

PURPOSE:

The purpose of this policy is to provide guidelines for the care and management of victims exposed to or contaminated by radiological and/or hazardous materials, to contain and control, as much as possible, contamination of the personnel and facilities of Kettering Medical Center Systems (KMCS), and to provide for the decontamination of personnel and facilities of KMCS.

POLICY:

VICTIM CATEGORIZATION:

1. Hazardous Chemical Exposure
 - a. Level of Exposure
 - i. Minimal
 - ii. Intermediate or questionable
 - iii. Substantial
 - b. Level of Current Illness
 - i. Asymptomatic
 - ii. Sick, not life threatening
 - iii. Life Threatening

2. Radiation Accident
 - a. **Category 1- No Problems:** Person involved in a radiation accident does not become contaminated or exposed to radiation but is transported to a hospital as a precautionary measure.
 - b. **Category 2- Radiation Exposure:** The individual has received whole or partial body external radiation exposure, regardless of dose, and is no contamination hazard to personnel, other patients, or the environment. The management of this patient depends on the absorbed dose of radiation and could be similar to the management of a radiation therapy or chemotherapy patient.
 - c. **Category 3- Internal Contamination:** Such contamination results from inhalation or ingestion of radioactive material (inhalation and ingestion almost always occur together). After being cleansed of minor amounts of contaminated material deposited on the body from an exposure to airborne radioactivity, this person could be handled similar to a case involving exposure to a chemical poison such as lead.

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- d. **Category 4- External Contamination:** External contamination of the body surface and/or clothing by radioactive material, presents problems similar to cases of vermin infestation. Isolation and decontamination techniques to protect other patients and the hospital environment must be employed in order to confine and control any potential hazard.
 - e. **Category 5- Internal and External Contamination:** Treat as listed for Category 3 & 4
3. Stable/Unstable
- a. Stable- Airway, breathing, circulation intact and expected to remain stable throughout the decontamination procedure.
 - b. Unstable-Medically and/or traumatically injured, airway, breathing and circulation is being compromised or expectation of problems with patient during contamination process.
4. Emergency Medical Services (EMS)/Ambulatory victims
- a. EMS- Patient is transported to the hospital by EMS, and radio or telephone communications have occurred prior to transport. If so instruct ambulance personnel to wrap the patient in a sheet.
 - i. EMS will need to be notified if using Emergency Department (ED) decontamination room only or during large scale: Decontamination (Decon) tent is being utilized.
 - ii. Direct EMS to bring all unstable patients to ED decon room and stable patients to either ED decon room or Decon tent area.
 - iii. EMS personnel are responsible for the decontamination of themselves, their vehicle, and their cot. If radioactive material is present, the Radiation Safety Officer (RSO) will oversee the decontamination. The RSO must survey the EMS personnel and their vehicle, and is responsible to authorize their release. They must not be released until completely decontaminated.
 - b. Ambulatory
 - i. Patient presents to the Emergency Department (ED) for treatment.
 - ii. If the patient presents, triage nurse or registration clerk will call and alert charge nurse, then triage or registration will cocoon the patient, place them in a wheelchair and take the patient outside of the ED and to the outside entrance to ED decon room. (After doing this, clarify whether or not triage or registration staff need to be decontaminated prior to going back to your position.)
 - iii. Consider exposure of others in immediate vicinity or waiting room contamination until told otherwise.

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CODE ORANGE RESPONSIBILITIES

Emergency Department (ED):

Ascertain the following information upon notification that a patient(s) with a hazardous chemical contamination will arrive in the ED.

1. Obtain chemical name, Safety Data Sheet (SDS) information. Make several copies of SDS sheets so that the only copy does not go into the Decontamination (Decon) Zone.
2. Type of chemical or radiation exposure: inhalation, ingestion, skin contact.
3. The number of persons exposed, number coming to the hospital.
4. Amount of hazardous chemical.
5. Categorization; condition of patient.
6. Staff person receiving information and/or patient will immediately notify the ED physician, giving them the above information.
7. ED physician will determine type of emergency present and will contact the Safety Officer, or the Radiation Safety Officer (RSO) (In the event of a radiation exposure/contamination).
8. Pregnant and/or immunocompromised staff is not to care for the patient.
9. Prepare ED decon room for decontamination patients (to be used for all unstable and stable patients and until decon tent is set up if required.)
10. ED staff will secure the ED decontamination cart from the lower level storage room

