

ANNEX D

RADIOLOGICAL PROTECTION



APPROVAL & IMPLEMENTATION

Annex D

Radiological Protection

This emergency management plan is hereby approved. This plan is effective immediately and supersedes all previous editions.

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ANNEX D

RADIOLOGICAL PROTECTION

I. AUTHORITY

Refer to the City of Arlington (Arlington) Emergency Management Plan, Attachment 2 for general authorities.

II. PURPOSE

The primary responsibility of this function is assigned to the Arlington Fire Department (AFD). University of Texas at Arlington (UTA) would assist in the direction and control of the AFD, should a major radiological incident occur on the campus. A copy of the Arlington annex is located in the Office of Emergency Management located at the AFD.

Environmental Health & Safety (EH&S) would develop and maintain supporting best practice guidelines to this plan. These supporting documents would address incidents related to licensed activities authorized by the university's Broadscope Radioactive Material License Number L00248. Look up, <http://www.uta.edu/policy/forms/ehs/RadiationSafetyManual.pdf> for more information.

III. EXPLANATION OF TERMS

AFD	Arlington Fire Department
Arlington	City of Arlington
DDC	Disaster District Committee
DOE	Department of Energy
DPS	Department of Public Safety
DSHS	Department of State Health Services
EH&S	Environmental Health & Safety
EOC	Emergency Operations Center
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
HazMat	Hazardous Materials
IC	Incident Commander
ICS	Incident Command System
INS	Incident of National Significance
NDA	National Defense Area
NIMS	National Incident Management System
NRC	Nuclear Regulatory Commission
NSA	National Security Area
PPE	Personal Protection Equipment
RO	Radiological Officer (Environmental Health & Safety)
RPP	Radiation Protection Program
TDEM	Texas Division of Emergency Management
UTA	University of Texas at Arlington

IV. SITUATION & ASSUMPTIONS

A. Situation

1. General

See the Arlington annex document, which is located in Arlington, Texas, Office of Emergency Management.

2. Arlington's Annex D outlines the following:

- a. Radioactive materials receive special coverage in state and federal laws and regulations that cover hazardous material (HazMat). Radiological materials are also subject to a number of specific state and federal laws, and regulations that control the handling and use of such materials, and plans that establish unique state and federal procedures for handling radiological incidents. State and federal agencies that provide advice and assistance to local governments during radiological incidents differ from those that provide advice and assistance during most HazMat incidents.
- b. Except for radiological incidents involving federal facilities or federally owned nuclear materials, the state or local government has the responsibility for taking required emergency response actions. Response from Arlington and UTA would be in compliance with the National Incident Management System (NIMS) operating principles and protocols, and would constitute general guidance for all responders to the radiological incident. Support may be requested from federal agencies pursuant to the National Response Framework. The Department of Homeland Security is responsible for all actual and potential Incident of National Significance (INS) and accidents or incidents involving nuclear or radioactive materials that may or may not rise to the level on an INS. Various federal coordinating agencies may lead the response to incidents of lesser severity by coordinating federal radiological monitoring assistance to state and local governments.
- c. Department of State Health Services (DSHS), the state's radiation control agency, has primary responsibility for the State Radiological Protection Program (RPP). DSHS also provides state-wide training for radiological officers (RO) and radiological monitors.
- d. Nuclear Regulatory Commission (NRC) is the federal agency for responding to accidents at nuclear facilities licensed by the state for incidents involving shipments of materials licensed by the state. The US Department of Energy (DOE) and Department of Defense have the lead federal role in incidents at their facilities or accidents involving their shipments.

3. Radiological hazards

- a. Arlington is susceptible to accidents involving radioactive materials at fixed sites and in transport. Hospitals and medical facilities use a wide range of radioactive sources in nuclear medicine as well as in research and development programs. Radioactive sources are used to x-ray pipe welds, in well logging, and for many other common industrial and

business uses. These sources can be extremely hazardous and lives threatening when removed from their containers, either intentionally or by accident. Varieties of radioactive materials are transported on Arlington's highways and rail systems, sometimes in unmarked vehicles, and may be present on some aircraft.

