

Annex 16 - Ingestion Exposure Pathway Emergency Planning Zone

- A. PURPOSE:** To describe the means to be used to minimize the effects of radioactive exposure on humans and the contamination of the food chain, resulting from an incident at a nuclear power plant, specifically Beaver Valley Power Station (BVPS).
- B. SITUATION AND ASSUMPTIONS**
- 1. Situation**
 - a. There is a 50-mile radius Ingestion Exposure Pathway Emergency Planning Zone (EPZ) associated nuclear power plants. The 50-mile EPZ associated with BVPS affects four (4) counties in the northern panhandle of West Virginia: Hancock County is in both the 10-mile plume EPZ and the 50-mile Ingestion Exposure Pathway EPZ; Brooke and Ohio Counties are wholly within the 50-mile EPZ and the northern half of Marshall County is in the 50-mile EPZ.
 - b. In the event of a radioactive release from BVPS the deposition of radiocontaminants on crops, other vegetation, bodies of surface water and ground surfaces could occur.
 - c. West Virginia, supported by appropriate federal agencies, has the responsibility to take protective actions in the event that a radiological incident causes contamination of human foods or animal feeds.
 - d. The State accepts the USFDA "Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Agencies" (1998) as the guidance concerning protective action guidance for dealing with accidental radioactive contamination of human food and animal feeds.
 - e. The decision to recommend protective actions generally is based on known releases to the environment, radiological measurements, laboratory analyses, and integrated dose projections in the pathway of concern.
 - f. Examples of protective action information for the general public to minimize exposure to contaminated foodstuffs are available through multiple sources. (See Attachments B & C).
 - g. Moderate or heavy rainfall may result in higher levels of deposition or surface contamination and may require protective actions at

greater distances or perhaps condemnation of more food because of higher levels of contamination.

- h. Radionuclides in the ingestion pathway may remain as a long-term problem since once in the soil, some may be taken up by vegetation including vegetables, fruit trees, grains and forage. This could affect future harvests.
- i. Attention must be paid to potentially large variations in deposition, weathering, uptake, and long-term behavior of environmental contaminants.

2. Assumptions

- a. West Virginia may form the State Recovery Task Force (SRTF) to coordinate State efforts.
- b. Members of the State Agencies necessary for making assessments will already be in place due to the "Early Phase" of the emergency.
- c. Prior to the Intermediate Phase, protective actions may have been taken based upon the Protective Action Guidelines (PAG) during the Plume "Early" Phase of the incident. It is assumed that decisions will be made during the Intermediate Phase on whether particular areas or properties from which persons have been relocated will be decontaminated or reoccupied, or condemned and the occupants permanently relocated. These actions will be carried out during the Late or "Recovery" Phase. Recovery, Re-Entry, Return and Relocation are addressed in Annex 5, 6 & 7 of this plan and ESF 06 and SPT 6 of the State EOP

C. CONCEPT OF OPERATIONS

1. Intermediate Phase

- a. The Intermediate Phase is the period of time beginning after the source and subsequent release have been brought under control and environmental measurements are available for use as a basis for decisions on Protective Actions and extending until the Protective Actions are terminated. This phase may overlap the early and late phases and may last from weeks to many months. For the purpose of dose projection, it is assumed to last for one year.
- b. Those products that could affect the human food chain (i.e., vegetation, fruits, milk, game, etc.), including animal feeds and water, will be held until the sampling has been completed.

- c. Emergency response operations within the Ingestion Exposure Pathway involves the identification of areas contamination.
 - (1) A "Fly Over" by federal resources may be requested by the State to help identify the contamination area.
 - (2) Once a contamination "Foot Print" is available, the State may conduct sampling and/or request assistance of or coordinate with the federal government for verification sampling.

Once contaminated areas are identified, protective actions will be taken to place restrictions, appropriate for protecting the public health, upon the use of contaminated food or water.

Emergency response operations will be coordinated by the State with support from the federal government. The county emergency management agencies are the operative arm in response and recovery supported by various state and federal farm service agencies, extension services, development authorities and other appropriate agencies as needed.

