Radiation Emergency Response Plan

UNLV

Risk Management and Safety
Radiation Safety Office

Responsible Office: Risk Management & Safety
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PREFACE

This Radiation Emergency Response Plan contains the policy, classification, and procedures for the handling of emergency situations involving radioactive materials or areas where radioactive materials are stored and/or used at the University of Nevada, Las Vegas. It defines responsibilities carried by the Radiological Safety Office and its cooperation with First Responders in case of an emergency.

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TABEL OF CONTENT

1.0 Purpose

Radionuclides used in research at UNLV can present hazards because of their ability to irradiate and contaminate mankind and the environment. The purpose of this procedure is to outline the basic approach to a radiological incident that will ensure that the safety and health of staff, students, general public, and the environment are protected.

2.0 Policy

UNLV will respond effectively to a radiological incident to ensure that exposures to radioactive materials and to members of staff and the public are kept ALARA and within regulatory limits.

3.0 Emergency Classification

Incident	**Action Level**	**Classification**
Spills of Radioactive Material: Liquids and Solids	Minor	Accident
	Major	Notification of Unusual Event *
Incidental Release of Radioactive Dusts, Mists, Fumes, and Gases	Minor	Accident
	Major	Notification of Unusual Event *
Personal Injury in Radiation Laboratory	Without Personal Contamination	Accident
	With Personal Contamination	Notification of Unusual Event *
Fire	Minor	Accident
	Major	Notification of Unusual Event *
Security Threat	Unauthorized Access to Radiation Laboratory	Accident
	Loss of control of radioactive material	Notification of Unusual Event *
	Bomb Threat	Notification of Unusual Event *
Major Natural Disaster	Fires, Tornado, Flood, Explosion, Epidemic and Major Emergency	Notification of Unusual Event *

* Declaration of this class of event requires notification of Police Services immediately, and the Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

4.0 Responsibility

Any Trained Radiation Worker, Risk Management and Safety department member, or Authorized User of Radioactive Materials involved in or witnessing a radiological incident has the responsibility to fulfill the requirements of this procedure in lieu of management of the area in which the incident occurred until management personnel are present on the site. After this time, it is the responsibility of the most senior manager available to implement this procedure.

For radiation contamination incidents, the Radiation Safety Officer has the responsibility to restrict or allow access to all areas where radioactive contamination is possible. Following a major radiological incident the Radiation Safety Officer is responsible for the supervision of all radiological surveys and for any decontamination activities

All radiological incidents are to be reported to the Radiation Safety Office as soon as practical with the exception of easily cleaned minor contamination. The Radiation Safety Office will promptly respond and determine if the incident is classified as an "Accident" or "Notification of Unusual Event". In the case of an Accident, the Radiation Safety Office will arrive at the scene of the Accident and proceed to control, mitigate, and eliminate consequences of the Accident. In the case of a Notification of Unusual Event, Police Services shall be notified immediately. Police Services will act as or provide for a First Responder's Crew at the scene of incident. Members of the Radiation Safety Office are not "First Responders". The Radiation Safety Office will provide guidance and support for the Emergency Responders assisting with facility specifications and radiation protection.

All incidents must be documented. This documentation must include a final survey indicating that all contamination has been removed or reduced to an acceptable level. In case of the Notification of Unusual Event, the Radiological Health Section of the Nevada State Health Division shall be notified according to the applicable provision of NAC 459.

5.0 Emergency Contact List

In case of an emergency involving radioactive materials or areas where radioactive materials are stored and/or used, the RSO and/or the Radiological Safety Office shall be contacted promptly.

Radiological Safety Officer (RSO)	(working hours)	**702-895-4226**	main line
		702-895-4419	office
	(after hours, weekend, and emergency)	**702-895-3669**	UNLV Dispatch
Alternate RSO	(working hours)	**702-895-4226**	main line
		702-895-4941	office

In case of Major Emergency Call the Police Services Immediately **911**

Radiological Health Section of the Nevada State Health Division **702-486-5280**

6.0 General Emergency Instructions

6.1 General Principals of Handling an Emergency Situation

Every radiation laboratory at UNLV shall be labeled accordingly and access restricted to authorized personnel. Contact information with telephone numbers of the RSO and/or the Radiological Safety Office is posted conspicuously in areas of use, so that it is readily available to workers in case of emergencies. The Authorized User (AU) of a laboratory should have appropriate emergency equipment readily available for handling spills. Emergency prevention measures shall be put in place. Initial and refresher Radiation Safety Training including proper response in emergency shall be provided. Proper Personal Protective Equipment (PPE) shall be in place and properly used. The UNLV Radiation Safety Manual, Emergency Response Plan, and an Evacuation diagram shall be available in the area.

