



U.S. DEPARTMENT OF ENERGY  
NATIONAL NUCLEAR SECURITY ADMINISTRATION

# FEDERAL RADIOLOGICAL MONITORING AND ASSESSMENT CENTER (FRMAC)



The Department of Energy's (DOE) National Nuclear Security Administration (NNSA) has the world's leading scientists, engineers and technicians from over 50 years of managing the nation's nuclear weapons program. When the need arises, DOE is prepared to respond immediately to any type of radiological accident or incident anywhere in the world with the following seven radiological emergency response assets.

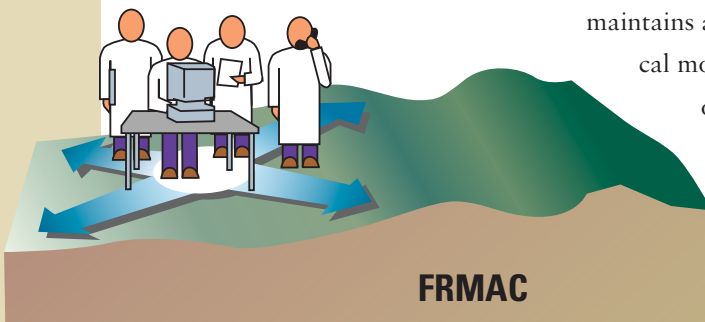
**AMS** (Aerial Measuring System) detects, measures and tracks radioactive material at an emergency to determine contamination levels. **ARAC** (Atmospheric Release Advisory Capability) develops predictive plots generated by sophisticated computer models. **ARG** (Accident Response Group) is deployed to manage or support the successful resolution of a U.S. nuclear weapons accident anywhere in the world. **FRMAC (Federal Radiological Monitoring and Assessment Center)** coordinates Federal radiological monitoring and assessment activities with those of state and local agencies. **NEST** (Nuclear Emergency Support Team) provides the nation's specialized technical expertise to the Federal response in resolving nuclear/radiological terrorist incidents. **RAP** (Radiological Assistance Program) is usually the first NNSA responder for assessing the emergency situation and deciding what further steps should be taken to minimize the hazards of a radiological emergency. **REAC/TS** (Radiation Emergency Assistance Center/Training Site) provides treatment and medical consultation for injuries resulting from radiation exposure and contamination, as well as serving as a training facility.

## INTRODUCTION

The Federal Radiological Monitoring and Assessment Center (FRMAC) is one of the emergency response resources, or assets, administered by NNSA. The Federal government

maintains an extensive response capability for radiological monitoring and assessment. In the unlikely event

of a major radiological incident, the full resources of the U.S. government will be coordinated to support state, local and Tribal governments. The efforts of 17 Federal agencies are coordinated under the Federal Radiological Emergency Response



COORDINATE MONITOR ASSESS



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Plan (FRERP) to integrate the Federal response to a radiological emergency. The FRERP assigns to DOE the responsibility to set up and initially manage a FRMAC. DOE's/NNSA's contribution to the FRMAC is the Consequence Management Response Team (CMRT). The CMRT draws from the NNSA Emergency Response Assets and becomes the NNSA coordination element for the FRMAC.

### MISSION

The FRMAC mission is to coordinate and manage all Federal radiological monitoring and assessment activities during major radiological emergencies within the United States in support of state, local and Tribal governments through the Lead Federal Agency (LFA). The LFA is the agency that is responsible for leading and coordinating all aspects of the Federal response.

### STEPS IN THE FRMAC RESPONSE

NNSA may respond to a state or LFA request for assistance by deploying a Radiological Assistance Program (RAP) team. If the situation requires more assistance than RAP can provide, upon request NNSA will activate a FRMAC. NNSA uses a phased approach to deploy NNSA elements of the FRMAC. The NNSA response begins with deployment of a CMRT Phase I team consisting of technical and management personnel who depart from Las Vegas within four hours of notification, and can reach any location in the United States normally within 6-10 hours. This team meets with the LFA and state to review what has occurred and how serious it is, establishes the FRMAC, what FRMAC can do to

help and how to do it, and to identify the best location for a working FRMAC. The team initiates all technical components of a FRMAC response, and is reinforced soon after by DOE (CMRT Phase II) and interagency personnel who enable the FRMAC to operate around the clock. If required, the full interagency FRMAC can be operational in 24-36 hours after the LFA or state has asked for help. A FRMAC's size is tailored to the event and may consist of as few as 60 or as many as 500 people, depending upon the needs of the emergency situation.

