

RADIOLOGICAL PROTECTION

I. PURPOSE

This annex provides the county with a radiological program and outlines the organization, personnel, equipment and procedures necessary to protect the citizens from potential effects of a disaster involving radioactive materials.

II. SITUATION AND ASSUMPTIONS

A. Situation

1. There are many types of incidents that could occur involving radioactive materials that would endanger public. Transportation of radioactive sources occurs in most communities and the threat of nuclear remains. Many facilities in the county have radiation sources. See Tab 1. List of NRC Licensed Agents/Facilities.
2. Protection of people, vital facilities and return to stable living conditions will require an organized capability to detect, monitor, report and analyze the radiological hazard should an incident occur.
3. Radiation measuring and detecting instruments used by trained personnel are the only means of gaining accurate radiological information in order to analyze the situation and take appropriate protective actions.
4. Morgan County is currently in the process of developing a radiological protection program including conducting training for personnel and obtaining monitoring equipment.

B. Assumptions

1. In the vent of attack upon the United States, the county will be subject to the effects of radioactive fallout.
2. Sheltering from radioactive fallout or other radioactive material may be required for population protection.
3. Shipments of limited quantities of radioactive materials do occasionally become involved in accidents and could produce loss of containment and contamination; however, the potential hazard from such shipments is low.
4. Large quantity and safeguard radioactive materials are shipped in special containers designed to withstand severe accident conditions. Such containers can contain amounts of radioactive material that if released due to accident, could potentially cause serious health and safety effects over large areas.

III. CONCEPT OF OPERATIONS

A. Execution

1. The County EMA is responsible for forming and developing a Radiological Protection (RP) Program and ensuring the proper execution of this plan in time of emergency. See Tab 3 Radiological Protection Emergency Notification Roster.
2. The RP Organization will collect data on nuclear incidents, spills or releases and the hazards that accompany them.
3. The RP Organization will use all resources as necessary to furnish radiological information to authorities at all levels or government as a basis for making decisions affecting:
 - a. The periods of shelter occupancy.
 - b. Control of radiation exposure of emergency workers during shelter and post shelter periods.
 - c. Decontamination activities.
 - d. Food and water supplies.
 - e. Restoration of vital facilities.
 - f. Relocation of people to avoid radiation.
 - g. Rescue, medical and welfare operations.
 - h. Public service organizations.

B. General Operating Procedures

1. The Disaster Analysis Section (DAS) will be stationed at or adjacent to the EOC during an emergency. Here the RP Section (when activated) will receive, analyze and evaluate radiological data from the monitoring system and make recommendations to the local government CEOs concerning operating decisions in a radiological environment.
2. Monitors (when activated) stationed in appropriately dispersed centers of monitoring throughout the county will perform:
 - a. On-station monitoring when radiation is expected and during the period when the radiation is present.
 - b. Detailed mobile monitoring when radiation levels will permit limited outside operations on a controlled risk basis.
3. Shelter monitors (when activated) will be positioned in each public shelter to provide:
 - a. Detailed radiological information needed to conduct shelter operations.

- b. Radiation exposure records for all shelter occupants as a basis for decisions concerning out-of-shelter and post-shelter work assignments.
4. Communications between shelters, monitoring stations and the county EOC shall be by telephone when available and via any emergency service radio as back up.
5. State level radiological aerial monitoring and assessment capability: See Ohio Emergency Operations Plan, Radiological Annex.

C. Response to Radioactive Material Incidents

When there is a hazardous material incident, a swift, efficient response is needed. That response comes from a variety of sources including local authorities, state government agencies and industry.

Groups that become involved vary with each incident depending on which are notified and their respective capabilities. Often these groups operate independently, and that can mean delays, misunderstandings or conflict.

Cooperation is essential among industry, state agencies and local authorities. They work together at the incident site and in the affected community to provide effective response, each contributing their unique areas of expertise.

Local authorities are essential in an emergency response for several reasons. The local police or fire department is normally the first responding organization at the site. They must make the initial emergency response decisions including securing the area, evacuating people, and giving emergency medical treatment.

State agencies perform a key role because they may have more expertise and resources than the local authorities, and they have legal authority to make response decisions.

Industry is the third group that may be at an incident. Industry representatives best understand the characteristics of specific products, and often have both the equipment and expertise to advise and help respond at the site.

1. In hazardous materials incidents involving radioactive materials, the Ohio Emergency Management Agency will assume the primary role of coordinating activities of the other state agencies.
2. Local Law Enforcement Agencies

Radiological incidents can occur in remote areas or within city limits, as well as on the state and federal highway network. Should

a local government agency be among the first on the scene of a radiation incident involving truck, rail and/or air transportation, regular law enforcement duties should be carried out. In addition, the local agency is to be responsible to:

- a. Take steps as indicated in Section D, Incident Initial Actions. It is important to remember that only essential activities should be carried out in proximity to the incident site prior to the arrival of (or consultation with) State Radiation Response Teams (RRT)
- b. The local law enforcement agency may be called on to escort or provide transportation for the radiation response team to the incident site and keep lines of communication open between the incident scene and control headquarters of the radiation response team.
- c. Upon notification of an incident involving radiation, state radiological assistance will be conveyed to the scene as soon as possible.

3. Fire Department

Local fire departments are usually called upon to fight fires in which radioactive materials may be involved. The fire may be associated with a transporting conveyance or a building used for storage of radioactive materials. With fires, two potential radiological hazards exist. One is melting down of the radiation shielding around the radioactive material, and the other is the vaporization of the radioactive materials (pyrophoric metals). Although the possibility of either of these situations occurring is remote, it is important that they are recognized. The following outlines the fire department's responsibilities:

- a. In fire fighting, follow normal procedures of fire fighting and rescue, except as outlined below.
- b. Stay out of the smoke and fumes and as far as practical from the cargo compartment, or the site of storage of radioactive materials.
- c. Firemen should wear self-contained breathing apparatus (SCBA), if available, and the fire should be treated as one involving toxic chemicals.
- d. A fog stream is preferable to a high pressure stream; however, the fire should be fought by any practical means available (if uranium (U) and/or plutonium (Pu) metals are known to be present, the fire should be flooded for quick extinguishing, the amount of water used should be kept to a minimum, but the first priority should be to get the fire out. (See DOT Emergency Response Guidebook.)
- e. The fire should be extinguished as quickly as possible.

- f. Representatives of the state will arrive at the fire as soon as possible to evaluate the radiation control of the incident and to assist in the planning necessary for recovery operations.