6.2 Personal Decontamination

Contaminated areas of the body need to be identified using appropriate survey methods. Do not use any decontamination methods which may spread material, increase penetration into the body, or cause spread to a wounded area.

Loose particles may be removed by gently applying the adhesive side of tape to the particles attached to skin. Most contamination may be removed by running water over the contaminated area. Use soap or detergent if water by itself doesn't remove all the contaminants and by applying **gentle** scrubbing. Avoid harsh scrubbing which may increase skin penetration. If decontamination of personnel was not fully successful, consider inducing perspiration by covering the area with plastic. Then wash the affected area again to remove any contamination that was released by the perspiration. If contamination still persists, stronger decontamination methods may be necessary. Contact the Radiation Safety Office for further instructions.

6.3 Laboratory Spills

Where danger of spills of radioactive material exists, secondary containers or trays should be used. Containers should be covered whenever possible and only those amounts of radioactive material immediately necessary should be taken from the stock.

In the event of accidental spillage, keep calm, use common sense, protect people, and do not spread the contamination. If high radiation levels or the possibility of airborne contamination from **volatile** or dispersal radioactive material is present, evacuate the laboratory immediately; secure the laboratory to prevent entry; notify RSO. Unnecessary movement or touching shall be avoided. Use the following as guides:

S — **Stop**. Localize the spill. Put on disposable gloves, right the container, and blot the spill with absorbent material. Do not wipe or use wiping motions because this may spread the contamination.

W — **Warn**. Notify persons in the area that a spill has occurred

I — **Isolate**. Report the incident to the Radiation Safety Office

M — **Minimize**. Minimize your exposure.

S — **Survey**. Survey the area with appropriate instruments. Check the area around the spill, your hands, clothing and shoes for contamination.

7.0 Spills of Radioactive Material: Liquids and Solids

7.1 Minor Spills of Radioactive Material: Liquids and Solids

A spill of Radioactive Material shall be classified as a Minor Spill if the level of contamination does not exceed 100 times of Acceptable Surface Contamination Levels listed in Table 1 and a restriction for access to the contaminated area does not exceed 24 hours. Commercially available cleaning supplies should be adequate for cleaning minor spills of contamination. If necessary, it is recommended to use them only when other measures such as plain water do not work.

Area	**Alpha emitter/100cm^2**	**Beta & Gamma/100cm^2**
Uncontrolled	11 DPM	110 DPM
Controlled	22 DPM	220 DPM
Restricted	110 DPM	1100 DPM

Table 1: Acceptable Surface Contamination Levels For Surface Swipe Tests

The following steps are recommended:

1. Notify persons in the area that a spill has occurred.
2. Prevent the spread of contamination by covering the spill with absorbent paper. (Paper should be dampened if solids are spilled.)
3. Clean up the spill, wearing disposable gloves and using absorbent paper.
4. Carefully fold the absorbent paper with the clean side out and place in a plastic bag for transfer to a radioactive waste container. Put contaminated gloves and any other contaminated disposable material in the bag.

5. Survey the area with an appropriate low-range radiation detector survey meter or other appropriate technique. Check the area around the spill for contamination. Also check hands, clothing, and shoes for contamination.
6. Report the incident to the RSO promptly.
7. Allow no one to return to work in the area unless approved by the RSO.
8. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
9. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

RSO and/or the Radiation Safety Office will:

1. Follow up on the decontamination activities and document the results.
2. Determine cause and appropriate corrective actions needed to avoid future occurrences
3. Determine if there is a potential for internal contamination and bioassay as required.
4. If necessary, notify the Radiological Health Section, of the Nevada State Health Division according to the applicable provision of NAC 459.

