

Radiation Safety Procedure

Department Of Biological Sciences

Southern Methodist University

Foreword

The Department of Biological Sciences at Southern Methodist University holds a Radioactive Material License issued by the Texas Department of Health for use in research and teaching. The license requires that we establish and follow an effective radiation safety program. This manual set forth the policies and procedures of our safety program, which has been approved by the Department of Health.

It is the responsibility of all within the Department of Biological Sciences who directly work with radioisotopes or supervise others who work with radioisotopes to familiarize themselves thoroughly with the contents of this manual. Constant vigilance is required to prevent negligent exposure to radiation.

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Radiation Safety Officer
September 2000

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I. CONTROL AND MANAGEMENT OF THE RADIATION SAFETY PROGRAM

A. ORGANIZATION AND MEMBERSHIP

The Radiation Safety Staff (RSS) is composed of those faculty members who are listed on the current license as direct users or supervisors of users of radioactive material. The Radiation Safety Officer (RSO) is an approved user of radioactive material, who serves as an RSO upon appointment by the Provost and Vice-President of the Academic Affairs of Southern Methodist University and approval by the Texas Bureau of Radiation Control. The associate RSO is a senior faculty member and also an approved user of radioactive materials, who is appointed by the RSO.

B. AUTHORITY AND DUTIES

1. Radiation Safety Staff

The RSS has the board responsibility for all policies and practices regarding the license, purchase, shipment, use, monitoring, disposal and transfer of radioisotopes in the Department of Biological Sciences. The staff will meet at least once during the academic year and whenever requested by one of its members. The Staff is responsible for conducting an annual audit of the radiation protection program and the effectiveness of its personnel training. Among the specific topics the Staff will review are: a) record-keeping procedures, b) receipt and opening of packages, c) waste disposal, d) compliance of users with safety procedures and regulations, and e) the need for additional training and reminders.

2. Radiation Safety Officer

- a. Supervise license application, amendment applications, and required reports as well as serve as the contact person for all correspondence with state and Federal Radiation Health Agencies, and other RSOs.
- b. Convene meetings of the RSS and maintain minutes if these meetings
- c. Prescribe special conditions and requirements that may be necessary for safe and proper use of all radioactive material.
- d. Suspend activities deemed unsafe
- e. Prepare and disseminate information about radiation safety for the use of and guidance of all users.
- f. Administer a written test to new workers to verify that they understand the information presented in this safety manual and the training films
- g. Supervise personnel monitoring services including the review of commercially processed dosimeter reports.
- h. Insure that radiation safety guidelines and requirements are followed in the laboratories using radioisotopes.

- i. Investigate unusual incidents or violations involving radioactive material, supervise remedial action, and keep a report of the incident on file.
- j. Supervise and coordinate the waste disposal program including the upkeep of waste storage and disposal records.
- k. Maintain an inventory of isotopes in the department to ensure that the possession limits are not exceeded.
- l. Supervise regular contamination surveys of facilities where radioactive material is used, and ensure an appropriate and timely response by the relevant user, if contamination is detected
- m. Delegate to the associate RSO the authority to perform the above duties in the absence or unavailability of the RSO.

3. Responsibilities of the Supervisors

- a. Plan each experiment to ensure that proper safety procedures are employed.
- b. Instruct all students and employees in the safety procedures and monitor their compliance.
- c. Provide appropriate radiation protection equipment.
- d. Insure that only authorized work is done with radioactive material.
- e. Notify the RSO in writing of new employees and students who need to work with radioactive material. Provide the individual's name, date of birth, social security number, and previous experience working with radioisotopes. Ensure that the new worker has completed the department's safety training program and understands the requirements.
- f. Designate an area and appropriate receptacle for the short-term storage of radioactive waste. Contact the RSO for removal of the waste to the long-term storage and disposal staging area.
- g. Post areas where radioisotopes are stored or used.
- h. Maintain records for the receipt, use and disposal of radioactive material.
- i. Insure that areas containing radioactive material are locked after working hours.

