

**Tempe Fire Department Policies and Procedures**  
**Radiological Response**  
**208.01C**  
**Rev 5-29-09**

This procedure is designed to provide basic operational guidelines for managing a radiological incident. This procedure is for peace-time radiological emergencies and does not specifically apply to nuclear warfare radiological contamination.

The Fire Department responsibilities during radiological emergencies include rescue, treatment, fire control/extinguishment, control of contamination spread and alerting responsible experts/agencies. Actual clean-up and overhaul operations will not be a Fire Department responsibility, although the Fire Department will be responsible for seeing that such operations are completed. Shippers and/or manufacturers of radiological materials will normally provide specially trained clean-up personnel and equipment for clean-up operations. Arizona Radiation Regulatory Agency (ARRA) has the responsibility for the radiological aspects of any accidents.

**DISPATCH**

Alarm will dispatch either a 2-1 hazardous assignment (2-1-H) or a first alarm hazardous assignment (1A-H) to any incident reported to involve radiological materials. The assignment will be based on the location and type of situation reported.

Alarm will advise responding units of the prevailing wind direction as provided by Sky Harbor Tower.

When a radiological incident is confirmed, Alarm will notify:

- A. DPS Communications to dispatch personnel from the Arizona Radiation Regulatory Agency.
- B. Tempe Fire Department personnel with advanced radiological training - (list in Info File).
- C. Maricopa County Civil Defense - on request from Command.
- D. Luke Air Force Base on any military accident.

**SITE OPERATIONS**

At the scene, Command must consider both direct radiation exposure and contamination. If there is no life hazard, rescue situation, or fire, there is no reason to risk exposure of Fire Department personnel. First arriving units should secure a perimeter, evaluate the situation, and wait for the arrival of the Hazardous Incident Response Team and ARRA emergency response teams.

If the immediate commitment of personnel is necessary, Hot Zone procedures shall be implemented to minimize the exposure and contain the spread of contamination.

The entry of personnel shall be limited to the absolute minimum number and time required for the urgent situation. These personnel will use full protective clothing and SCBA.

Any commitment of personnel to the Hot Zone shall include at least two instruments (one low range and one high range instrument) per team to monitor radiation hazard levels. Dosimeters must be issued to all personnel operating at the scene. Maximum exposure to any firefighter is a 25 rems for lifesaving, 5R otherwise.

Hazard Zone tape shall be stretched to define an area where readings of 2mR/hr are detectable. This must take into account potential downwind spread of contamination. Periodic checks should be made to determine if hazard

area has expanded. (See Figure 1.)

A Decontamination Area must be established within the perimeter of the Warm Zone adjacent to the Lobby Control (entrance/exit) point. All personnel and equipment leaving the Hot Zone must be checked for radioactive contamination by qualified personnel. Any persons or items which are contaminated must go to the Decontamination Area before leaving the Hot Zone. (See Radiological Decontamination.)

Patients requiring treatment who cannot immediately be decontaminated, must be placed in an isolated treatment area away from other patients and inside the Hot Zone perimeter.

## **TACTICAL CONSIDERATIONS**

### **Basics For All Radioactive Incidents**

1. Approach from upwind.
2. Use full protective clothing - including SCBA, Nomex hood, and gloves.
3. Take contamination precautions - use monitoring instruments and dosimeter as early as possible to determine radioactive levels.
4. Establish hazardous area.
5. Establish a Warm Zone outside the limits of 2mR/hr detectable radiation.
6. Use detection instruments to determine the general extent of the radiation hazard and mark hazardous materials area.
7. Establish a Lobby Control Sector.
8. Minimize the number of personnel in the Hot Zone area.
9. Establish a Decontamination Sector. No one will be permitted outside the Hot Zone area without first being surveyed and determined to be free of contamination.
10. Observe inventories/shipping papers and container markings/labels, if possible, to determine types and quantities of radioactive materials and determine the dose rate.
11. If no rescue is required, limit entry/exit of all personnel. Secure the area.
12. Remember that each level of radioactive packages allow for acceptable levels of radiation outside of the packages.

### **Firefighting**

1. Use normal tactics with exceptions as indicated in 2, 3, and 4 below.
2. Do not ventilate - ventilation spreads contamination.
3. Use minimal water - limit water application to only that which is absolutely necessary.
4. Control runoff - or any other possible spread of contamination.
5. If fire locations involve radioactive materials, limit entry/exposure of personnel.

### **Rescue/EMS Incidents**

1. Make rescues quickly, utilizing full protective clothing and SCBA.
2. Establish a Treatment Sector for injured, if required.
3. Treat patients as usual, utilizing contamination precautions.
4. Alert hospitals that will be receiving contaminated patients as early as possible and ambulance companies responding of the radiation possibilities.

## **NUCLEAR WEAPONS**

The radiological hazard of nuclear weapons in transit is similar to other radioactive materials and can be handled with similar tactics.

These weapons contain considerable amounts of high explosives which may be shock sensitive and can detonate very easily. They are especially dangerous when the weapon has broken up and the high explosive is scattered about. If a nuclear weapon involves fire, evacuate the area for 2,000 feet, in all directions immediately. All downwind areas must be checked for contamination.

## **TREATMENT OF CONTAMINATED PATIENTS**

Do not delay field treatment of injuries. Radioactive material contamination itself is not a medical emergency. Treatment of contaminated patients should proceed with the following precautions.