7.2 Major Spills of Radioactive Material: Liquids and Solids

A spill of Radioactive Material shall be classified as a Major Spill if the level of contamination exceeds 100 times of Acceptable Surface Contamination Levels listed in Table 1 and a restriction for access to the contaminated area exceeds 24 hours. The following is a general guideline to deal with a Major Spill of Radioactive Material:

1. Shield the release of radioactivity or cut it off from the source if possible.
2. Clear the area. If appropriate, survey all persons not involved in the spill and vacate the room.
3. Prevent the spread of contamination by covering the spill with absorbent paper (paper should be dampened, if solids are spilled), but do not attempt to clean it up. To prevent the spread of contamination, limit the movement of all personnel who may be contaminated.
4. Minimize radiation exposure to personnel. Shield the source only if it can be done without further contamination or significant increase in radiation exposure.
5. Close the room and lock or otherwise secure the area to prevent entry. Post the room with a sign to warn anyone trying to enter that a spill of radioactive material has occurred.
6. **Notify the RSO immediately.**

7. Survey all personnel who could possibly have been contaminated. Decontaminate personnel by removing contaminated clothing and flushing contaminated skin with lukewarm water and then washing with a mild soap.
8. Allow no one to return to work in the area unless approved by the RSO.
9. Remain in the general area until the RSO and/or the Radiation Safety Office personnel arrive.
10. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
11. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

RSO and/or the Radiation Safety Office will:

1. Confirm decontamination of personnel.
2. Supervise decontamination activities and document the results. Documentation should include location of surveys and decontamination results.
3. Determine cause and needed corrective actions; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin.
4. Notify Radiological Health Section, of the Nevada State Health Division according to the applicable provision of NAC 459.

8.0 Incidental Release of Radioactive Dusts, Mists, Fumes, and Gases

Classification of an Incidental Release of Radioactive Dusts, Mists, Fumes, and Gases as a Minor or Major event will depend on the nature of the released radioactive material. The RSO will determine the classification of the release.

In general, the Incidental Release of Radioactive Dusts, Mists, Fumes, and Gases in the air shall be classified as a Minor Release if the amount of released radioactive activity does not exceed 100 microCuries, and a restriction for access to the contaminated area does not exceed 24 hours. If the released radioactive activity is equal to or exceeds 100 microCuries or a restriction for access to the contaminated area exceeds 24 hours, the release shall be classified as a Major Release. The following procedure shall be followed in case of either Minor or Major release:

1. Notify all personnel to vacate the room immediately.
2. Shut down ventilation system, if possible, unless it is determined that the room ventilation system needs to be used to clear the air for access purposes.

3. Vacate the room. Seal the area, if possible.
4. **Notify the RSO immediately.**
5. Ensure that all access doors to the area are closed and posted with radiation warning signs, or post guards (trained) at all access doors to prevent accidental opening of the doors or entry to the area.
6. Survey all persons who could have possibly been contaminated. Decontaminate as directed by the RSO.
7. Promptly report suspected inhalations and ingestions of licensed material to the RSO.
8. Decontaminate the area only when advised and/or supervised by the RSO.
9. Allow no one to return to work in the area unless approved by the RSO.
10. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
11. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., decontamination techniques, surveys, provision and collection of bioassay samples, requested documentation).

RSO and/or the Radiation Safety Office will:

1. Promptly assess the situation and determine classification of the release.
2. Based on classification, determine if additional assistance is required and if the Police Services and Radiological Health Section of the Nevada State Health Division should be notified.
3. Supervise decontamination activities.
4. Perform air sample surveys in the area before permitting resumption of work with licensed materials
5. Provide written directions to potentially contaminated individuals about providing and collecting urine, breath, blood, or fecal samples, etc.
6. Based on classification of the release consider need for medical exam and/or whole body count before permitting involved individuals to return to work with licensed material.
7. Determine cause and corrective actions needed; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
8. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

9.0 Personal Injury in Radiation Laboratory

Despite the fact that incidents that involve personal injury in radiation laboratory might lead to significant internal contamination, life and health of a person shall be considered the most important.

9.1 Personal Injury in Radiation Laboratory without Personal Contamination

In the event a person receives an injury requiring medical attention in a laboratory with radioactive materials, and it is established that there is no threat that the injured person was contaminated, the following procedure will be initiated.