4. Responsibilities of the Individual users:

- a. Each person working with radioactive material must be familiar with the contents of this Radiation safety Manual and must strive to keep personal exposure to radiation as low as is reasonably achievable.
- b. Wear appropriate safety equipment such as gloves, lab coat, and safety glasses.
- c. Use protective barriers or shield when appropriate.
- d. Always use a fume hood when working with volatile radioisotopes. All radioiodinations must be carried out in an approved hood
- e. Never pipette by mouth. Use the appropriate mechanical device for transferring small amounts of liquid, and ordinarily the device should be reserved and so marked for use only with radioactive material
- f. Work with radioactive material only in the designated area of the lab.
- g. Do not smoke, drink, eat, store food, or apply cosmetics in the lab.
- h. Wash hands thoroughly after working with radioactive material. Do not work with such material if there is a break in the skin below the wrist
- i. Always wear a personal dosimeter (film badge) when working with or in the vicinity of ^{32}P . It should be worn at the unshielded location of the whole body likely to receive the highest exposure. Return the badge promptly to the RSO upon request at the end of each monitoring period.
- j. Check the lab's survey instrument routinely to determine that it is working in proper order and keep it readily available
- k. Users of ^{32}P should scan their work area and equipment with a survey meter after a procedure is completed. Record the survey results and any necessary corrective actions taken.
- l. Label all radioisotope storage containers with the following information: radioisotope, activity, date, user's name, and a radiation control symbol
- m. Keep the radioisotope work areas neat and clean. Remove unnecessary material and equipment from the area. Cover the lab bench surface with absorbent paper. Mark the area with tape labeled for radioactive material and be sure co-workers are aware that isotopes are being used.
- n. Equipment used for working with radioactive material should be appropriately labeled, and should not be used for other work.

- o. Report any unusual incidents involving radioactive material to the lab supervisor and the RSO, and carry out the recommended corrective measures. The individual user must cooperate in any and all attempts to evaluate personal exposure, which may include complying with requests from the RSO for body burden measurements of the thyroid and submission of urine samples for radioassay.
- p. Carry out decontamination procedures when necessary, and take appropriate steps to prevent the spread of contamination to other areas.

II. PROCEDURES FOR ORDERING AND RECEIPT OF RADIOACTIVE MATERIAL

A. PURCHASING

The normal institutional purchase requisition should be prepared and signed by an authorized user. It must indicate the radioisotope(s) to be purchased, the chemical form(s) of the isotope, and the amount. If the amount for an individual order does not exceed the quantity approved by the RSO when the research was originally authorized, prior approval of the purchase requisition by the RSO is not required. However, if the user is increasing the amount ordinarily ordered, the RSO must be consulted first to ensure that the authorized limits of possession are not exceeded, and that additional safe handling procedures have been considered.

B. RECEIPT IN THE DEPARTMENT

It is the responsibility of the authorized user who placed the purchase order to have a trained individual available on the day the isotope delivery is made.

All deliveries are made to room 113, Dedman Life Sciences Building. The office staff will sign for the delivery and be responsible for placing the package in a leak proof pan, which is reserved for this purpose and marked with the appropriate caution symbol. The office staff will promptly notify the purchaser or the purchaser's trained designate that the material has been received. Deliveries are only accepted during normal working hours.

In the event that a received package is suspected of leakage or if leakage is evident, the RSO or another member of the RSS must be called immediately to handle the situation.

C. OPENING PACKAGES IN THE LABORATORY

A package containing radioactive material must only be opened in a supervisor's laboratory in a location with appropriate shielding and ventilation.