- b. Arlington is on a designated shipment route for certain DOE radiological materials. See Support Document 6, AFD Shipments of Transuranic Waste for information regarding these shipments.
- c. UTA has very small amounts of radiological material on campus for research purposes.

B. Assumptions

1. Arlington may experience radiological emergency situations, which may threaten public health and safety as well as private or public property and necessitate the implementation of protective actions for the public at risk.
2. A nuclear attack against the United States is considered highly unlikely. However, the deliberate release of radioactive materials by criminals or terrorists in the local area is considered, but unlikely.
3. Proper development and execution of a Radiation Protection Program (RPP) which is created by Arlington can significantly reduce the number of casualties that could result from a radiological accident. A combination of trained local radiological personnel and operational detection equipment would be available to detect, assess the threat posed by, and contain radiological accidents.
4. Arlington must be prepared to carry out the initial emergency response on an independent basis. If the city's resources alone are inadequate to cope with a radiological incident, state assistance may be requested through the Disaster District Committee (DDC) chairperson. The DSHS would provide advice and assistance to local personnel in responding to an incident involving an actual or suspected radiological release.
5. Local emergency operations, including the use of mutual aid resources, would be directed by local officials, except in those situations where state or federal law requires that a state or federal agency exercise lead responsibilities or where local responders lack the necessary expertise and equipment to cope with the incident and agree to permit those with the expertise to take charge.
6. The state may request supplemental emergency assistance from other states or from the federal government when local and state resources are insufficient to deal with the emergency.

V. CONCEPT OF OPERATIONS

A. General

1. Arlington would have a basic local RPP consisting of the Emergency Operations Center (EOC) and an incident response capability that includes one or more of Arlington Special Operations, HazMat,, and Arlington's RO to manage the program. In addition, trained radiological monitors equipped with appropriate radiation detection and communication equipment would be part of the RPP.
2. To conduct an effective RPP, Arlington would:
 - a. Maintain information on radiological monitoring instruments by type, number, location, and owner including radiation detection equipment on loan from the state, see Support Document 1, Arlington's Radiological Instrument Inventory.
 - b. Establish procedures for initial emergency response to radiological accidents. See Support Document 2, Arlington Radiological Incident Response Checklist.
 - c. Establish a radiological incident reporting system. See Support Document 4, Arlington HazMat Incident Report.
 - d. Appoint personnel and provide training to local emergency responders, emergency management personnel, ROs, and radiological monitors. See Support Document 5, Arlington Radiological Response Training and Instruments.
 - e. Establish procedures for decontamination and recovery operations.

B. Radiological accidents

1. Discovery

On campus, radiological accidents may be discovered by the staff, faculty or students. UTA Police Department, EH&S, AFD and emergency management would be notified. The first responder on the scene would take charge of the incident, initiating the Incident Command System (ICS), and serve as the incident commander (IC) until relieved by a more senior or more qualified individual. Radiological accidents surrounding the campus, may be discovered by businesses that use or transport such materials, or by local responders who are summoned to an accident site. Local personnel are likely to be first emergency responders on the scene of a radiological accident. AFD would be responsible and the first local official at the scene would take charge, initiating ICS, and serve as the IC/unified command until relieved by a more senior or more qualified individual.

2. Local notification

On campus, the IC would provide information about the incident to the Executive Policy Group and the UTA RO. Once the incident is reviewed and if notification to the campus community is needed, see Annex B, Communications. If the event is large, AFD is responsible for the incident. After establishing a perimeter, the IC would provide information about the incident to local officials through AFD dispatch services using Support Document 4, Arlington HazMat Incident Report, if appropriate. The IC would make an initial assessment of the situation to include an estimate of the likelihood of a radiological release. If it appears that

radiological materials have been released into the environment or such a release appears likely, the EOC may be activated to support the incident response.

3. Response actions

The IC would identify response resources required and direct responders to contain or mitigate the incident. The initial response would be accomplished in accordance with established HazMat response criteria and the general checklist in Support Document 2, Arlington Radiological Incident Response Checklist. At least one trained RO or radiological monitor would participate in the response to a known or suspected radiological incident.