1. Notify all persons present in the area and stop all work.
2. Promptly assess the extent of injury by asking the injured person for a brief statement of the type of injury and how serious it is. Evaluate if a radiation or other hazards are present.
3. If the injury justifies the need for immediate medical attention, have one individual **immediately call 911 (Police Services) and then call the RSO**, briefly describe the injury, and explain the type of accident, ask for instructions to follow.
4. If radioactive contamination is present follow procedure for Personal Injury in Radiation Laboratory with Personal Contamination.
5. Upon arrival of the First Responders and Ambulance Personnel, escort them to the injured person, inform them where radioactive materials are stored and/or located as well as any precautions to avoid exposure or risk of creating radioactive contamination in the area.
6. Emergency Responders take charge upon arrival and proceed with assistance of the RSO and/or the Radiation Safety Office.
7. In consultation with the RSO, determine a plan of actions to survey laboratory and personnel after the incident is eliminated and there is no threat to the life and health of the injured person.
8. Allow no one to return to work in the area unless approved by the RSO and Emergency Responders.
9. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
10. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., surveys, requested documentation).

RSO and/or the Radiation Safety Office will:

1. **Immediately call 911 (Police Services)**, if not already done, briefly describe the injury and explain the type of accident.

2. Assist First Responders with facility specifications and radiation protection. Make sure they are aware where radioactive materials are stored or where radioisotopes were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid unnecessary exposure.
3. Set up a controlled area where the laboratory personnel and Ambulance Personnel can be surveyed for contamination of their clothing and equipment if possible.
4. Once the incident is eliminated and there is no threat to the life and health of the injured person, advise the Ambulance Personnel not to enter potentially contaminated areas or areas where radioactive sources may be present.
5. If it is feasible perform thorough contamination surveys of the First Responders and/or Ambulance Personnel and their equipment before they leave the controlled area. If it is not possible the RSO and/or the Radiological Safety Office personnel will find out where the injured person will be transported to, so as the RSO and/or the Radiological Safety Office personnel can meet the Ambulance personnel there to conduct a thorough contamination survey to the involved personnel and equipment.
6. Supervise decontamination activities.
7. Determine cause and needed corrective actions; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
8. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

9.2 Personal Injury in Radiation Laboratory with Personal Contamination

In the event a person receives an injury requiring medical attention in a laboratory with radioactive materials, and extensive radioactive contamination is present, the following procedure will be initiated.

1. Notify all persons present in the area to stop all work, and evacuate area of non-essential personnel.
2. Promptly assess the extent of injury by asking the injured person for a brief statement of the type of injury and how serious it is. Evaluate if a radiation or other hazards are present.
3. If the injury justifies the need for immediate medical attention, have one individual **immediately call 911 (Police Services) and than call the RSO**, briefly describe the injury, explain the type of accident, report that radioactive contamination is present, and ask for instructions to follow.
4. Upon arrival of the First Responders and/or Ambulance Personnel, escort them to the injured person, if feasible provide them with personal protective equipment,

and inform them where radioactive materials are stored and/or located as well as any precautions to avoid exposure or risk of creating radioactive contamination in the area.

5. Emergency Responders take charge upon arrival and proceed with the assistance of the RSO and/or the Radiation Safety Office.
6. In consultation with the RSO, determine a plan of actions to survey the laboratory and personnel after the incident is eliminated and there is no threat to the life and health of the injured person.
7. Allow no one to return to work in the area unless approved by the RSO and Emergency Responders.
8. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
9. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., surveys, requested documentation).

RSO and/or the Radiation Safety Office will:

1. **Immediately call 911 (Police Services)** , if not already done, briefly describe the injury, explain the type of accident, and report that radioactive contamination is present.
2. Assist First Responders with facility specifications and radiation protection. Make sure they are aware where radioactive materials are stored or where radioisotopes were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid unnecessary exposure.
3. Set up a controlled area where the laboratory personnel and Ambulance Personnel can be surveyed for contamination of their clothing and equipment.
4. Once the incident is eliminated and there is no threat to the life and health of the injured person, advice the Ambulance Personnel not to enter potentially contaminated areas or areas where radioactive sources may be present.
5. If it is feasible perform a thorough contamination survey of the First Responders and their equipment before they leave the controlled area and decontaminate, if necessary.
    a. If it is not possible the RSO and/or the Radiological Safety Office personnel will find out where the injured person will be transported to, so as the RSO and/or the Radiological Safety Office personnel can meet the ambulance personnel there to conduct a thorough contamination survey of the involved personnel and equipment.
    b. Upon arrival at the hospital the Radiation Safety Office staff should assist the hospital staff in personnel control and radiation monitoring. They shall remain at the hospital until decontamination procedures are complete.