Gloves and a lab coat should be worn when opening the package

The external surfaces of a package must be monitored for radioactive contamination if the package is damaged or if it is labeled with a Radioactive White I, Yellow II, Yellow III label. This should be done in the following manner:

- a. The monitoring must be done as soon as possible but no later than 3 hours after the package is received. If there is evidence of degradation of package integrity, such as a package that is crushed, wet, or damaged, the package should be surveyed immediately.
- b. Use a cotton or filter paper swab to wipe an area of 300 cm² using moderate pressure. Sufficient swabs must be taken in the most appropriate locations to yield a representative assessment of the removable contamination levels.
- c. Place the swab in a scintillation vial together with 5 ml of scintillation fluid. Measure the activity of the wiping material with the scintillation counter. Measure the activity of an unused swab to determine the background level.
- d. For beta- and gamma-emitting radioisotopes, the maximum permissible limit of removable external radioactive contamination is 22 dpm/cm² above background.
- e. The RSO must immediately be notified if the removable surface contamination exceeds the permissible limit.
- f. A copy of the print-out from the scintillation counter should be annotated and submitted to the RSO within 24 h of the survey. The original should be filed with the supervisor's records.

The inner vial from a package labeled with a Radioactive White I, Yellow II, or Yellow III label must also be swabbed to determine removable contamination levels. The results must be filed as described in paragraph f above. If contamination exceeds 22 dpm/swab, immediate action should be taken to decontaminate the vial's surface or to transfer its contents to a clean container.

A wipe test (described above) should be carried out on any packing material suspected of contamination. If the isotope is normally detectable by a survey meter, the meter should be used to check each piece of packing material as it is removed.

Receipt of the isotope should be entered into the supervisor's inventory record immediately. A copy of the packing slip and any survey results must be submitted to the RSO within 24 h of receipt.

Prior to disposing of uncontaminated containers and packing material with the regular trash, deface all radioactive caution labels.

III. TRAINING OF LABORATORY PERSONNEL AND/OR STUDENTS

Every person using radioisotopes for research purposes must be familiar with the information outlined in this Safety Manual. This Manual must be available to every user and in every relevant laboratory.

The RSO will provide a copy of this Manual to anyone upon request. The RSO will also supervise the lending of the three training films and be available for any questions that arise about safety requirements and procedures. The laboratory supervisor, who is a member of the RSS, is responsible for the individual's training in safe techniques and radiation protection pertinent to the specific laboratory situation.

A signed statement indicating that this Manual has been read must be submitted to the RSO by each person who plans to work with radioactive material. In addition, every user is required to view three training films on radiation safety, laboratory procedures, and emergency procedures. The same signed statement will indicate that this requirement has also been satisfied.

After receipt of the signed statement from a new user, the RSO will administer a written examination to determine if the Information in the Safety Manual and training films was understood. The completed exam will then be kept on file with the signed statement.

The RSO will issue memos as needed, but at least once every three years, to remind all users of certain procedures and to inform them of new or changed requirements. At the bottom of the last page of the memo will be a form that each user must sign and return to the RSO to document that the memo was received.

The RSO will make an unannounced visit at least once a year to each research laboratory to spot-check compliance with procedures. Should it become apparent to the RSO that safety procedures are not being followed, all workers in that laboratory will be required to attend a safety review session. Training procedures will be reviewed annually at a meeting of the RSS.

Radioisotopes will only be used in a teaching laboratory under the close supervision of a member of the RSS, who will ensure compliance with proper techniques and protective procedures.

IV. GENERAL INSTRUCTIONS FOR WORKING WITH RADIOACTIVE MATERIAL

A. AUTHORIZATION TO USE RADIOACTIVE MATERIAL

Before an authorization to use radioisotopes is issued, the RSO will first review and make an evaluation of the supervisor's plans for radiation safety. The evaluation will include consideration of the following: the equipment or materials to be used, the physical forms of the isotopes, the total amounts of the isotopes that will normally be required at anyone time, the experimental protocols, where the isotope will be used and stored, what containment and shielding will be available, the posting of caution signs and emergency procedures. Upon approval by the RSO, the new supervisor's name and credentials will be submitted in an application for amendment to the license. Once approved by the Texas Department of Health, the supervisor is then authorized to order isotopes and supervise other users in the research laboratory. All users are only permitted to work with isotopes after they have completed the training requirements described in Part III.