**A FRMAC field team collects water and soil samples.**





### FRMAC ACTIVITIES INCLUDE:

- Coordinating Federal offsite radiological environmental monitoring and assessment activities
- Maintaining technical liaison with state, local and Tribal governments
- Maintaining a common set of all offsite radiological monitoring data
- Providing monitoring data and interpretations to the LFA, state, local and Tribal governments

The initial monitoring is focused on the protection of the public and the investigation of the type, amount, and extent of the radiological release. Monitoring continues until all of the area where radioactivity was released is fully evaluated and the effects are known. Any monitoring results that show an immediate threat to public health are promptly reported. All raw data coming into the FRMAC from field teams is quickly reviewed and given to the LFA and state representatives. Then the raw data is processed, evaluated and summarized, and approved by the FRMAC Director for distribution outside the FRMAC. This evaluated technical information is given officially to the LFA and state at the same time.

At some mutually agreeable time following the emergency phase, NNSA will transfer responsibility of managing the FRMAC to the Environmental Protection Agency. NNSA and other Federal agencies will continue to provide resources for as long as is necessary to complete the Federal response to the emergency.

### FRMAC PRODUCTS

The FRMAC will present the environmental radiological data to the LFA, state and local authorities in a usable format and in a perspective understandable by managers and decision-makers.

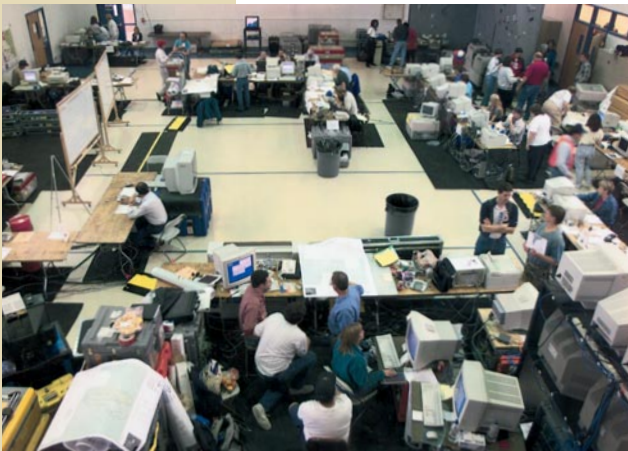
FRMAC products include:

- Predictive plots of plume dispersion and dose rates prepared using ARAC
- Aerial survey data provided by AMS

coordinate  
monitor  
assess



- Reviewed raw data including data from samples of water, air particulates and reactive gases, soil, vegetation, food products, and any other sample media consistent with potential health hazards
- Summarized data such as external exposure rate data taken in certain sectors, districts, or population areas over a given time period
- Radiation contours showing where the contamination is located and the associated radiation levels, the contour levels may be in exposure rates or isotopic concentrations
- Contour levels applicable for protective action guidance, such as contours of the projected four-day, one-month, first-year, second-year, and fifty-year whole body dose equivalent from external radiation for outdoor locations and/or for sheltered locations
- A comprehensive and traceable compilation of all environmental radiological data
- A geographic information system which provides for the capture, storage, retrieval, analysis and display of spatial data



A FRMAC facility is set up to coordinate monitoring and assessment activities.

## A GROUP EFFORT

The main NNSA emergency response assets that supplement and are integrated into FRMAC capabilities are: RAP, ARAC, AMS, and REAC/TS. These assets are used to detect and monitor radiation, measure the concentration of radiation in the air and on the ground, and to evaluate current weather conditions and forecasts which may affect the radiation impacts. Other Federal agencies provide key professionals specializing in technical areas of importance to the Federal monitoring assessment activities. In addition, state, local and Tribal emergency personnel are invited to work directly with the FRMAC.



FRMAC utilizes specialized equipment to conduct radiological monitoring.