6. Supervise decontamination activities.
7. Remove any contamination that was released by the perspiration.
8. Determine cause and needed corrective actions; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
9. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 45

10.0 Fire

10.1 Minor Fire

Local fires (e.g., waste container fire) which can be contained and promptly put out using a regular fire extinguisher and which do not create a threat to hazardous materials in storage shall be classified as a Minor Fire. In order to handle a Minor Fire effectively the following procedure shall be followed:

1. Immediately attempt to put out the fire by approved methods (e.g., fire extinguisher) if other fire hazards or radiation hazards are not present.
2. If this fails follow procedures for Major Fire.
3. Notify all persons present to vacate the area and have one individual immediately call the RSO and fire department (as instructed by RSO).
4. Once the fire is out, isolate the area to prevent the spread of possible contamination.
5. Survey all persons involved in combating the fire for possible contamination.
6. Decontaminate personnel by removing contaminated clothing and flushing contaminated skin with lukewarm water, then washing with a mild soap.
7. In consultation with the RSO, determine a plan of decontamination and the types of protective devices and survey equipment that will be necessary to decontaminate the area.
8. Allow no one to return to work in the area unless approved by the RSO.
9. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
10. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

RSO and/or the Radiation Safety Office will:

1. If fire moved from Minor category to Major follow procedures for Major Fire.
2. Supervise decontamination activities.

3. Consult with Fire Safety personnel to assure that there are no other possibilities of another fire starting.
4. Determine cause and needed corrective actions; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
5. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

10.2 Major Fire

Fires which can not be contained and promptly put out by a regular fire extinguisher, or which create a threat for hazardous materials in storage shall be classified as a Major Fire. In order to handle a Major Fire effectively, the following procedure shall be followed:

1. Notify all persons present to vacate the area and have one individual **immediately call 911 (Police Services) and then call the RSO** (as instructed by RSO).
2. Once all persons are evacuated isolate the area to prevent the spread of possible contamination.
3. Survey all involved persons for possible contamination.
4. Decontaminate personnel by removing contaminated clothing and flushing contaminated skin with lukewarm water, then washing with a mild soap.
5. Allow no one to enter the area.
6. Upon arrival of the First Responders, inform them where radioactive materials are stored or where radioisotopes were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid exposure or risk of creating radioactive contamination by use of high pressure water, etc.
7. Emergency Responders take charge upon arrival and proceed with assistance from the RSO and/or the Radiation Safety Office.
8. In consultation with the RSO, determine a plan of decontamination and the types of protective devices and survey equipment that will be necessary to decontaminate the area.
9. Allow no one to return to work in the area unless approved by the RSO and Emergency Responders.
10. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
11. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

RSO and/or the Radiation Safety Office will:

1. **Immediately call 911 (Police Services).**
2. Assist First Responders with facility specifications and radiation protection. Make sure they are aware where radioactive materials are stored or where radioisotopes were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid exposure or risk of creating radioactive contamination by use of high pressure water, etc.
3. Consult with the First Responders and set up a controlled area where the firefighters can be surveyed for contamination of their protective clothing and equipment after the fire is extinguished.
4. Once the fire is extinguished, advise the First Responders not to enter potentially contaminated areas, or areas where radioactive sources may be present until a thorough evaluation and survey are performed to determine the extent of the damage to the licensed material use and storage areas.
5. Perform thorough contamination surveys of the First Responders and their equipment before they leave the controlled area and decontaminate, if necessary.
6. Supervise decontamination activities.
7. Determine cause and needed corrective actions; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.
8. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

11.0 Security Threat

A Security Threat to a radiological laboratory, to the control of radioactive materials and/or a radiation producing device, or the welfare of personnel is an extremely serious event. Such event covers a wild range of possibilities, from an unauthorized but accidental entry of a person into a restricted work area to a bomb threat. In any case, in a discussion of security threat on the UNLV campus, it should be emphasized that the actual health risk from radiation or radioactivity is very small, especially when compared to that of the hazards which may be attendant upon a threat of security.