The quantity of isotope to be handled per student or allowed per experiment should never be more than and will normally be much less than the average amount indicated by the supervisor at the time authorization was approved. If the laboratory's needs increase, the supervisor must consult with the RSO to ensure that the Department does not exceed the possession limits set by its license. If necessary, the RSO will apply for all amendment to the license to accommodate the new conditions.

B. LABORATORY APPAREL AND PERSONAL PROTECTIVE EQUIPMENT

1. Apparel

- a. Gloves and lab coats or aprons should be worn by all employees when working with liquid radioactive material.
- b. When performing radio iodination reactions, plastic sleeves are to be worn over the lab coat. The plastic sleeves are to be taped at the wrist, worn under a second pair of gloves, and extend above the elbow. A lead apron should be worn outside the lab coat, and a film badge should be worn outside the lead apron.
- c. Safety glasses, optical glasses, or goggles should be worn when skin dose from beta- emitting radioisotopes may exceed 100 mR/week.
- d. In areas where radioactive material is handled, it is prohibited to wear open-toed shoes, shorts, or short skirts.

2. Equipment

- a. In order to protect personnel working with isotopes, shielding of sufficient thickness to reduce the dose rate to 1 mR/hour at a distance of 1 foot from the shielding will be placed around the isotope source.
- b. An appropriate survey instrument should be employed in the area where isotopes are used.
- c. A film badge must be worn on the outside of the lab coat or apron by anyone working with radioisotopes other than ^3H , ^{14}C and ^{35}S .

- d. Volatile radioactive material should only be handled in a chemical fume hood. Radioiodinations are always performed in a radiochemical fume hood.
- e. Work surfaces must be protected with plastic-backed absorbent paper.
- f. Long-handled tongs should be used whenever such safety measures are needed (for example, when large quantities of hard beta: and/or gamma emitters are used). When in doubt as to their need, the user should contact the appropriate member of the RSS.
- g. All unsealed sources of radioactive liquids should be stored in nonbreakable, leakproof containers

C. ROUTINE SURVEY AND MONITORING PROCEDURES

1. Authorized users of radioactive materials should frequently check their radiation survey instruments to make sure they are in operating order. The RSO will arrange for the instruments to be calibrated at least once a year and will retain copies of the certificates of calibration for 3 years. It is the responsibility of the individual supervisor to purchase the instrument and to arrange for repairs as needed. Calibration and repair work are done by a state or federally licensed vendor.
2. Working areas are to be monitored with a survey meter after the use of hard beta (e.g. ^{32}P) or gamma emitting radioisotopes (except sealed sources) to determine radiation levels and the presence of any contamination. The results should be recorded in the appropriate laboratory logbook. Surfaces showing more than 0.4 mR/hour dose rate at one centimeter from the surface must be decontaminated.
3. The RSO will supervise routine swab tests of each laboratory where radioactive material is in use. The frequency of these tests will vary with the amount and type of material used as recommended by the Texas Bureau of Radiation Control, but they will be done at least once monthly. The Department's long-term storage and disposal staging area will be monitored by swab test on a monthly basis, and by survey instrument upon receipt of new waste. The contamination on each swab will be measured with a liquid scintillation counter and recorded in units of dpm. If an area produces more than 1000 dpm above background, it must be decontaminated. The RSO will maintain records of the swab test results for three years in the Department.