Activation and Notification of Code Orange:

1. ED physician, in consultation with the ED Director or designee, Safety Officer and /or RSO will determine if the Code Orange and/or Decon team will be activated.
2. Dial **11111** and request PBX announce three (3) times over the hospital paging system, “Attention All Employees, Code Orange is now in Effect. All Decon Team Members report to the Emergency Department”. Request PBX notify the Administrator on call.
3. In the event of Code Orange activation, Facility Lock down may be considered to protect the hospital and staff. (See Addendum)

Security/Environmental Services/Maintenance:

1. Facility Lock down may be considered to protect the hospital and staff. (See Addendum)
2. Control access into and out of the hospital, including the decontamination area.
3. Contact Kettering, Moraine, Miamisburg or Franklin Police Department for additional manpower to assist with security and traffic control.
4. If needed, assist with Decon tent set up.

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Director, Environmental Services:

1. Coordinate with local EPA and Health Department for appropriate clean-up.
2. Work in conjunction with ED physician, Safety Officer, RSO, and the Administrator on-call to determine safety in terminating Code Orange.

Decontamination Preparation:

1. Treatment Area Options:
 - a. Decision is made between the ED physician and the ED charge nurse.
 - b. ED decon room needs to be used for all unstable patients and can be used for a limited number of stable patients.
 - c. Decon tent - needs to be used for large volumes or an expected increased number of patients arriving.
 - d. Decon supplies are kept in the lower level storage room
2. Triage Areas Set Up:
 - a. All visitors/stable patients will be removed from ED to prevent contamination.
 - b. If Decon tent is deployed, set up triage area by ED ambulatory entrance only if available staff. If no available staff, lock down ambulatory entrance and direct patients to decon tent.
 - c. Use Ambulance doorway only for non-contaminated patients. Post signs on doors to direct EMS contaminated patients to ED decon room.
 - d. Set up triage area outside ED decon room to receive contaminated patients.
3. Treatment Area: Decon Tent: located in the lower level storage room
 - a. Decon Zone (Gross Decontamination) – Decon tent.
 - i. Decon tent will be set up outside of the ED in your designated area.
 - ii. Decon Supplies are located in the lower level storage room
 - iii. Decon Team will set up the Decon tent and supplies that are appropriate for the patient's condition. PPE will be utilized that are appropriate for hazard involved.
 - iv. Set up cones to assist with traffic flow.
 - v. Ambulatory and stable patients will enter the Decon tent for gross decontamination.

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- vi. If during decon, a patient becomes unstable, move them to ED decon room.
- vii. Direct post-Decon patients to post-Decon area.
- b. Post-Decon Zone
 - i. Level D PPE should be considered in this area.
 - ii. Ambulatory patients will only be brought into the ED ambulatory entrance after decontamination if triage is set up there.
 - iii. Triage personnel at ambulatory doors will be initiating the disaster tags.
 - iv. If at any time, post-decon patients become unstable, move them to the ED decon room.
 - v. If large a number of patients are expected, consider opening secondary treatment area for post-decon patients to be seen by physician/treatment team.
 - vi. Staff not involved with the decontaminated process will care for patients in the post-decon zone.
- 4. Treatment Area: ED Decon Room
 - a. Decon zone (Gross Decontamination)
 - i. Secure ED decon cart in lower level storage room
 - ii. ED staff or Decon team will set up ED decon room
 - iii. PPE appropriate for hazard involved will be used.
 - iv. Remove all unstable patients from ED decon room hallway. Facilitate admissions or patient through put.
 - v. Use the ED decon room for all unstable patients and for minimal number of known contaminated patients coming to ED.
 - vi. The ED physician will don protective clothing as deemed necessary for known exposure.
 - vii. Direct post-decon patients to post-decon area.
 - b. Post-Decon Zone
 - i. Level D PPE should be considered in this area.
 - ii. Ambulatory patients may be directed to the waiting room after they are decontaminated.
 - iii. Disaster tags will be initiated on unstable patients and be placed on ED cart and continue treatment.
 - iv. If patient expires during decon process, place the body outside of the ED and secure the area.