11.1 Unauthorized Access to Radiation Laboratory

Access to the areas where radioactive materials are stored and used at UNLV is strictly controlled and only persons with proper training and experience are authorized for unescorted access to the areas. Unauthorized entry of a person into a Radiological Laboratory shall initiate the following procedure:

1. Inform the person that the area is restricted for purposes of radiation protection, and escort the person from the laboratory.
2. If possible get the persons contact information, why the person attempted to access the laboratory, whether or not the person has received proper Radiation Safety Training, and whether or not the person is aware of a potential radiological hazard in the laboratory.
3. Report the incident to the RSO and/or the Radiological Safety Office promptly.
4. Instruct the person about radiological hazard in the laboratory, and suggest contacting the Radiological Safety Office if the person has any questions regarding Radiation Safety Training and/or access to radiation laboratory.

RSO and/or the Radiation Safety Office will:

1. If possible contact the person who attempted to access the radiation laboratory without proper authorization.
2. Determine if the person has legitimate reason to access the laboratory and the laboratory supervisor has no objections.
3. Provide the person with proper Radiation Safety Training and instructions regarding access restrictions associated with Radiation Laboratories.

11.2 Loss of control of radioactive material

Suspected or confirmed loss of control of radioactive materials, initiate the following procedure:

1. Notify the RSO and/or the Radiological Safety Office promptly. Request special instructions regarding securing the area.
2. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., securing area, surveys, conducting minor investigation).
3. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of the cause of the loss of the material).

RSO and/or the Radiation Safety Office will:

1. Promptly assess the situation, if threat is confirmed, the Executive Director of Risk Management and Safety Department, the Police Services, and the Radiological Health Section of the Nevada State Health Division shall be notified.
2. If necessary, request assistance from higher management and/or enforcement (e.g., the Executive Director of Risk Management and Safety Department, the Police Services, the Radiological Health Section of the Nevada State Health Division).
3. Initiate an immediate and exhausting search for the material in full cooperation with the Police Services if they are involved. Document the incident investigation in progress.

4. Once the incident is eliminated, determine the cause of the threat and needed corrective actions. File final incident report.
5. Determine cause(s) of the incident and assess steps to prevent a recurrence. Initiate corrective actions immediately.
6. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

11.3 Bomb Threat

If a bomb threat is received or identified, initiate the following procedure.

1. Notify all persons in the area to stop and secure their work if feasible and leave immediately.
2. Notify the Police Services and briefly described the nature of the situation.
3. Notify the RSO and other Risk Management and Safety Department personnel.
4. Upon arrival of the First Responders, inform them where radioactive materials are stored or where radioisotopes were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid exposure or risk of creating radioactive contamination by use of high pressure water, etc.
5. Emergency Responders take charge upon arrival and proceed with assistance of the RSO and/or the Radiation Safety Office.
6. Allow no one to return to work in the area unless approved by the RSO.

RSO and/or the Radiation Safety Office will:

1. Coordinate activities with the Police Services. First Responders and/or other section of Risk Management and Safety Department.
2. Once the incident is eliminated, advise the First Responders not to enter potentially contaminated areas or areas where radioactive sources may be present until a thorough evaluation and survey are performed to determine the extent of the damage to the licensed material use and storage areas.
3. Perform thorough contamination surveys of the First Responders and their equipment before they leave the controlled area and decontaminate, if necessary.
4. Determine cause and needed corrective actions. Document incident.
5. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

12.0 Major Natural Disaster

All major natural disasters such as Fires, Tornados, Floods, Explosions, Epidemic and Major Emergencies require close cooperation with Police Services. Members of the Radiation Safety Office are not First Responders. Their major function is assisting with facility specifications and radiation protection for the Police Services and/or First Responders. The following general guideline shall be followed:

1. Notify all persons in the area to stop and secure their work and leave immediately.
2. **Notify the Police Services (call 911)** and briefly described the nature of the situation.
3. **Notify the RSO and other Risk Management and Safety Department personnel**.
4. Upon arrival of the First Responders, inform them where radioactive materials are stored or where radioisotopes were being used; inform them of the present location of the licensed material and the best possible entrance route to the radiation area, as well as any precautions to avoid exposure or risk of creating radioactive contamination.
5. Emergency Responders take charge upon arrival and proceed with assistance of the RSO and/or the Radiation Safety Office.
6. Cooperate with the RSO and/or the Radiation Safety Office (e.g., investigation of root cause, provision of requested bioassay samples).
7. Allow no one to return to work in the area unless approved by the RSO.
8. Follow the instructions of the RSO and/or the Radiation Safety Office (e.g., decontamination techniques, surveys, provision of bioassay samples, requested documentation).