D. TRANSPORT OF RADIOACTIVE MATERIAL BETWEEN LABORATORIES

Ordinarily the radioactive material will be stored and used in the same room. It should only be in the hallways when it is first received, is transported to the Department's waste storage area, or more rarely, when it is moved from one work site to another. For transport, the dry waste must be double-bagged and the liquid waste must be in a closed, leakproof, heavy gauge plastic container that is sitting in a leakproof plastic tub (e.g., a dishpan) or other large pan. Even small samples (e.g., a vial or tube) should be transported in a container on a cart rather than by hand to reduce the risk of dropping the sample or bumping into someone. The material should be labeled with the radioactive caution symbol and appropriately shielded to protect personnel during transport, and the surface of the cart should be covered with absorbent paper.

Movement of radioactive material outside the premises of the Department of Biological Sciences is not allowed except for waste disposal.

E. STORAGE AND LABELLING OF RADIOACTIVE MATERIAL.IN THE LABORATORY

1. All glassware and equipment containing radioactive material should be properly labeled if they are to be left unattended for any period of time. They should only be located in an area with appropriate caution signs for radioactive work and with shielding, if necessary.
2. The supervisor must designate a storage box or area for radioisotopes. The cabinet, refrigerator or freezer must be lockable or be located in a lockable room to restrict access to the isotope. There must be sufficient shielding around the isotope so that the radiation level at the surface of the storage compartment is less than 2 mR/hr. The storage unit must be labeled with a prominent sign that indicates the types *of* isotopes within it.

F. FILM BADGES

1. Each supervisor of a laboratory must notify the RSO in writing of the names of those persons who will be using radioisotopes. The notification must include the name of the individual, date of birth, social security number, and prior work experience with radioactive materials. The film badge service will be initiated if appropriate for the isotopes in that laboratory. The personnel monitoring devices are provided and read by a NVLAP accredited dosimetry service.
 2. Each film badge holder is responsible for returning the badge for exchange upon request of the RSO. The official film badge report will be placed on file in the main office of the Department of Biological Sciences. Users are informed immediately if their badge results are above background level, and appropriate remedial actions will then be taken.
3. Instructions for use of the film badge:
- a. The badge is to be worn only by the person to whom it is assigned exchanged for a new badge upon the request of the RSO.
 - b. Wear the badge when working with or in close vicinity to radioisotopes. The badge is to be worn at the unshielded location of the whole body likely 10 receive the highest exposure. It should be worn outside of any protective clothing.
 - c. Pregnant women may request an additional badge to be worn at waist level under any protective clothing being worn.
 - d. If there is a potential for significant radiation exposure to the hand, a ring dosimeter should be worn.
 - e. Care must be taken to avoid accidental exposure of the badge to radiation or heat. When removing a lab coat or apron, do not leave the badge in a position where accidental exposure to radioactive material, X-ray~ or intense direct sunlight is possible. The badge can be damaged if it is laundered. Should accidental exposure or damage occur, promptly write an explanatory note and return the badge to the RSO.

G. WASTE DISPOSAL PROCEDURES

The RSO or Associate RSO must supervise disposal of radioactive waste. No individual worker is authorized to dispose of such waste in the sanitary sewage system or regular trash without the prior knowledge and consent of the RSO. The majority of radioactive waste will be submitted to the RSO for appropriate disposal.