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5. Termination of Decontamination Procedure: Removal of patient from decontamination area to clean area.
 - a. Plastic should be placed on the ground covering the path for the staff and patient to use when exiting the clean area of the decontamination area.
 - b. A clean stretcher or wheelchair will be brought to the area by an individual who has not been involved with the decontamination process. The patient will then be brought to the treatment area for definitive care.
 - c. The ED charge nurse will ensure that no one who has not been decontaminated, leaves the decon area.

6. Staff Preparation
 - a. Take staff vital signs pre- and post-decontamination and record.
 - b. For **RADIATION INCIDENTS**, the team will wear:
 - i. Full surgical dress, scrub tops, pants, cap and mask, surgical gown, shoe covers and gloves.
 - ii. Pant cuffs taped inside shoe covers and sleeves taped inside gloves.
 - iii. Additional gloves will be worn but not taped. These gloves should be changed often to prevent cross contamination.
 - iv. Respiratory equipment may also be desirable depending on the chemical properties of the contaminating substance.
 - c. For **CHEMICAL EXPOSURE INCIDENTS** the team will wear:
 - i. A scrub suit, shoe covers, Tyvek suit, one pair of silver gloves taped to sleeves.
 - ii. Chemical resistant gloves taped to tyvek suit.
 - iii. Multiple layers of surgical gloves that can be changed whenever required.
 - iv. Chemical resistant goggles.
 - v. Latex boots taped to coveralls.
 - vi. Respiratory protection.
 - vii. Cooling vest.
 - viii. Additional protective clothing may be required. Consult with local HazMat Team.
 - d. Limited personnel will put on protective clothing and enter the decontamination area. Have relief personnel ready for assignment to the decon area as needed. Inform staff to alert the ED charge nurse if they need relief.
 - e. All decontamination personnel will have their name and time protective gear was donned, written on a piece of 2” masking tape and placed on the back of their protective clothing for easier communication.
 - f. Pregnant and immuno-compromised personnel should not care for contaminated patients.

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DECONTAMINATION PROCEDURES

Radiation Exposure/Contamination:

1. The ED staff person will complete a primary survey of the patient.
2. **UNDRESS THE PATIENT COMPLETELY.** Clothing will be removed and placed in sealed plastic bags/containers and marked as contaminated. If the chemical is known, mark that also on the container. Valuables should be bagged and sealed in a separate container from clothing.
3. The RSO or designee will check the patient for radiation contamination by:
 - a. Surveying the skin, body fluids, and secretions with a Survey Meter.
 - b. Record findings
 - c. Using cotton swabs and test tubes, collect pre-decontamination samples from the contaminated areas on the body.
 - d. Body areas to be decontaminated will be identified by the RSO's survey of the body.
4. Radioactive contaminated objects should be labeled and placed in a radioactive waste container that clearly displays a label "CAUTION RADIOACTIVE- DO NOT DISCARD".
5. Bags of radioactive material will be sealed and left in the decon area. The RSO will monitor and/or dispose of.
6. ED Staff will be responsible for irrigation/decontamination of wounds
 - a. Open wounds are decontaminated first, using copious amounts of normal saline. All of the run-off liquid/contaminated material should be collected for analysis.
 - b. Wounds are to be covered with a waterproof dressing and plastic.
7. The ED physician and the RSO will determine additional areas to be decontaminated by looking at the type of exposure, and information from the local HazMat Team.
8. All contaminated material is to be stored in a plastic drum with a tight-fitting lid. This material must be monitored and under the control of the RSO until disposal.
9. The patient's body waste (urine and feces) must be collected and saved so that the amount of radiation dose received can be analyzed so therapy can be administered. The length of the collection time will be determined by the RSO, the minimum length of time is 24 hours. All samples must be labeled as radioactive and sent to Nuclear Medicine.
10. Re-survey as liquid and contaminated items are removed from the room.
11. When the survey readings are as low as possible, and after decontamination process, the patient will be deemed ready for ED treatment.
 - a. RSO will determine if treatment is necessary.
 - b. A new stretcher will be brought to the clean area.
 - c. A new team should be wearing protective clothing- gowns, gloves, head covering and shoe protection.
 - d. The cart is checked for contamination as it leaves the area (especially the wheels of the cart)

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Chemical Exposure:

Decontamination Team will:

1. Obtain multiple copies of the SDS. A copy will be handed into the decon area.
2. Assess the victim's condition as well as the degree of contamination.
3. Perform initial patient survey, stabilization, and contamination reduction procedures simultaneously. Work on both sides of the stretcher. Do not reach over the patient past midline. Cut away and remove all suspected contaminated clothing with minimal agitation and roll away from the body, including jewelry and watches. Dip scissors in soapy water at each joint, if available.
4. Bag clothing separately from jewelry and other valuables. Double bag and seal, marking patient's name on the outside container with date, time and chemical, if known. Remove from room.
5. Brush away or wipe off any contamination and remove from room.
6. Protect any open wounds from contamination by covering with plastic wrap.
7. Make every effort to avoid possible contamination with chemical.

Effective Decontamination: Ensuring the patient is as clean as possible. This means that the contamination has been reduced to a level that is no longer a threat to the patient or the responder.

1. Begin at the head and proceed downward with attention to eyes, ears, nose and open wounds.
2. Gently wash with a spray of room temperature water, with a sponge using mild soap. No abrasives.
3. Wounds should be irrigated with copious amounts of normal saline.
4. Deep debridement and excision should only be performed when particles or pieces of material have been embedded in tissues.
5. Decontamination of eyes should be from medial to lateral. **DO NOT USE A GLUCOSE SOLUTION** which causes vasodilation and abrasion.
6. Attempt to contain and recover all run-off.

Decontamination of the Decon Team:

1. If protective clothing is contaminated, it must be disposed of or decontaminated. Specific types of decontamination will depend on type of chemical.
2. Personnel should remove protective clothing in the following sequence:
 - a. Remove outer gloves, turning them inside out as they are removed.
 - b. Remove tape securing gloves to suit.
 - c. Remove suit turning it inside out and avoid shaking.
 - d. Remove plastic shoe cover from one foot and step over "Clean Line".
 - e. Remove the other shoe cover and put that foot over the line.
 - f. Remove mask.
 - g. Place mask in a plastic bag and hand over the clean line and place in a second bag held by another member of the staff.

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- h. Send mask for decontamination.
 - i. Remove inner gloves and discard in drum inside dirty area.
 - j. Close off dirty area until level of contamination is established and the area is properly cleaned.
3. Personnel should then move to the shower area, remove scrubs, place in a plastic bag, double bagged and labeled.
 4. Shower and redress and be relieved of decon duty.
 5. Recheck vital signs.
 6. For radiation incidents, all personnel must be monitored with radiation survey equipment prior to leaving the decon area.

Clean-up of the Decontamination Room/Area:

Dayton Regional HazMat will provide agency information for clean-up.

1. Decon area will be secured until clean-up can be done.
2. HazMat Coordinator, RSO and the incident commander will determine the type of decontamination needed to clean the area based on the chemicals involved.
3. The Administrator on-call will arrange for this clean-up and in conjunction with the Safety Officer and/or RSO determine when a partial or complete termination of Code Orange can be called.
4. If a radiation incident, the Code Orange can only be terminated by the RSO or their designee.
5. If a radiation incident, signs must be affixed to all outside doors and remain in place until there is a complete termination of Code Orange.

Termination of Code Orange:

Partial: Decontamination area will be secured and not entered until cleaning has been done. The ambulance entrance may remain closed and all traffic continues to be redirected during the decontamination process.

Complete: Traffic control will return to pre-decontamination procedures. The hospital will remain in Code Orange until the Administrator On-call, in conjunction with the Safety Officer and RSO have determined that the emergency no longer exists.

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Resources:

1. Local Fire Division HazMat: 911.
2. Poison Control: 1-800-762-0727, or 222-2227
3. Dayton Regional HazMat: 512-5103
4. National Chem Trec: 1-800-424-9300
5. Environmental Protection Agency (EPA): 1-614-644-3198
6. Montgomery County Emergency Management Authority:
7. Radiation Emergency Assistance Center/Training Site (REAC/TS): 1-865-576-1005
8. ODH Radiation Protection Hotline 1- (614) 644-2727

SPONSORING DEPT:	Complete
DEPARTMENTS AFFECTED:	Complete
DATE OF ORIGIN:	Complete
LAST REVIEWED:	Complete
LAST REVISED:	Complete
REPLACES:	Complete, if applicable
APPROVED BY:	
EFFECTIVE DATE:	

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