4. Airport Officials

In the event of any damage to a radioactive material container or signs of apparent loss of the radioactive material (leakage or spillage), airport officials should be contacted immediately. The airport officials are responsible for the following:

- a. Immediately notify the State Emergency Management Agency.
- b. Essential information to be given to the State EMA is listed in the Accident Reporting Checklist (Tab 4, form attached to this annex)
- c. To minimize interruptions in the normal operation of the airport, rapid reporting to the State EMA is imperative.
- d. If it appears that there may be contamination of a given plane to include its cargo and baggage, the cargo on the plane and airline are to be detained for further instructions from the State EMA. If there is a possibility of radioactive contamination either on the ramp or within the airport buildings, these areas are to be segregated and roped off to limit the spread of contamination.

5. Truck and Rail Freight Terminals

If in the course of normal operations it is discovered that a container of radioactive material has been severely damaged, or it is apparent that the source is outside of its containment, or that the possibility of contamination exists (e.g., leaking or broken container), the supervisor of the terminal or his designated assistant to:

- a. Report the incident or apparent incident immediately to the State Emergency Management Agency.
- b. If there is apparent contamination within the cargo compartment of the transporting vehicle, this should be included in the initial report to the EMA.
- c. Take steps as indicated in Section D, Incident Initial Actions. It is important to remember that only essential activities should be carried out in proximity to the incident scene prior to the arrival of or consultation with Ohio EMA radiation response team representatives.

6. Morgan County Health Department

Morgan County Health Department will be responsible for protecting life and property in their jurisdictional area. Under the direction from the Ohio Department of Health, this may include the collection of environmental samples and performing radiation surveys. Coordination with local USDA offices and the County Agricultural Extension Agency should be made.

D. Incident Initial Actions

The following steps are to be carried out by responders arriving at the scene of a radiological incident. Law enforcement and fire department officials have primary responsibilities to carry out the items below until such time as an accident response team arrives on the scene:

1. Restrict the area of the incident

Keep the public as far as practical from the incident scene. See attached chart, Radioactive Materials Safe Distances Chart. Keep upwind of fires to the extent possible. Also, the area downwind of a fire, especially if smoke and ash are involved, should be cleared of people even if these are residents of homes.

2. Perform life saving rescues and emergency first aid

If medical attention is indicated, assist in arrangements for medical assistance. The physician and/or hospital should be informed that radioactive contamination might exist on the victim and on his or her clothing. The person transporting the injured can relay this information; however, preliminary notification by law enforcement or fire officials is desired.

3. If there is a fire or danger of fire, summon assistance from the nearest fire department.

If work connected with rescue or fire fighting must be done in the incident area, handle the debris resulting from the incident with mechanical means to avoid direct skin contact or contact with clothing. Clothing and tools used at the scene should remain set aside until they have been checked for radioactive contamination by qualified monitoring personnel.

4. Contact Morgan County EMA as soon as possible.

5. Contact the Ohio Emergency Management Agency as soon as possible.

Immediate notification is essential so that the accident response team can be activated and dispatched to the accident location.

6. Detain all persons involved with the incident of potentially contaminated by the incident, except those requiring emergency medical evacuation, at the scene until the accident response team arrives.
Upon arrival of the team, individuals will be monitored, decontaminated, if necessary, and cleared after further medical treatment or released. Record names, addresses, and phone numbers from those individuals who cannot, or will not, stay at the incident scene.
7. Eating, drinking, or smoking in the incident area should be prohibited.
8. Remain calm and wait for the arrival of the radiation response team.

E. Radiation Dose Limits and Reporting

1. Dosimeters should be read once every ½ hour, at a minimum, but more often if possible.
2. The on-scene radiological officer should record the dose for each individual exposed. See attachment entitled “Individual Dose Record.”
3. If the EOC is activated, these doses should be continually reported to the EOC by the on-scene RO and recorded at the EOC. See Tab 8 “Dosimetry Packet Issues & Exposure Log.”
4. The dose received by each individual should be kept to a minimum.
5. When an emergency worker’s dose is nearing 25R, another worker should replace him.
6. When lifesaving activities are involved, a maximum lifetime limit of 75R may be accepted. This applies only if the saving of a human life may result by incurring this level of exposure.
7. The decision for authorizing emergency workers to incur exposures in excess of EPA general protective guidelines should only be made in dire life-threatening circumstances and under guidance from local health personnel. The person in charge of an incident would handle this situation on a case-by-case basis, utilizing volunteers only.

F. Total Population Exposure

1. The attached Safe Distance Chart (Tab 5) will be used to determine areas needing to be evacuated.

2. All citizens located within the area will need to be monitored and decontaminated if readings from the CD V 700 register twice the local (uncontaminated) background or higher.
3. In the event of a nuclear attack, the entire county will probably be affected by radiological fallout.
4. Man Rems may be determined by multiplying the number of people affected by exposure.

G. Decontamination

1. In order to determine the need for decontaminating exposed individuals, area and equipment need to be monitored with a CDV 700.
2. If the reading obtained measures twice the local (uncontaminated) background, skin, clothes contaminated objects; areas and equipment need to be decontaminated.
3. Tabs 9, 10, and 11 to this annex list methods of decontamination.

H. Phases of Emergency Management

1. Mitigation activities may include but are not limited to:
 - a. Establish a radiological program.
 - b. Designate a radiological officer.
 - c. Develop a radiological training program.
 - d. Develop a radiological reporting network.
2. Preparedness activities may include but are not limited to:
 - a. Select and train radiological staff for a radiological accident or nuclear attack.
 - b. Conduct radiological exercises.
 - c. Maintain radiological monitoring equipment.
 - d. Establish priorities for decontamination facilities.
 - e. Conduct public information and education programs.
 - f. Provide training for RDOs, monitors, and shelter managers and for weapons effects reporting.
3. Response activities may include but are not limited to:
 - a. Activate radiological staff.
 - b. Deploy radiological teams to pre-arranged locations.
 - c. Activate the radiological reporting (WER) network.
 - d. Intensify public information and education on radiation safety.
 - e. Activate medical teams to handle radiation exposure injuries.

- f. Distribute bulk-stored RADEF instruments.
 - g. Request mutual-aid for RADEF support from nearby counties and assistance from Ohio EMA (614-889-7150).
4. Recovery activities may include but are not limited to:
- a. Continue ground and aerial monitoring.
 - b. Initiate decontamination activities.
 - c. Continue public information and education programs.
 - d. Continue damage assessment activities.