4. Protective actions

a. Short-term

1. If it appears that a release of radiological materials has occurred or is possible, the IC is responsible for determining and implementing appropriate protective actions for the public in the immediate area of the incident. The IC is also responsible for advising responding personnel of the threat and determining requirements for personal protective equipment (PPE). Responders who lack HazMat training and appropriate PPE would not be committed to radiological incidents.
2. If it appears that a radiological release has or may affect areas beyond the incident site, the IC would coordinate with the EOC to agree upon a division of responsibilities for warning the public, making required notifications, implementing protective actions for the public in areas beyond the incident site, and obtaining additional resources and technical assistance.
3. Suitable initial public protective actions for a radiological incident may include evacuation or sheltering-in-place. Annex Q, Hazardous Materials & Oil Spill Response provides additional information on selecting public protective measures.

b. Long-term

DSHS would conduct a detailed incident assessment, identify affected areas through radiological monitoring, recommend follow-on protective measures to protect public health, and oversee recovery operations. Long-term protective measures may be implemented by DSHS or other state regulatory agencies and may include controls on the movement and use of foodstuffs, milk, and feed from contaminated areas, and on the use of drinking water from contaminated sources.

5. State and federal notifications

Arlington dispatch services or the EOC, if activated, would be responsible for making required emergency notifications to state and federal agencies. Radiological releases would be reported to:

- a. Tarrant County Office of Emergency Management would be included in this notification process. Local department of DDC office in Hurst would relay information to Department of Public Safety (DPS) elements and Texas Division of Emergency Management (TDEM)
- b. Radiation Control Program at TDEM at 512-458-7460 (24-hours)
- c. State Environmental Hotline at 1-800-832-8224
- d. National Response Center at 1-800-424-8802
- e. If incident involves a deliberate release of radiological materials, contact the Federal Bureau of Investigation (FBI) office in Dallas.

For additional information see Support Document 3, Arlington Texas Radiological Incident Reporting System and Support Document 4, Arlington HazMat Incident Report.

6. State & federal assistance

The AFD in collaboration with UTA EOC is responsible for coordinating with the DSHS to obtain technical advice and assistance regarding radiological issues. The DSHS staff in Austin, Texas has the capability to provide advice by telephone to the EOC or directly to the IC until DSHS personnel arrives on scene. DSHS may formulate requests by the governor for radiological monitoring and assessment assistance from the federal government or from other states, if required. The mayor may request other types of state assistance through the DDC chairperson.

7. Situation updates

The IC would provide situation updates to the EOC. The EOC would prepare and transmit situation reports to the DDC.

8. Monitoring of emergency workers

Exposure records and medical follow-up would be provided for responders who have entered contaminated areas.

9. Government nuclear materials

In the event of a radiological accident involving nuclear weapons, special nuclear material, or classified components, the federal agency, which owns that material may declare a National Defense Area (NDA) or National Security Area (NSA) around the site and take exclusive control within that area. NDAs and NSAs are established to safeguard classified information or restricted data, equipment, or material.

10. DOE shipments

DOE has jurisdiction on accidents involving DOE transuranic waste shipments. Information on these shipments and guidance on dealing with incidents involving such shipments is provided in Support Document 6, Arlington Fire Department Shipments of Transuranic Waste.

C. Deliberate acts

The deliberate release of radioactive materials is a crime under numerous state and federal laws. Any deliberate acts or suspected deliberate acts must be promptly reported to local and state law enforcement agencies.

The FBI is the federal agency for crisis management of malevolent acts involving weapons of mass destruction, including nuclear devices; the DPS is the lead state agency.

The Federal Emergency Management Agency (FEMA) is the lead federal agency for consequence management of a deliberate radiological release; TDEM is the lead state agency. If a release of radiation is believed to be an act of terrorism, the city officials would ensure the incident is reported to both the DPS and the FBI. More information on dealing with terrorist events is provided within Annex V, Terrorist Incident Response.

D. Activities by phases of emergency management

1. Prevention

- a. Maintain an effective public warning system.
- b. Establish/maintain a hazardous cargo route.
- c. Each year, obtain a current listing of local licensed users of radiological materials from DSHS, maintain a copy of that list, and provide copies to emergency response elements for use in operational planning.
- d. Schedule and conduct an annual review of this annex.