2. **Protective Actions**

- a. Protective actions, as announced by the State and counties, may require modifications of food production, processing, and distribution cycle pathways in affected areas both within and outside of the ingestion exposure pathway EPZ.
- b. Protective actions will be based upon known releases to the environment, radiological measurements, laboratory analyses, and/or integrated dose projections.
- c. Protective actions will not be recommended without documentation by state and federal agencies involved with the measured levels for both preventive or emergency protective actions and/or a consideration of the health, economic, and social impacts of such actions.

The public in the exposure EPZs will be notified about preventive and emergency protective actions through EAS messages, public service announcements, and/or normal news releases to local radio and television stations, and the print media.

Target audiences for public information concerning contamination through ingestion exposure will be the general public, farmers, processors and distributors in the food production process and water suppliers located within the Ingestion Exposure Pathway EPZ.

Farm animals should be protected within the entire ingestion exposure pathway EPZ by sheltering with priority given to dairy animals. They should be fed from stored feed and covered/stored water to prevent ingestion of radiologically contaminated feed and water. Once placed on stored feed and water, animals should not be permitted to graze until directed or advised by the State Recovery Task Force.

Game and fish within the pathway shall not be permitted to be consumed following an order by the Director of the WV DNR. A ban on hunting and fishing will be continued until it is lifted by order of the Director should sampled tissues be determined to be uncontaminated by radiation.

The state will disseminate information to the counties based on developed recommendations for implementation of protective actions within the designated ingestion EPZ. Once the protective action recommendation is made and disseminated, the primary agency for implementation is the county EMA.

D. ORGANIZATION AND RESPONSIBILITIES

1. Organization

a. Division of Homeland Security and Emergency Management (WV DHSEM)

The State is responsible for collecting samples which will then be sent to the Ohio Lab for data analysis to determine the impact of the incident, additional federal resources as necessary can be requested per the State Emergency Operations Plan (EOP). The team is composed of appropriate state agencies who may have the required expertise and resources available to perform this function.

b. County Emergency Management Agencies

The county EMA is the lead county agency associated with response to problems within their jurisdiction. The operative county, state and federal agencies from within the county dealing with human health and agricultural and natural resources will provide assistance.

c. Federal Emergency Management Agency (FEMA)

The federal response assistance for actual radiological emergencies is identified in the Nuclear/Radiological Incident Annex of the National Response Framework.

2. Responsibilities

a. State Emergency Management

- (1) WV Division of Homeland Security and Emergency Management (WV DHSEM)
 - (a) Serves as the coordinating agency for the state.
 - (b) Provides logistical support for the teams.
 - (c) Operates the Field Team Center (FTC).
 - (d) Serves as the contact for affected counties.
 - (e) Assists the counties with the coordination and disseminates of education information about radiation hazards, protective actions to be taken, and locations of contact points where additional information can be obtained.

- (2) West Virginia Department of Health and Human Resources (WV DHHR)
 - (a) Represent Health Department in decision process and provides public information support as needed.
 - (b) Coordinate with WVU and Marshall University for support through WV DHSEM.
 - (c) Office of Environmental Health Services
 - [1] Provides radiological expertise.
 - [2] Assists in determining type and location of sample
 - [3] Analyzes radiological data.
 - [4] Analyzes sample results to determine impact on the IPZ and assist in developing Protective Action Recommendations.
 - [5] Provides personnel for the Field Sampling Teams for the collection of milk,. Public drinking water samples, along with air sampling.
 - [6] Operates the Sample Reception Center
 - [7] Provides vehicles and drivers for the Field Sampling Teams.

- (3) Department of Agriculture (Ag)
 - (a) Assist in sample determination and locations.
 - (b) Provides agricultural expertise.
 - (c) Provides personnel for the Field Sampling Teams for the collection of poultry and poultry products animal feed, grain, meat and meat prodcuts, eggs and honey samples.
 - (d) Coordinates with the county EMAs and federal agencies for feed and water.

- (4) West Virginia University Extension Service
 - (a) Assist in public communication to help implementation of protective actions.
 - (b) Assist in sample determination and locations.