IV. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

- A. The Radiological Protection (RP) Organization will consist of: (Show or reference Organization Chart.)
- 1. A Disaster Analysis (or Damage Assessment) Section located in the EOC.
 - 2. An RP section within the Disaster Analysis/Damage Assessment Section. (Mention the exact number of RDO's, Analysts, Plotters required at the EOC.)
 - 3. An RO responsible for all RP operations.
 - 4. Trained personnel (RRT & RM) at emergency services in the county (peacetime & wartime).
 - 5. Trained personnel at monitoring stations, self-protection facilities and public shelters. These personnel are trained during the surge period for wartime activation.
 - 6. Trained personnel and identified equipment for decontamination.
- B. Duties
- 1. County-wide Policy Group/CEOs
 - a. Implements protective measures (i.e., evacuation, sheltering, etc.) based on recommendations from county RO, Health department, Ohio EMA, etc.)
 - 2. Radiological Officer (RO)
 - a. Supervises the countywide RF operation. Serves as senior Radiological Defense Officer (RDO) during exercises and RADEF emergencies.
 - b. Directs monitoring and reporting procedures of entire radiological protection organization.
 - c. Prepares and present radiological situation briefings to EOC Policy Group and the Operations Staff.

- d. Prepares radiological information for release to the Public Information Officer.
 - e. Submits required radiological situation reports to the State EOC.
 - f. Provides decontamination guidance to emergency services.
 - g. Advises County Policy Group on protective measures (evacuation, sheltering, etc.) necessary to protect citizens threatened by the radiation hazards, based on EPA protective action guides (PAGs) as well as criteria consistent with DHEW, FDA, etc. (peacetime only)
 - h. Identifies resources for radiological and chemical analysis, environmental assessment, biological sampling, and plume movement tracking and contamination surveys.
 - i. Maintains an inventory of RADEF instruments.
 - j. Provides advise and assistance to the Emergency Operations Center (EOC) staff, monitoring stations, shelter staffs and the general public on the full range of nuclear weapons effects, including the radiological hazard and fire and blast effects.
 - k. Estimates the impact on operational capabilities of the community.
 - l. Maintains close contact with the radiological monitoring network, shelter complex headquarters, adjacent communities, State EOC, and the military to receive reports of nuclear detonations, radiation intensity and other weapons effects.
3. Assistant Radiological Officer
- a. Serves as chief assistant to the RO.
 - b. Serves as Assistant Radiological Defense Officer in EOC (wartime).
 - c. Fills any vacant position in the EOC RP Section.
4. Analysts (wartime position)
- a. Records and analyzes incoming radiological data to determine location, intensity and hazard to life, also predicts probable radiation decay times by mathematical extrapolation.
 - b. Determines areas where activity is permitted or restricted and for how long.
 - c. Identifies hazardous situations requiring immediate remedial action by emergency services.
 - d. Prepares estimates of shelter emergence time for EOC staff.

- e. Analyzes decontamination requirement upon shelter emergence.
5. Plotters (wartime position)
- a. Records incoming data in appropriate tabular form.
 - b. Prepares and maintains:
 - 1) Meteorological information
 - 2) Fallout forecasts
 - 3) Message and reporting logs
 - 4) Dose and dose rate plots
6. Radiological Response Team (RRT) Personnel
- a. Serves as the responder-in-charge for peacetime radiological response.
 - b. Serves as a community based cadre of radiological defense personnel.
 - c. Develops departmental plans and operating procedures for radiological defense and radiological.
 - d. Trains their own organizations initial response personnel in radiological monitoring for nuclear attack preparedness and for first response actions to a peacetime radiological emergency.
 - e. Conducts refresher/update training for radiological monitors (RM)
 - f. Serves as a trained cadre of instructors to conduct accelerated training during the surge period of a national crisis.
 - g. Ensures the availability, operability, periodic maintenance and proper distribution of radiological instruments in their department.
 - h. Notifies the local and state EMA authorities of a radiological emergency.
 - i. When necessary, performs all the duties of a RM.
7. Radiation Monitors (RM)
- a. Serves as a first responder in peacetime radiological emergencies.
 - b. Serves as a self-protection monitor in a nuclear attack environment.
 - c. Uses survey meters to identify areas of contamination, type, and exposure rate.
 - d. Applies the radiation protection principles of time, distance and shielding in reducing exposure of the public to ionizing radiation.

- e. Uses a dosimeter in determining accumulated dose of radiation.
 - f. Performs all the duties of shelter monitor when necessary.
 - g. Reports Weapons Effects observations, See Appendix 1.
8. Shelter Monitors (SM) (wartime position only)
- a. Performs RM duties c-e above in a Fallout Shelter.
 - b. Supports sheltered population by providing guidance on:
 - 1) Actions to reduce radiation levels in shelters.
 - 2) When and how restrictions on shelter living may be relaxed.
 - 3) Expected exposure levels.
9. Decontamination Personnel
- a. Decontaminates vehicles, equipment and facilities contaminated with radioactive particles.
 - b. Recommends appropriate decontamination procedures.
 - c. Uses radiological equipment to determine the effectiveness of decontamination.
 - d. Uses radiological equipment to protect personnel from excessive exposure.
- C. Responsibilities of Agencies
1. The Morgan County Emergency Management Agency and Office of Homeland Security is responsible for:
- a. Development and formation of a Radiological Protection Program including but not limited to:
 - 1) Classes and refresher classes for RN, RRT, and RDOs
 - 2) SOP Guidance
 - 3) Training materials, instructors
 - b. Responding to all radiological emergencies in the county.
 - c. Distributing radiological monitoring equipment to law enforcement agencies, fire departments, EMS, Shelters and other agencies for further disbursement.
 - d. Augmenting radiological monitoring teams, as necessary.
 - e. Preparing weapons effect reports (WER) and damage assessment reports for submission to the State and Federal Government. See also Appendix 1 (WER) and Annex.
2. Emergency Medical Services are responsible for:

- a. Advising public about proper treatment for exposure to radiation and radioactivity.
 - b. Providing medical care for radiation-related injuries.
 - c. Ensuring 1 RRT per Service & 1 RM per CD V-777 set issued is trained for peacetime emergencies.
3. Law Enforcement Agencies are responsible for:
- a. Distributing radiological monitoring equipment as requested by the Emergency Management Director.
 - b. Receiving/transmitting NAWAS information.
 - c. Responding to radiological (peacetime) accidents.
4. Fire Services are responsible for:
- a. Serving as Primary 1st Responders for peacetime radiological emergencies.
 - b. Ensuring 1 RRT per station and 2 RM per CDV 777 – 1 set issued are trained for peacetime emergencies.
5. Department of Public Works (or Engineering Department)
- a. Organizes & executes decontamination operations.
 - b. Develops a self-protection plan (see also 7.)
6. Public Health
- a. Provides recommendations to the county commissioners on allowable radiological exposures to the public and or evacuation recommendations.
 - b. Provides Staff member to RADEF Section during wartime activation of EOC.
7. All Emergency Services, Vital Facilities and Essential Industries
- a. In the event of a nuclear attack, emergency services vital facilities and essential industries may be required to operate in a fallout radiation environment. Examples of vital services are hospitals and utilities. Examples of essential industries are food processing, storage and distribution, and pharmaceutical manufacture and supply. Each Service/Facility/Industry must prepare the procedures & plans to operate in this environment. See also Appendix 1 (Nuclear Attack) and Attachment 4 for further guidance.