2. Preparedness

- a. Establish a RPP.
- b. Select and train RPP personnel.
- c. Ensure responders have data available on local facilities that are licensed to use or store radiological materials. This information may be obtained from the DSHS.
- d. Ensure radiation detection instruments are available and operational.
- e. Educate the public about radiological hazards and protective actions.

3. Response

- a. Activate the RPP.
- b. Respond in accordance with the guidelines in Support Document 2, Arlington Radiological Incident Response Checklist.
- c. Provide information and instructions to the public.

4. Recovery

- a. Ensure the radiation source is removed and ensure access to contaminated areas is controlled until they are cleaned up. Clean-up would be performed by a contractor supervised by state or federal agencies and paid for by the responsible party, if one can be located.
- b. Work with state and federal agencies to assess damage, if any.
- c. Work with DSHS to continue area radiation monitoring, if required.
- d. Work with DSHS to determine the cause of the incident and determine the liability.
- e. Keep the public informed about the status of the incident.

VI. ORGANIZATION & ASSIGNMENT OF RESPONSIBILITIES

A. Organization

EH&S is responsible for the day-to-day oversight of the university's broad scope radiation materials license. EH&S personnel are the initial responders for minor incidents involving radioactive materials authorized by the aforementioned material license number L00248 for research purposes. Once a major radiological incident or incident not involving the university's licensed radioactive material occurs on campus, responsibility for managing and directing the response is assigned to the IC and responsibility for coordinating the external support is assigned to the EOC staff.

Effective response to a radiological incident from Arlington may require a coordinated response by local departments, agencies, and officials, together with EH&S, and representatives of the facility responsible for the incident. This response may be augmented, in certain circumstances, by state and federal agencies with responsibilities for radiological incidents. Technical assistance for a radiological incident may be provided by the facility, by state and federal agencies, or industry.

In the event a large scale incident occurs, AFD would establish a unified command for the incident at that time, using EH&S as a resource to the incident. AFD would contact the UTA radiation safety officer for a listing of current radioactive material locations if necessary.

B. Assignment of responsibilities for the Arlington

1. EMC :

Designate one or more ROs to coordinate all radiological protection program activities.

2. Incident commander :

- a. Manage emergency response resources and operations at the incident site to control the incident.
- b. Determine and implement protective actions for emergency responders and the public in the vicinity of the incident site.

3. AFD :

- a. Provide personnel and equipment to isolate or control radiological incidents.
- b. Carry out initial radiological monitoring needed to assess the situation and determine protective actions. State or federal agencies may provide follow-on radiological monitoring assistance.
- c. Carry out initial decontamination where needed. Large-scale decontamination, may be coordinated by state or federal agencies.
- d. Assist in evacuation.

4. RO :

- a. Ensure sufficient radiological detection instruments are in-place and operational.
- b. Ensure selected emergency responders are provided training in radiological monitoring.

5. Arlington Police Department :

- a. Restrict access to incident sites and contaminated areas to protect public health and safety.
- b. Organize and conduct evacuations and provide traffic control.
- c. Assist in warning the public.
- d. If the release of radiation appears deliberate, control the scene, apprehend suspects, conduct an investigation, and if the incident appears to be terrorist-related, ensure that DPS and the FBI are advised.

6. American Medical Response ambulance service :
 - a. Provide medical care and transportation for casualties.
 - b. Alert hospitals of the potential for contaminated victims.
7. Hospitals :
 - a. Provide medical care for casualties as needed.
 - b. Be prepared to decontaminate patients.

VII. DIRECTION & CONTROL

A. Guidance

Arlington fire chief would establish local policies relating to radiological protection and may provide general guidance for emergency operations.

B. Program management

Arlington's RO would carry out day-to-day management of the radiological protection program.

C. Operational direction

During radiological incidents, the IC would manage radiological response operations at the incident site. The IC and the EOC would agree upon a division of responsibilities for specific tasks. Typically, the EOC would conduct support operations, including activating additional resources and requesting external resources, making required notifications and reports, coordinating large-scale evacuations and area traffic control, disseminating emergency public information, and other tasks to sustain emergency operations.

D. Communications

Telephone, radio, teletype, e-mail, and/or fax may be used to transmit reports of radiological incidents, obtain technical assistance, exchange information, and provide direction and control.