- . All contaminated patients should be placed in one Treatment Area - separate from non-contaminated patients - within the Hot Zone perimeter.
- . All treatment personnel should use SCBA or dust-filtering type masks, long-sleeve shirts or coats, gloves, and nomex hoods. (Disposable gloves, if possible, so clean ones can be used on each patient. Sleeves and leg openings should be taped closed with masking tape.)
- . A mask or other airway filtering means should be used on the patient to limit inhalation/ingestion of airborne contamination.
- . Bandage all open wounds as quickly as possible to prevent wound contamination.
- . Carefully peeling or cutting of outer clothing from the patients body will remove most of the contamination.
- . Removed clothing, watches, wallets, etc., must be placed in plastic bags or other appropriate containers, sealed, and properly identified.
- . A plastic bag or other clothing should be placed over the patients scalp hair to minimize the spread of contamination. Do not cover face.
- . Much of the contamination on a patient's skin can be removed by wiping with a moist cloth or tape (put in plastic bag afterwards).
- . Hot spots of contamination on the patients body that cannot be removed by wiping, etc., should be marked with ink outline or tape.
- . Before transporting, all contaminated patients must be wrapped in blankets or sheets to completely cover them while leaving the face exposed, in order to reduce the contamination spread. In addition, consideration should be given to covering gurneys, ambulance floors, and critical equipment in the

ambulance to help prevent contaminating those areas.

- . Hospital and ambulances must be alerted early and before patient transportation is initiated so they can prepare to receive contaminated patients.
- . All contaminated patients should be sent to a single hospital or as few as possible. Once contaminated, these hospitals could be out-of-service for sometime.
- . Where there are a large number of contaminated patients, place as many patients as possible in each ambulance to minimize contamination spread to other ambulances.
- . Reuse of contaminated ambulances for contaminated patient transportation may need to be considered. If all available ambulances become contaminated, these vehicles can be out-of-service for long periods of time until they can be decontaminated.
- . Before treatment personnel can be released from the scene, they must be checked for contamination and decontaminated. All equipment used in patient treatment must also be checked and decontaminated.

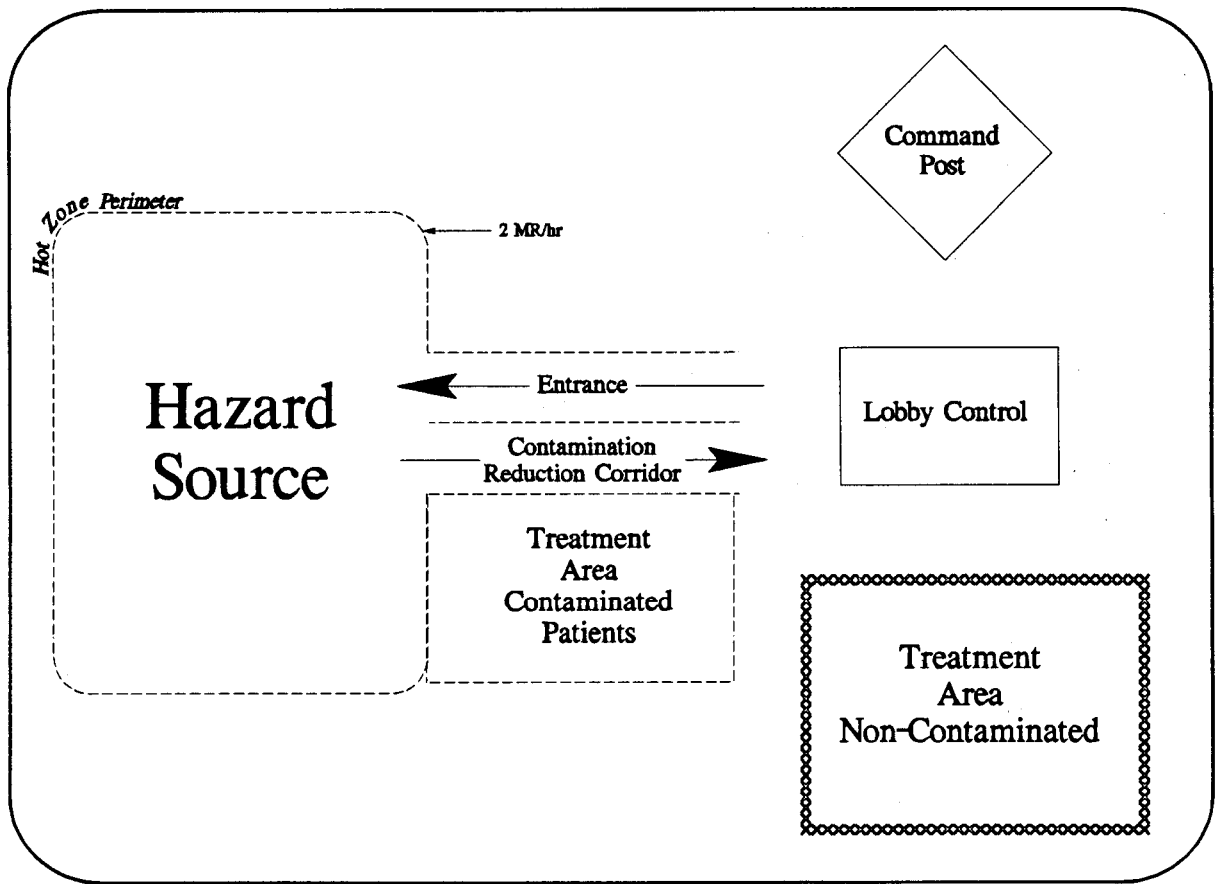


Figure 1