V. DIRECTION AND CONTROL

The Radiological Officer (RO) is responsible for coordinating all radiological activities within the county. The RO will establish operations within the EOC,

supervise plotting, damage assessment, decontamination operations and advise EOC personnel on necessary protective measures to ensure continuous emergency operations.

- A. The line of succession for the Radiological Officer is as follows:
 - 1. Radiological Officer
 - 2. Assistant Radiological Officer
 - 3. Senior Analyst
- B. Refer to Tab 11, Procedures for the Relocation & Safeguarding of Vital Records in the Basic Plan, and Tab 3, Procedures for the Protection of Government Resources, Facilities, and Personnel in Annex N, Resource Management.

VII. ADMINISTRATION AND LOGISTICS

- A. Training & Exercises
 - 1. Each emergency service, vital facility and essential industry will have at least 1 person trained as an RRT. Two RMs must be trained for each instrument set issued.
 - 2. Additional training will be conducted on an as needed basis as personnel are available to be scheduled into the training classes. Refresher training will be given to all RNs, RRTs and RDOs at least every two years.
 - 3. Accelerated training of RM, SM and Decontamination Specialists will be conducted in the event a nuclear emergency appears to be imminent or if the mass distribution of instruments is ordered or if the President/Governor orders an evacuation of high-risk areas.
 - 4. Emergency service personnel will be exercised in the context of nuclear attack scenarios as well as peacetime radiological incidents. The RADEF System will be exercised at least every 4 years.
- B. Equipment
 - 1. Radiological monitoring equipment: Tab 2 shows the distribution of monitoring equipment in the county.
 - 2. All fire departments have the protective equipment, clothing and instruments to perform assigned tasks in a hazardous chemical or radiological environment, however, this is not disposable and would have to be either decontaminated or replaced.
- C. Monitoring Stations

1. All fire departments and EMS stations in the county are designated monitoring stations for Morgan County.
2. All self-protection facilities and shelters are considered back-up monitoring stations.
3. Other monitoring stations will be established as necessary.
4. Tab 12 is a map showing the location of all current/back-up stations.

VIII. PLAN DEVELOPMENT AND MAINTENANCE

- A. All agencies, departments and organizations with radiological protection responsibilities are responsible for reviewing this annex at least once per year and submitting new or updated information to the Radiological Protection Annex Coordinator, commencing one year from the approval date of this document or more often as necessary.
- B. All agencies, departments and organizations with radiological protection responsibilities are also responsible for developing and maintaining SOPs, mutual aid agreements, personnel rosters including 24-hour emergency notification telephone numbers and resource inventories, including source, location and quantity. (Cite any Radiation specific item) (Cite State Radiological Plan Provisions for Mutual Aid and Related Assistance)
- C. The countywide Radiological Officer is responsible for incorporating changes and revisions into this annex and submitting the revised annex to the Emergency Management Director once per year or more often as necessary.
- D. The countywide EMA Director is responsible for printing and distributing changes, updates and revisions of this annex to all departments, agencies and organizations retaining a copy of this plan.

IX. AUTHORITIES AND REFERENCES

- A. Authorities
CPG 2-1, Radiological Defense Preparedness, September 1989 29 CFR 1910.120
Also see Section IX.A. of the Basic Plan.
- B. References
Not used, see Section IX.B. of the Basic Plan.

X. ADDENDUMS

- Tab 1 – NRC Licensed Facilities/Agents
Tab 2 – Radiological Monitoring Equipment Locations (Peacetime)

- Tab 3 – Radiological Protection Emergency Notification Roster
- Tab 4 – Accident Reporting Checklist
- Tab 5 – Radioactive Materials – Accidents
- Tab 6 – Radioactive Materials – Safe Distances
- Tab 7 – Individual Dose Rate Records
- Tab 8 – Radiation Exposure Record
- Tab 9 – Decontamination of Vehicles and Equipment
- Tab 10 – Personnel Decontamination Report
- Tab 11 – Area & Material Decontamination
- Tab 12 – Map of Current/Backup Monitoring Stations
- Appendix 1 – Radiological Protection for the Nuclear Attack Hazard

XI. AUTHENTICATION

12/08/03

Date

Terry Robison

Radiological Protection Coordinator

NRC LICENSED FACILITIES/AGENTS

<u>NAME</u>	<u>LOCATION</u>	<u>SOURCE</u>	<u>CURIE</u>
Alan Stone Company, Inc. 740-554-6191	St. Rt. 377, P.O. Box 127, Chesterhill, OH 43728		

RADIOLOGICAL MONITORING EQUIPMENT LOCATIONS (PEACETIME)

<u>Location</u>	<u># & Type of CDV Equipment</u>	<u>Phone</u>
Chesterhill Fire Department	2 CDV-777-1	740-962-2222
Morgan County Sheriff	1 CDV-777-1	740-962-3333

RADIOLOGICAL PROTECTION EMERGENCY NOTIFICATION ROSTER

ANNEX COORDINATORS

(Roster maintained by EMA Director at EOC)