1. General Considerations. Three categories of radioactive waste are covered by this Department's License: solid waste, liquid waste, and scintillation vials. Note that we are NOT licensed to use isotopes in experiments with animals. All handling of waste is subject to double containment. Containers for solid waste must be lined with 4 or 5 mil plastic bags, and sharp items must be placed in a separate receptacle before being bagged. Liquid waste must be in a heavy gauge plastic bottle that is placed in a large polyethylene tray or bucket. It is important to keep the various isotopes separate from one another.
2. Temporary Storage. A fenced region with restricted access, appropriate shielding, and caution signs is located in the Dedman Life Sciences Building, and serves as the holding site for storage barrels. The lined storage barrels are labeled with the type of waste, the radio nuclide(s), and the activity of the waste on the date it was placed there. Only the RSO or Associate RSO is authorized to place waste in this area or to remove it for final disposal. Solutions of 125I waste must be stored in a functioning fume hood.
3. Final Disposal.
 - a. Decay-in-storage (DIS): Only ^{32}P , ^{33}P and ^{35}S have sufficiently short half-lives to qualify for this means of disposal. Also to qualify for DIS, waste with one of these isotopes must not be mixed with waste containing other isotopes. The RSO will accept waste for DIS after it is appropriately contained, and labeled with its contents and activity. After it has decayed for a length of time >10 half-lives in the secure storage facility (see above), the RSO will scan the dry waste with a portable survey meter and take a sample of the liquid waste for scintillation counting. If residual activity is indistinguishable from background, the dry waste will be placed in the regular trash and liquids will be disposed via the sanitary sewer system.
 - b. Transfer to a Type I municipal solid waste site. Should the volume of low level waste that is normally treated by DIS exceed the capacity of our temporary storage facility, this licensee will apply for agency approval to discard the material in a Type I municipal solid waste site.
 - c. Transfer to a commercial disposal agent. The services of a commercial firm, licensed and approved for the disposal of radioactive wastes, will be used to handle scintillation vials and those solid or liquid wastes whose half-lives disqualify them for DIS. Experience in the last decade suggests that the volume of radioactive waste in this category accumulates very slowly. We have sufficient storage capacity to wait until the State of Texas acquires a low-level radioactive waste disposal area.
 - d. Disposal into the sanitary sewage system. The only material that can be discharged into the sewage system is that which is soluble or dispersible in water. The limits for disposal into the sanitary sewage system are specified in Table III of Chapter 25 Texas Administrative

Code (25 TAC) §289.202 (ggg) (2) and the regulations are further detailed in subsection (gg)(1). In order to stay well within the specific limits, each supervisor is restricted to

disposing into the sanitary sewage system each day no more than 1 μCi of ^{125}I , 10 μCi of ^{45}Ca or ^{32}P , and 100 μCi of ^3H , ^{14}C , or ^{35}S .

H. INVENTORY ACCOUNTABILITY RECORDS

Maintenance of an accurate inventory is the responsibility of each supervisor. This is not only part of good laboratory safety procedures, but it is also required for compliance with the terms of the Department's License. Receipt, use, and ultimate disposal of all radioactive material must be documented. Information on the Isotope Inventory Log should include the following:

1. Supervisor's name, and lab room number.
2. Receipt record:
 - a. Date of receipt.
 - b. Type of isotope, its activity, form, and lot or batch number.
 - c. Vendor.
 - d. Results of contamination survey on container and packing material, if conducted.
 - e. Initials of person making the entry.
3. Use and disposal records:
 - a. Date of each use.
 - b. Amount used each time.
 - c. Manner of waste disposal.

An example of an Inventory Accountability Form is provided on the next page for supervisors to copy. If a different form is used, it must include the same information as noted above. The accountability forms should be kept in a notebook and be available for inspection by the RSO and representatives from the Texas Bureau of Radiation Control.

I. BIOASSAYS

Bioassays may be required for persons handling certain radioisotopes. In general, bioassays will be required of persons handling stock solutions or otherwise directly involved in experimental procedures in which the possibility exists for internal contamination. Bioassay procedures include thyroid uptake analyses and the radioanalysis of urine. Reports of the bioassays become a part of the individual's exposure history and are kept on file in the Department of Biological Sciences.

1. Tritium. Urine bioassays are required when an individual handles 100 mCi or more of tritium over any two-week period in a non-contained form other than metallic foil. Individuals who regularly work in an environment in which the amount of tritium exceeds 100 mCi are required to have urine bioassays on a biweekly schedule. Individuals working in an off-normal condition or individuals not participating in a routine bioassay program and performing isolated tasks with amounts of tritium that exceed the activity defined above are required to have urine bioassays after each experiment.

If an accident or abnormal condition occurs where there is a possible internal exposure, a bioassay should be performed on all affected individuals within one day of and at least more than two hours after the possible exposure.

