 30, 2002**

| | InStorage 7/1/2001 | Generated | Disposed BFI | Disposed Sewer | Disposed Safety | Disposed ADCO | In Storage 6/30/2002 |
|---|---|---|---|---|---|---|---|
| Short-Lived Dry | 4 | 60 | 71 | 0 | 0 | 0 | 63 |
| Long-Lived Dry | 0 | 25 | 0 | 0 | 0 | 25 | 0 |
| Scintillation Vials | 0 | 37 | 0 | 0 | 0 | 37 | 0 |
| Animals | 0 | 2 | 1 | 0 | 0 | 1 | 0 |
| Long-Lived Sewer | 0 | 55 | 0 | 55 | 0 | 0 | 0 |
| Long-Lived Non-Sewer | 10 | 31 | 0 | 0 | 0 | 0 | 41 |
| Short-Lived Sewer | 0 | 75 | 0 | 75 | 0 | 0 | 0 |
| Short-Lived Non-Sewer | 30 | 70 | 0 | 0 | 0 | 0 | 100 |

All values in the dry waste, vial, and animal categories denote the number of 55-gallon drums. All values for the liquid waste categories are in gallons.

The total indirect cost savings to researchers by disposing of all DIS dry/solid waste through Browning Ferris Industries (BFI) was $10,296.

**INCIDENTS INVOLVING RADIOISOTOPES**

February 18, 2002 - A bag containing 0.01 μCi of H-3 dry waste was picked up by housekeeping and disposed as regular trash. Although the amount of radioactive material involved was not reportable, the procedural oversight was significant. The individual from housekeeping admitted that he had emptied the trash into a regular waste container. The container was clearly marked with radioactive labels. The Radiation Safety Office, his supervisor, and the asst. director of Housekeeping Services counseled the individual as to proper procedures.

March 7, 2002 - A technician found 4 nCi P-32 contamination on the bottom of her shoe while performing a post-experiment survey. She decontaminated the shoe to zero activity with detergent and a paper towel. The floor of the lab was surveyed and no contamination was found.

March 12, 2002 - A technician spilled a stock vial containing 2 μCi of P-32, contaminating her shoes and pants as well as the floor area. All areas were decontaminated and the worker was told to use an appropriately sealed container when moving radioactive material in vials.

April 23, 2002 - A response on a meter was observed when a sealed ventilation pipe was found prior to construction work being done in the Wood Building. A wipe was taken, and the results on the LSC were not definitive. It appears that the reading was due to naturally occurring radioactive material (NORM) materials present in the pipe.

**2002-03 RADIATION SAFETY OFFICE GOALS**

**General Administrative Goals** - Procedures for most operational areas of the department have been completed as of last fiscal year. We will begin the first of our annual review and updating of all standard operating procedures in the coming year.

At the close of fiscal year 2002, the Radiation Safety Office began a search for a new assistant radiation safety officer. Until a permanent replacement for our Assistant RSO is identified, Karen Janiga will fill the position of acting assistant RSO. A search will also be initiated for a new specialist who will be cross-trained in both radiation and safety service response areas to monitor after hours security and safety on the CWRU campus in the evening and on Saturday. (Note: as of the date of submission of this report (10/23/2002), this goal has been accomplished. Karen Janiga was appointed to the assistant RSO position and Edward Traverso (RRPT) has taken over her former position as operational manager in the Radiation Safety Office.)

**Emergency Response** - Over the past year, our department developed emergency response plans for incidents involving radioactive, chemical and biological materials.

These plans have been reviewed with input from University Protective Services and local fire and emergency response officials. Over the last year, all responding and administrative personnel in the DOES staff were also trained as 24 hour emergency response (HAZWOPER) technicians.

In 2002-2003, we will organize practice scenarios to test our emergency response readiness and integrate these response exercises with Protective Services, plant

maintenance, and local responder personnel. We will also continue to develop programs to introduce local emergency response personnel from the police, fire and emergency medical response units to the potentially hazardous areas of our campus. Further, as a special focus, we will expand our security and response activities and exercises to include training in response to terrorism events that might directly affect our campus.

**Safety Liaison Program** – We will continue to actively enhance our departmental liaison program to improve relationships with the researchers. This effort integrates with departmental efforts to continuously review and improve our performance in researcher interface areas, to streamline operations, and make our procedures more user-friendly.

**New projects for the coming year include:**

- All new projects completed in 2001-2002 will be monitored for efficacy in year 2002-2003.
- Incorporation of irradiator security procedures into our audit program to ensure compliance.
- Security procedures for the three irradiators that are now in place will be monitored. Completeness of the list of irradiator users and security of access to all irradiators will be reviewed.
- Development of a program on the Palm Pilots for x-ray audits.
- Participation in illustrative emergency response scenarios will take place twice in the coming year.
- New worker training will be converted to a DVD format and ancillary worker training will be duplicated in VHS format in order to make them more interactive.
- Staff training will be augmented to ensure competence in all areas involving radiation safety instrumentation.

- New operational procedures for H-3 bioassays and gamma counter usage will be developed and introduced.

# APPENDIX

# Sealed Sources