VIII. READINESS LEVELS

Most radiological incidents typically occur without warning. Hence, developing a systematic set of increased readiness actions is difficult. The following charts are Arlington's readiness levels.

1. Level 4-Normal conditions
 - a. Maintain an effective public warning system.
 - b. Establish/maintain a hazardous cargo route.
 - c. Each year, obtain a current listing of local licensed users of radiological materials from DSHS, maintain a copy of that list, and provide copies to emergency response elements for use in operational planning.
 - d. Schedule and conduct an annual review of this annex and coordinate update of the annex if needed.
 - e. Establish a RPP.
 - f. Select and train RPP personnel.
 - g. Ensure responders have data available on local facilities that are licensed to use or store radiological materials. This information may be obtained from the DSHS.
 - h. Ensure radiation detection instruments are available and operational.
 - i. Educate the public about radiological hazards and protective actions.
2. Level 3 – Increased readiness
 - a. Increased readiness may be appropriate if there is a greater than normal threat of a radiological incident. Initiating conditions may include a radioactive source missing in our region or notification that a significant radioactive shipment would be in transit through the area.
 - b. Monitor the situation.
 - c. Inform first responders of the situation.
 - d. Ensure that the Hazardous Materials Response Team is aware of the situation and can respond if necessary.
3. Level 2 – High readiness
 - a. High readiness may be appropriate if there is an increased risk of a radiological incident. Initiating conditions may include a significant radiological shipment is in transit through the area or a radioactive source is missing in the jurisdiction.
 - b. Monitor the situation.

- c. Alert personnel for possible emergency duty and deploy personnel and equipment to investigate incidents.
 - d. Check equipment and increase short-term readiness.
 - e. Issue public warning and providing public information if necessary.
4. Level 1 – Maximum readiness
- a. Maximum readiness is appropriate when there is a significant possibility of a radiological release. Initiating conditions might include a lost radioactive source being located in the local area, activation of radiological alarms at a landfill screening point, or an incident at a facility licensed to use radiological materials.
 - b. Investigate the situation.
 - c. Partially or fully activate the EOC to monitor the situation.
 - d. Place first responders in alert status and place off-duty personnel on standby.
 - e. Advise appropriate state and federal agencies.
 - f. Prepare to issue public warning if it becomes necessary.

IX. ADMINISTRATION & SUPPORT

A. Agreements and contracts

Should local resources prove to be inadequate during an emergency; requests may be made for assistance from other local jurisdictions, other agencies, and industry in accordance with existing mutual-aid agreements and contracts.

B. Reports and records

1. Situation reports

If there has been an actual release of radioactive materials, the EOC would prepare and disseminate a periodic Situation Report to state and federal agencies until the situation is resolved. It may be desirable to also disseminate this report to nearby jurisdictions and to those cities or counties that are providing mutual aid resources.

2. Activity logs

The IC Post and the EOC would maintain accurate logs recording key response activities.

3. Response and recovery expenses

As it may be possible to recover some expenses incurred in responding to a release of radiological materials from the responsible party, insurers, or the federal government, each department or agency would maintain detailed records of labor costs, equipment usage, and supplies expended to respond to or recover from an actual radiological release.

4. Post-incident review

A post-incident critique would be conducted in the aftermath of any incident that resulted in an actual release of radiological materials.

C. Maintenance of radiological equipment

1. All radiological monitoring devices owned by Arlington would be maintained in accordance with the manual of instructions for those instruments.
2. State-owned instrument sets are normally exchanged periodically by the DSHS so they can be serviced and calibrated. The Arlington RO would coordinate instrument exchanges and any out-of-cycle maintenance requirements for state-owned instruments with DSHS.

D. Training

Federal law requires that individuals, who respond to HazMat incidents, including radiological incidents, would be adequately trained and equipped for the tasks they would perform. Training is available through a combination of federal, state, and local sources. See Support Document 5, Arlington Radiological Response Training and Instruments.

X. DEVELOPMENT & MAINTENANCE

UTA is responsible for maintaining and updating this annex, located at the Office of Emergency Management, Arlington, Texas.

XI. REFERENCES

See attachment 2, Emergency Management Plan of Arlington`s original annex.