- (5) Division of Natural Resources (DNR)
 - (a) Assist in sample determination and locations.
 - (b) Provides expertise in fish and wildlife and other area of Natural Resources
 - (c) Provide personnel for the Field Sampling Team for the collection of game meat and fish sampling.
 - (d) Provide vehicles and drivers for the Field Sampling Teams

- (6) Department of Environmental Protection (DEP)
 - (a) Coordinates sampling activities of the Field Sampling Teams.
 - (b) Assist in sample determination and locations.
 - (c) Provides environmental and sampling expertise.
 - (d) Provide personnel for the Field Sampling Teams for the collection of surface water, air, soil and leafy vegetation samples.
 - (b) Provide vehicles and drivers for the Field Sampling Teams

b. County Emergency Management Agencies

- (1) County EMAs and their support agencies may co-locate, usually at a county EOC. Some support agencies are responsible for more than one county and share resource between the counties.

- (2) Assist the State with:
 - (a) Feed/water needs
 - (b) Locations of stored feed/covered water
 - (c) Areas to be sampled
 - (d) Obtain permission for access to sample locations

- (3) Implementation of Protective Actions.

- (4) Dissemination of information to the target groups.

c. Federal Emergency Management Agency

Provide assistance requested by the state.

E. OPERATIONS

1. State Emergency Operations Center (SEOC)
 - a. Coordinate state agencies activated for the emergency incident.
 - b. Dispatch personnel and equipment for the for Field Sampling Teams and Field Team Center (FTC).
 - c. Request federal government assistance to establish a "Foot Print" of the contaminated area.
 - d. Recommend a hold to be placed on products in the 50-mile EPZ that could affect the human food chain until sample results have been compiled.
 - e. Once the initial assessment has been conducted, coordinate all activities with counties.
 - f. Coordinate with the other states.
 - j. Coordinate news releases with the county EMAs.
2. Field Team Center (FTC)
 - a. Coordinate all sample collection.
 - b. Maintain communications with both the SEOC and Field Sampling Teams
 - c. Deliver collected samples to the Sample Reception Center
3. Sample Reception Center
 - a. Assist in the oversight of field samples
 - b. Assist in oversight of shipment to appropriate laboratories

4. County Emergency Management Agencies
 - a. Assist the sample teams with sample locations.
 - b. Obtain permission for access to sample locations.
 - c. Implementation of protective actions.
 - d. Coordination of news releases.

5. Laboratory sample analysis will be coordinated with the Ohio Department of Health per the Memorandum of Understanding. Once Federal Labs are available West Virginia laboratory sample analysis will be coordinated with those labs per the National Response Framework.

F. REFERENCES

1. Federal Guidelines
 - a. U.S. Department of Health and Human Services:
Accidental Radioactive Contamination of Human Food and Animal Feeds: Recommendations for State and Local Governments, prepared by: Center for Devices and Radiological Health, USFDA issued August 1998.
 - b. U.S. Department of Health and Human Services:
Supporting Document for Guidance Levels for Radionuclides in Domestic and Imported Foods, Docket No. 2003D-0558 July 2004
 - c. U.S. Environmental Protection Agency:
National Primary Drinking Water Regulations, EPA 40 CFR 141.
 - d. Federal Emergency Management Agency:
Guidance on Offsite Emergency Radiation Measurement Systems, Phase I - Airborne Release, FEMA REP-2, July 1987.
Guidance on Offsite Emergency Radiation Measurement Systems, Phase 2 - The Milk Pathway, FEMA REP - 12, September, 1987.
Guidance on Offsite Emergency Radiation Measurement Systems, Phase 3, Water and Non-Dairy Food Pathway, FEMA REP 13, October 1984
Guidance Memorandum IN-1, The Ingestion Exposure Pathway, February 26, 1988.
2. Information for Farmers

The Cooperative Extension Service, West Virginia University in cooperation with the Extension Service, U.S. Department of Agriculture and the Defense Civil Preparedness Agency, Department of Defense, "Disaster Handbook for Extension Agents," March 1983.

G. ATTACHMENTS

1. Attachment A: Ingestion Exposure Pathway EPZ Counties in West Virginia and Contiguous States
2. Attachment B: Protective Actions
3. Attachment C: Pre-Scripted Advisories