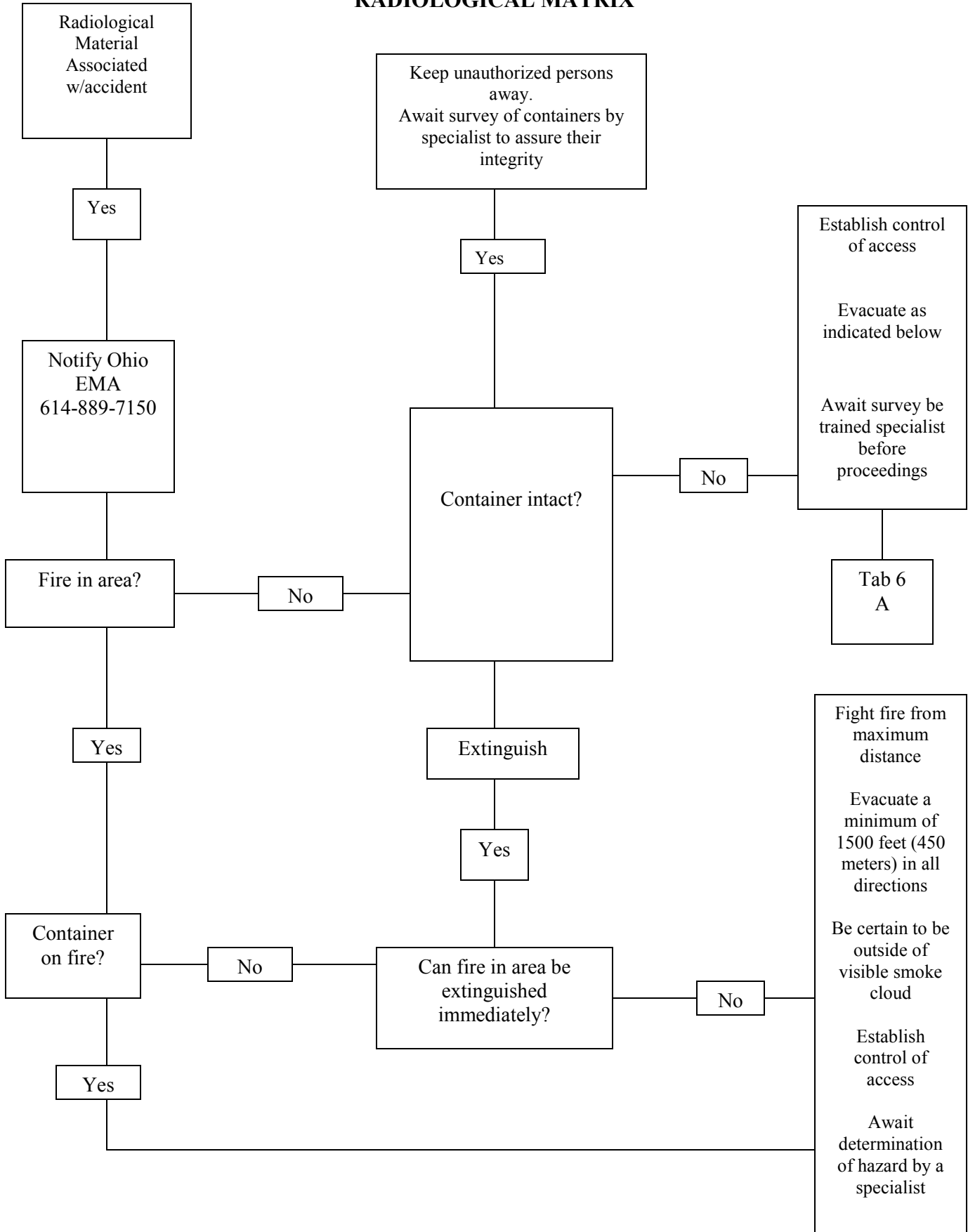
AGENCIES AND DEPARTMENTS

ACCIDENT REPORTING CHECKLIST

Below is a checklist or guideline on information to be transmitted when requesting assistance or reporting a radiological incident to the proper authority.

1. Identify the fact that you are calling about a radioactive materials incident.
2. Location and brief nature of the incident, including description of package(s).
3.
 - a. There is _____, is no _____ injury to personnel.
 - b. Personnel are _____, are not _____ expected to have been exposed or contaminated.
 - c. There is _____, is no _____ evidence of release of radioactive material.
4. Evidence of any other hazardous materials.
5. Carrier and shipper and/or consignee.
6. Terrain and weather.
7. Personnel and equipment on the scene and actions under way.
8. Your name and call back phone number.
9. If readily available from shipping papers, labels, or package markings, the following will be of value. Do not delay your call for assistance to obtain this information, however, you can always call back.
 - a. Shipper's name
 - b. Radioisotope(s)
 - c. Number of curies
 - d. White I, Yellow II, or Yellow III labels
 - e. Transport index (TI) of package(s)
 - f. Physical and chemical form
 - g. Package identification (specification Type A or B, certification number, exemption number, etc.)
10. If emergency service personnel responders have radiation survey meters and have been properly trained in their use, indicate types of instruments used and readings obtained. Again, unless specifically directed, do not delay communications to get this information.