RSO and/or the Radiation Safety Office will:

1. Coordinate activities with the Police Services, First Responders and/or other section of the Risk Management and Safety Department.
2. Consult with the First Responders and set up a controlled area where the evacuated personnel can be surveyed for contamination.
3. Once the incident is eliminated, advise the First Responders not to enter potentially contaminated areas or areas where radioactive sources may be present until a thorough evaluation and survey are performed to determine the extent of the damage to the licensed material use and storage areas.
4. Perform thorough contamination surveys of the First Responders and their equipment before they leave the controlled area and decontaminate, if necessary.
5. Supervise decontamination activities.
6. Determine cause and necessary corrective actions; consider need for bioassays if licensed material is suspected to have been ingested, inhaled, or absorbed through or injected under the skin. Document incident.

7. Notify Radiological Health Section of the Nevada State Health Division according to the applicable provision of NAC 459.

13.0 Emergency Preparedness Program

13.1 Personnel

The Radiological Safety Office consists of the RSO, Alternate RSO, Radiation Safety Technician(s), and Student Workers trained and qualified in the disciplines appropriate for handling radioactive materials and response to emergencies involving radioactive materials.

13.2 Communication

The Radiological Safety Office has a comprehensive communication program in place which provides immediate access to the office personnel during and after working hours. During working hours, the RSO and/or the Radiological Safety Office can be reached at the Risk Management and Safety Department phone number (702-895-4226), which is attended by an office assistant at all times. The RSO and Alternate RSO can also be reached at the personal office phone number as listed in "Emergency Contact List". In addition, the RSO carries an emergency cell phone which may be utilized during and after working hours, on weekends, holidays, and/or whenever the RSO can not be reached at the office phone number. In order to maintain continuity of the RSO emergency response phone the RSO may assign the phone to the Alternate RSO or Radiation Safety Technician when the RSO is unavailable. The Radiological Safety Office is also equipped with two two-way-radios that can be used to communicate effectively in case of emergency.

13.3 Training and Exercises

The Radiological Safety Office personnel have thorough training and experience regarding emergency situations involving radioactive materials. The Radiological Safety Office does not conduct specific Radiation Emergency Response training for University personnel. However, all Radiation Safety Training, general or specific, includes Radiological Emergency instructions, which provide the trainee, with specific instruction in the case of an emergency involving radioactive materials and/or radioactivity.

13.4 Emergency Response Equipment

Appropriate Personal Protective Equipment, Decontamination Equipment, and Radiation and Contamination Sampling and Detecting Equipment are maintained and stored at two assigned campus locations, the Campus Services Building and the Radiation Protection Laboratory and is ready to be used in case of an emergency. Designated Emergency Response Kits (ERK's) are stored, inventoried, and maintained at those two locations as well.

Personal Protective Equipment (PPE)

PPE includes but is not limited to lab coats, disposable gloves, safety glasses, shoe covers, and surgical caps, and are part of ERK. A sufficient supply of each item is maintained at both locations and ready to be used in case of an emergency.

Decontamination Equipment

Decontamination Equipment includes but is not limited to commercially available soap and or detergents (e.g., Radiacwash ™, Formula 409 ®), absorbent paper, cloth and paper towel, plastic sheets and bags, adhesive tape, mops and mop heads, heavy duty gloves, and buckets. A sufficient supply of each item is maintained at both locations as part of the ERK and is ready to be used in case of an emergency.

Radiation and Contamination Sampling and Monitoring Equipment

A sufficient supply of paper smears to collect contamination samples is available at both locations and is ready to be used in case of an emergency. Appropriate equipment capable of the detection of radiation and/or contamination, such as Ion Chambers, Geiger-Muller counters, Gas-Flow Proportional detectors, is maintained operational at both locations and ready to be used in case of emergency as well. Those instruments are not part of the ERK. However, at least one Ion chamber and one Geiger-Muller detector are present at each location and kept operational and ready to be used.

Additional Emergency Respond Equipment:

Radiation and contamination signs and labels stating "Caution Radioactive Material" and/or "Caution Radiation Area", small and medium size Ziploc plastic bags, bandage scissors, clip board, office paper, pen, marker, flashlight, copy of the Radiation Emergency Respond Plan, and copy ERK inventory list are included in the ERK as well.