A urine bioassay consists of a baseline urine sample and a urine sample taken within 2 to 24 hours after the experiment is performed. The baseline sample must be taken before the experiment begins. The RSO will arrange with the Radiation Safety Office at the University of Texas Southwestern Medical Center at Dallas for the samples to be collected and analyzed in their facility. Their office has set administrative limits for tritium exposure and corresponding actions that individuals must take in accordance with the appropriate regulations. Individuals from the Department of Biological Sciences at Southern Methodist University will abide by the corrective actions recommended by UT Southwestern's Radiation Safety Officer.

2. Iodine. Persons planning to use over any three-month period a cumulative amount of ^{125}I greater than 1 mCi in an open room or bench or 10 mCi in a fume hood must submit to thyroid bioassays. Also, workers who are sufficiently close to the iodination process (within a few meters) must also receive bioassays.

If an accident or incident occurs where bodily contamination or ingestion of ^{125}I is suspected, a thyroid bioassay should be performed within 24 hours.

The bioassay is a simple noninvasive procedure that requires only a few minutes to complete. A baseline measurement must be performed prior to beginning work with ^{125}I for those who will work with it in the amounts mentioned above. It is required that a thyroid survey be arranged within 72 hours of a radioiodination procedure. Subsequently, bioassays will be performed every two weeks for routine radioiodine use or within 10 days of the end of the work period for infrequent use. Routine quarterly bioassays will be performed if during a 3-month period: a) the average thyroid burden for an individual in a given area was less than

0.12 μCi of ^{125}I and b) the working conditions have remained constant with regard to airborne concentrations and amount of iodine handled.

The RSO will arrange with the Radiation Safety Office at the University of Texas Southwestern Medical Center at Dallas for the thyroid bioassays to be performed. Their office has set administrative limits for iodine exposure and corresponding actions that individuals must take in accordance with the appropriate regulations. Individuals from the Department of Biological Sciences at Southern Methodist University will abide by the corrective actions recommended by UT Southwestern's Radiation Safety Officer.

RADIATION SAFETY: EMERGENCY PHONE NUMBERS

Type of Emergency	Immediate Precautions	Follow-Up
Minor Spill (usually microcurie amounts)	1.notify all persons in the room 2.confine spill immediately 3. Notify RSO and supervisor	Permit no one to work in the area until approved by the supervisor of the lab.
Major Spill (usually millicurie amounts)	1.notify all personnel to vacate room or area 2.Make NO attempt to clean up the spill. 3.Switch off all fans and vacate room or area 4.provide temporary barrier and warning signs 5.Notify RSO & supervisor	Decontamination of personnel and equipment, including spill, to be carried out by or under the supervision of the supervisor
Accidents involving radioactive dust, mist, fumes, vapors or gases where spread and inhalation or ingestion of radioactivity is possible	1.Notify others to vacate room or area 2.close windows & shut off all air calculating devices 3.Provide temporary barrier and warning signs 4.Notify RSO & Supervisor.	Do not re-enter the area until approved by the RSO
Injuries where contamination of a wound is possible	1.wash wound immediately in running water 2.Call physician 3.Notify RSO & supervisor	Permit no one involved in the accident to return to work until approved by the physician and the RSO
Fire involving radiation	1.Activate fire alarm 2.Attempt to extinguish fire if radiation hazard is not immediately present 3.Notify RSO & supervisor	Emergency activities will be governed by the local fire department

RADIATION SAFETY: EMERGENCY PHONE NUMBERS

For life-threatening emergencies, dial **911** immediately.

	<u>Campus</u>	<u>Home</u>
Lab Supervisor: _____	8-	
Radiation Safety Officer (RSO): Dr. Christine Buchanan	8-2848	972-387-1058
Assoc. RSO Dr. Bill Orr	8-4018	
SMU Dept.Public Safety (DPS)	8-3333	
Ask DPS to contact one of the SMU Health and Safety Officers.		