RADIOLOGICAL MATRIX



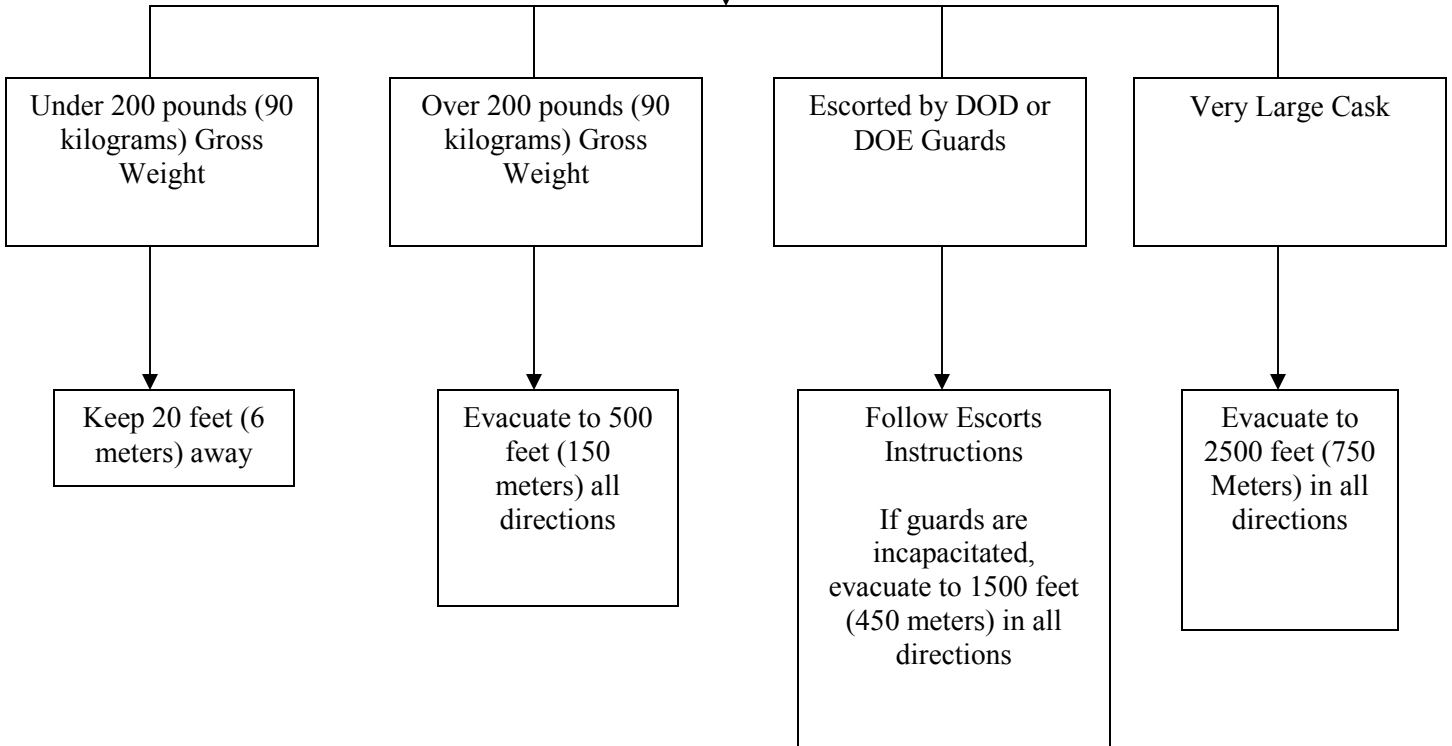
RADIOLOGICAL MATERIALS SAFE DISTANCES

CLASS

RADIOACTIVE MATERIAL

SIZE

ALL



DOSIMETRY PACKET ISSURE AND EXPOSURE LOG

Special Emergency Worker Dosimetry Packet Issue & Exposure Log

Organization: _____ Date: _____
 Address: _____
 Page: _____
 Dept. RO: _____

Emergency worker	Dosimetry Packet Number	Time	Initial Reading	Dosimetry Readings & KI Administration								Ending reading	Mission Total	Total Exp. To Date
Name		CDV138												
		CDV730												
Mission/Location		CDV742												
		KI												
Name		Time												
		CDV138												
Mission/Location		CDV730												
		CDV742												
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DECONTAMINATION OF VEHICLES AND EQUIPMENT

Decontamination of vehicles and equipment of the various operational services, such as fire departments, police departments, and decontamination teams, will be the responsibility of the various services, aided by radiological defense services. Individuals will be responsible for decontamination of their own vehicles and equipment in accordance with instructions of local government.

The simplest and most obvious method for partial decontamination of vehicles and equipment is by water hosing. Quick car-washing facilities are excellent for more thorough decontamination.

Special precautions should be used when vehicles and equipment are brought in for maintenance. The malfunctioning part of the vehicle or equipment should be checked for excessive contamination.

Hosing should not be used on upholstery or other porous surfaces or the interior of vehicles, as the water would penetrate and carry the contamination deeper into the material.

The interior of vehicles can be decontaminated by brushing or vacuum cleaning. Procedures for decontaminating interiors of vehicles by vacuum cleaning are similar to those used on the interior of structures.

Upon completion of missions in a contaminated area, vehicles and equipment used by decontamination personnel should be monitored, and decontaminated if necessary. Attempts should be made to reduce the hazard to tolerable levels.

A paved area set up for decontamination would be the best place for decontaminating vehicles and equipment, because it could be hosed off after decontamination.

Monitoring should follow each decontamination procedure to determine if further treatment is required.

PERSONNEL DECONTAMINATION PROCEDURES

Method	Surface	Action	Technique	Advantages	Disadvantages
Mild soap and water	Skin and hands	Emulsifies and dissolves contaminate	Wash 2-3 mins. And monitor. Do not wash more than 2 times	Readily available and effective for most radioactive contaminate	Continued washing will defat the skin. Indiscriminate washing of other than affected parts may spread contamination.
Mild soap and water	Hair	Same as above	Wash not more than twice		
Mild soap , soft brush and water	Skin and hands	Emulsifies, dissolves, and erodes	Use light pressure with heavy lather. Wash for 2 mins, 2 times. Rinse and monitor. Use care not to scratch or erode the skin. Apply lanolin of hand cream to prevent chapping	Same as above	Continued washing will abrade the skin

AREA AND MATERIAL DECONTAMINATION

<u>Method</u>	<u>Surface</u>	<u>Action</u>	<u>Technique</u>	<u>Advantages</u>	<u>Disadvantages</u>
Vacuum Cleaning	Dry Surface	Removes contaminated dust by suction	Use conventional vacuum technique with efficient filter	Good on dry porous surfaces. Avoid water reactions	All dust must be filtered out of exhaust. Machine is contaminated.
Water	All non-porous surfaces (metal, painted, plastic etc.)	Dissolves and erodes.	For large surface hose with high-pressure water at an optimum distance of 15-20 feet. Spray vertical surfaces at an angle of incidence of 30-40 degrees; work from top to bottom to avoid recontamination. Work upwind to avoid spray.	All water equipment may be utilized. Allows operation to be carried out from a distance. Contamination may be reduced by 50 %. Water equipment may be used for solutions of other decontaminating agents.	Drainage must be controlled. Not suitable for porous materials. Oiled surfaces cannot be decontaminated. Not applicable on dry contaminated surfaces (use vacuum not applicable on porous surfaces such as wood, concrete canvas etc. Spray will be contaminated.
Water	All surfaces	Dissolves and erodes.	Determine cleaning rate experimentally if possible; otherwise use a rate of 4 square feet per minute. For small surfaces blot liquid and hand-wipe with water and appropriate commercial detergent.	Extremely effective if done immediately after spill on non-porous surfaces.	Of little value in the decontamination of large areas long-standing contaminants and porous surfaces.
Steam	Non-porous surfaces (especially painted, or oiled surfaces)	Dissolves and erodes.	Work from top to bottom and from upwind. Clean surface at a rate of 4 square feet per minute.	Contamination may be reduced approximately 90% on painted surfaces.	Steam objects to same limitations as water. Spray hazard makes the wearing of waterproof outfits necessary.

CURRENT AND BACKUP MONITORING STATIONS

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Current Monitoring Stations



Backup Monitoring Stations



The ICS Commander will designate additional backup monitoring stations

RADIOLOGICAL PROTECTION FOR THE NUCLEAR ATTACK HAZARD

I. PURPOSE

This appendix covers radiological protection relating to unique demands expected to be generated by a nuclear attack.

II. SITUATION AND ASSUMPTIONS

A. Situation

1. The detonation of a nuclear weapon would cause a radiological hazard that differs markedly from that posed by peacetime hazards in the extent of the area affected and in the intensity of the radiation.
2. It is not possible to predict the size of an attack or the specific areas that would be directly affected. The number of weapons could be one, as in an accidental launch or terrorist incident, or it could be many, as in an all-out attack on military and economic targets.

Development of a nuclear attack radiological protection system will remain a necessary activity as long as stockpiles of nuclear weapons exist and the number of nations with sufficient technological development to produce nuclear weapons continues to grow.

3. The Governor's Order to evacuate high-risk areas will trigger the release of stored radiological instruments to emergency organizations and public fallout shelters. During a period of heightened tensions the Governor's Order for surge training would also trigger release of instruments. See Attachment 1, Bulk Distribution Plan.

B. Assumptions

1. Morgan County can develop a Radiological Protection System, which meets all nuclear attack and peacetime radiological hazard requirements.

III. CONCEPT OF OPERATIONS

A. General

The stages of a Nuclear Defense Emergency are as described in the Direction and Control Annex, this Appendix. In the pre-emergency phase, an inherently expandable radiological protection system will be maintained. The principal elements of this system are procedures, facilities, equipment, communications, and trained personnel.

B. Nuclear Defense Emergency Phase

The emergency phase of a nuclear defense situation includes an increased readiness period, during which all elements of the radiological protection system will be expanded, training will be conducted, and drills will be carried out to refine the capabilities of the system. A sample log, listing radiation level reporting locations for a nuclear defense emergency is provided in a table in Attachment 2 to this appendix.

If an attack actually occurs, all elements of the emergency organization will be dependent on the radiological protection system for information to determine when emergency actions can be undertaken and to minimize the radiation danger to emergency services personnel.

The radiological protection organization will be integrated across the board with the emergency management organization as a whole, i.e. personnel of all elements will be trained to monitor and interpret radiological data, so that radiological situation information will be available throughout the organization even during periods of seriously degraded communications.

C. Continuity of Government

The Radiological Protection System will be carefully coordinated with continuity of government planning to provide enough information, analysis and decontamination capability to ensure survival of personnel and continuation of essential functions of local government.

D. Shelter System Support

Radiological information may be the key to survival for people in fallout shelters. A listing of instruments and monitors are given in Tab 2 and 3 to the Radiological Protection Annex.

IV. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

A. Organization

Not used. See Section III.A. to the Radiological Protection Annex.

B. Assignment of Responsibilities

1. Emergency Management

Coordinate with the State Emergency Management Agency and with neighboring jurisdictions on development of the RP System.

2. Radiological Officer

- a. Maintains rosters of the RP personnel.
- b. Maintains inventories of RP equipment.
- c. Provides RP training.

- d. Supervises the radiological situation analysis team.
 - e. Prepares outgoing reports on the radiological situation.
 - f. Receives and analyzes reports and briefs Direction and Control staff on the radiological situation.
 - g. Receives displays and analyzes weapons effects data from the reporting network.
 - h. Prepare weapons effect reports for submission to State/Federal Government.
3. Weapon Effects Reporting (WER) Network
- a. WER Stations (referred as monitoring stations) are established to detect and report weapon effects information. Monitoring Stations report:
 - a. Observations/sightings of nuclear detonations or nuclear burst clouds
 - b. Damage from nuclear detonations
 - c. Radioactive Fallout arrival and intensities
 - b. Any shelter with radiation detecting equipment has the responsibility to report radiation intensities at its location.

V. DIRECTION AND CONTROL

Information Requirements: All monitoring stations will report the following information to the county EOC. Exact formats and additional detail are specified in CPG 2-10 series. Negative reports are as important as the actual reports below. Negative sightings and damage reports are sent as possible after a weapon detonation. Negative Fallout Reports should be sent 12 hours after a nuclear burst.

- A. Sightings of Nuclear Weapons Detonations
- B. Damage: Any observed damage is classified as only “window” or as structural damage.
 - 1. Window damage is only broken windows. This defines the outer limit of physical damage.
 - 2. Structural damage is visible damage greater than simply broken windows. This damage defines the area in which more serious damage has occurred. Structural damage includes any fires started, blown indoors, or any greater damage.
- C. Fallout: The Fallout Reports are very time critical and provide key information on the travel of the cloud, expected dose rates and health of the populace. Exposure rates should be reported as “outside” dose rates or if inside then the Transmission Factor must always be determined and

reported. All the below numbers are outside dose rates. See RM Manual for details.

1. Fallout is arriving and the exposure rate goes above .5 r/hr (500 mr/hr)
2. The exposure rate reaches/rises above 5 r/hr.
3. The exposure rates reaches/rises above 50 r/hr.
4. The exposure rate has peaked and is declining.
5. The exposure rate is declining and goes below 50 r/hr.
6. The exposure rate is declining and goes below 5 r/hr.
7. The exposure rate is declining and goes below .5 r/hr (500 mr/hr)
8. Selected monitoring stations may be tasked to provide hourly reports.

D. County reports to the state EOC: Immediately forward the first report of each type received, the state may request additional data as well the following summary reports:

1. Each location's peak report.
2. Any shelter where the total dose is expected to exceed/has exceeded 200-rad. Provide estimated total dose.

See also Section V. of the Radiological Protection Annex.

VI. CONTINUITY OF GOVERNMENT

Not used. See Section VI. of the Radiological Protection Annex.

VII. ADMINISTRATION AND LOGISTICS

- A. Protection of Monitoring Stations. Monitoring Stations will be facilities with a fallout protection factor (FPF) of at least 100 or in a facility upgradeable to that level.
- B. Communications: Monitoring Stations will have redundant sets in case of EMP damage to the primary transmitter.

See also Section VII. Of the Radiological Protection Annex.

VIII. PLAN DEVELOPMENT AND MAINTENANCE

See Section VIII. Of the Radiological Protection Annex.

IX. AUTHORITIES AND REFERENCES

- A. Authorities

Not used. See Section IX.A. of the Basic Plan.

- B. References

Not used. See Section IX.8. of the Basic Plan.

X. ADDENDUMS

Attachment 1 – Bulk Distribution Plan

Attachment 2 – Radiation Level Reporting Locations

Attachment 3 – Shelter RP Capability Log

Attachment 4 – Emergency Services, Vital Facilities, and Essential Industries
EOP Guidelines

BULK DISTRIBUTION PLAN

I. PURPOSE

The purpose of this attachment is to develop a RADEF equipment distribution system for shelters, emergency services, vital facilities and essential industries.

II. SITUATION AND ASSUMPTIONS

Not used. See Section II.A.&B. of this appendix.

III. CONCEPT OF OPERATIONS

A. General

Radiological information is essential to the survival of people in fallout shelters and essential workers. Instruments must be distributed to vital facilities located throughout the county.

B. Phases of Emergency Management

1. Mitigation activities may include, but are not limited to:
 - a. Determine availability of radiological monitoring equipment, current operational status, and location.
 - b. Identify existing shelter sites (fallout) with appropriate protection factors (PF). See Attachment 3 to this appendix for a listing of ready-to-use government and public buildings with a 2+ category protection factor (PF).
 - c. Identify emergency services, vital facilities, and essential industries (see Attachment 4 to this appendix.)
2. Preparedness activities may include, but are not limited to:
 - a. Release and distribution of stored monitoring equipment by the State of Ohio.
3. Response activities may include, but are not limited to:
 - a. Prepare and repair, calibrate, and distribute RM instruments to appropriate facilities.
4. Recovery activities may include, but are not limited to:
 - a. Gather and transport previously distributed RN instruments.

IV. ORGANIZATION AND ASSIGNMENT OF RESPONSIBILITIES

A. Organization

The RADEF equipment distribution system will consist of:

1. The Ohio Emergency Management Agency

2. Morgan County Emergency Management Agency
3. Morgan County Radiological Officer (when appointed)
4. Law Enforcement Agencies
5. Fire Departments
6. EMS Departments
7. Department of Human Services, Red Cross and Salvation Army, etc.
8. Public Works Departments
9. All emergency services, vital facilities, and essential industries

B. Assignment of Responsibilities

1. The Radiological Instrumentation/Maintenance and Calibration (RI/M&C) Facility operated by the State is responsible for:
 - a. Providing for the inspection, calibration, repair and issue of radiological monitoring equipment.
2. The Morgan County Emergency Management Agency is responsible for:
 - a. Storage and distribution of radiological monitoring equipment.
3. The Morgan County Radiological Officer is responsible for:
 - a. Maintaining a listing of RADEF instruments.
4. Law Enforcement Agencies are responsible for:
 - a. Distributing radiological monitoring equipment as requested.
5. Fire Departments are responsible for:
 - a. Distributing radiological monitoring equipment as requested.
6. EMS Departments are responsible for:
 - a. Distributing radiological monitoring equipment as requested.
7. Shelter (Department of Human Services, Red Cross, Salvation Army, etc.) is responsible for:
 - a. Distributing radiological monitoring equipment as requested.
8. Public Works Departments are responsible for:
 - a. Developing a Self-Protection Plan.
9. All emergency services, vital facilities and essential industries are responsible for:

- a. Preparing the procedures and plans to operate in a radiation environment.

V. DIRECTION AND CONTROL

After the Morgan County Policy Group implements protective measures, the Director of Morgan County Emergency Management Agency is responsible for the distribution of monitoring equipment in the county.

VI. CONTINUITY OF GOVERNMENT

Not used. See Section VI. of the Basic Plan.

VII. ADMINISTRATION AND LOGISTICS

- A. According to the Radiological Protection Annex to the State Emergency Operations Plan, the Ohio State Patrol (OSHP), Posts at Zanesville and Marietta, Ohio, are equipped with radiological instruments and have personnel trained to use them. OSHP has a complete radio system, which is accessible from the State EOC.

The Ohio Department of Transportation (ODOT), 4205 Monastery Road, McConnellsville, OH, is equipped with radiological instruments and personnel have received monitor training. ODOT has its own radio net, which is accessible from the State EOC.

VIII. PLAN DEVELOPMENT AND MAINTENANCE

Not used. Refer to Section VIII of the Radiological Protection Annex.

IX. AUTHORITIES AND REFERENCES

- A. Authorities

Not used. See Section IV.A. of the Radiological Protection Annex.

- B. References

Not used. See Section IX.B. of the Basic Plan.

Attachment 2
Radiation Level Reporting Locations

Name of Facility	Location	Type of Communications	Phone Number Radio Freq./Call Signs	Name of Monitor
Chesterhill Fire Department	St. Rt. 555, Chesterhill, Ohio	Phone/Radio	740-962-2222	
Morgan County Sheriff	37 East Main Street, McConnellsville, Ohio	Phone/Radio	740-962-3333	

Attachment 3
Shelter RP Capability Log

Facility	Address	Spaces	Type	Comm	Industrial Sets			Monitors	
					Req.	Avail.	Stored	Req.	Avail.
McConnelsville Elementary School	21 E. Jefferson St McConnelsville, Ohio	272	*	**	2			4	
McConnelsville Post Office	83 S. Kennebec Ave. McConnelsville, Ohio	260	*	**	2			4	
Morgan County Courthouse Annex	9 E. Main St. McConnelsville, Ohio	300	*	**	2			4	
Morgan County Sheriff's Office	37 E. Main St. McConnelsville, Ohio	206	*	**	1			2	
York Elementary School	Ohio Route 555 Deavertown, Ohio	33	*	**	1			2	

* 3 CDV-777-1 in County

** Phone

SELF-PROTECTION OF EMERGENCY SERVICES
VITAL FACILITIES AND ESSENTIAL INDUSTRIES

1. List of Activities (list each activity separately)
 - a. All Police (See Annex E, Tab 1)
 - b. Fire (See Annex F, Tab 1)
 - c. Rescue Services (See Annex I, Tab 1)
 - d. All Hospitals
 - e. All Public Utilities (Electric, Gas, Telephone, and Water Sewage)
 - f. Essential Industries (Food processing, storage and distribution, pharmaceuticals)
2. RADEF Self Protection Objectives
 - A. Ability to detect, measure and assess the radiation environment and report this to their Headquarters.
 - B. Determine if and how long emergency operations may be conducted.
 - C. Minimizing exposures to personnel in the course of performing their duties.
3. Shelter Arrangements: The provisions taken to protect the personnel from excessive exposure to radiation. The protection should of the highest available since these emergency workers will be exposed to radiation during their missions.
4. Decontamination
 - a. Priority
 - b. Recommended Techniques
5. Training: Special Training is not required. The standard RADEF RM, RRT, RDO courses should provide the necessary information.
6. Equipment Requirements: Refer to the Shelter RP Capability Log, it should include all shelters mentioned in Paragraph 3.