

ANNEX B

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LOCAL RADIOLOGICAL PROTECTION ANNEX

'88 AUG 11 P5:53

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Revised 12/86

NUCLEAR REGULATORY COMMISSION

Docket No. 50-322-06-3 Official Exh. No. 22
 In the matter of LILCO
 Staff _____ IS OBTAINED
 Applicant NOT OBTAINED _____
 Intervenor _____ REQUESTED _____
 Cont'g Off'r _____
 Contractor _____ DATE _____
 Other _____ Witness 7-11-88
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LOCAL RADIOLOGICAL PROTECTION ANNEX

I. INTRODUCTION:

The Radiological Protection Annex is a part of the local emergency operations plan, and describes the activities of the local radiological protection personnel during the response to any incident or emergency involving radioactive materials. It also provides for certain forms of assistance in the event of a hazardous materials incident or other emergency involving the need for technical knowledge or special manpower requirements.

The Annex narrative contains basic information and concepts of operations and response. The Annex is supported by specific information in appendices on staffing, procedures and special resources.

II. PURPOSE:

In an emergency, the purpose of the Radiological Protection Program is to initiate and coordinate radiological response activities pending the arrival of responsible health experts, to provide support assistance to such experts, and to assist in response to hazardous materials and other emergencies.

Specifically, these activities include the following:

Identifying the nature and extent of the problem

Insuring the communication of vital information to local and State officials

Advising on hazards for the protection of the public and emergency workers

Monitoring radiation levels where appropriate

Analyzing, displaying and explaining technical data and related information.

III. ASSUMPTIONS:

A. Individuals with specialized training are necessary for all levels of government and in all emergency services or other organizations which may respond to radiological and hazardous materials incidents.

B. Transportation accidents can occur nearly anywhere, without warning, and may create special hazards to those involved, nearby public or emergency responders.

C. Radiological or hazardous materials incidents at fixed sites may potentially be more serious than transportation incidents, but pre-planning can be done in more detail at fixed sites.

D. Since radiation cannot be detected with the five senses, instruments are needed to determine the presence or verify the absence of radioactive materials.

E. Instruments are an asset only when properly handled by appropriately trained individuals, and when correctly maintained and checked on schedule.

F. Radiological experts from the Health Department might not arrive on scene for several hours. In the meantime, many activities may be necessary to deal with the situation and limit escalation.

G. The response needed can vary according to the situation, from one to many radiological personnel. Only in rare circumstances would activation of the Emergency Operations Center be necessary.

H. Response to hazardous materials incidents often requires knowledge and skills similar to radiological response.

I. Analysis or response to other disasters or potential emergencies may require scientific or technical knowledge and skills similar to those possessed by some radiological personnel. Also, extraordinary manpower requirements may be met by activation of radiological personnel.

IV. CONCEPT OF OPERATIONS:

A. RESPONSIBILITIES:

State Executive Law, Article 2-B, recognizes that local government is the first line of defense in an emergency. This is based not only on the responsibilities of local officials for their jurisdictions, but also on the local proximity of local resources to the hazardous situations which threaten nearby people and property.

Under Section 201 of the Public Health Law, the Health Department is responsible for protecting the public from ionizing radiation. Primary responsibility falls on the Local Health Department (usually at the county level), with the State Health Department providing appropriate assistance, especially in such technical areas as radiological protection. Nevertheless, there are some well-qualified local health units certified in radiological protection by the State Health Department. Expertise in radiological health is available from the State Department of Health, Bureau of Environmental Radiation Protection, and can be contacted through the 24-hour State Warning Point.

When an incident involving radioactive materials occurs it is appropriate to seek technical assistance as soon as possible. The arrival of technical experts may be delayed for several hours depending on the incident location and time, and the ability to rapidly alert and mobilize appropriate individuals.

In most cases, the critical time period for emergency response actions is early in the incident. Local response forces must, therefore, be able to carry out their normal essential activities safely with the added circumstance that radiation may be present at the scene. Since these actions often cannot await the arrival of radiological experts, local responders should have a basic common-sense knowledge of radiation protection. This will enhance the safety of the responders and the nearby public.

Also for large-scale or widespread problems, the number of potentially affected individuals is large and could greatly burden the relatively small number of available radiological health experts. An understanding of basic radiation principles would enhance emergency workers' efforts.

Communities are better prepared to cope with the situation if they can call upon locally available individuals knowledgeable in basic radiation protection. These individuals can provide technical assistance and advice until the experts arrive and can assist the experts when requested.

B. ORGANIZATION:

Each county and several independent cities should have an active Radiological Protection Program, staffed and organized, usually with volunteers, to provide response assistance to any emergency or incident involving radioactive materials.

The Radiological Protection Program makes use of a variety of personnel who are trained to deal with radiological emergencies. Radiological personnel obtain information and provide advice at an incident scene but are not responsible for the direction or handling of the incident. They serve as advisors to the on-scene commander who makes the decisions at the scene. They can also provide similar assistance with hazardous materials emergencies.

The Radiological Officer (RO) is the principal technical expert on radiological matters for the local emergency management director. Additional Radiological Officers should be available as assistants and to provide backup in case the chief RO is not available. The RO is the Radiological Protection Program manager and serves as overall coordinator of the radiological activities, receiving direction and advice from the State Radiological Officer in the State Emergency Management Office and from the Department of Health.

The Radiological Response Team (RRT) member is an intermediate level manager within each major local service or organization who is familiar with the details of that organization's role, procedures and capabilities. This individual directs and coordinates the radiological activities of the service. With additional training he can also assist in hazardous materials incidents. If a responding service or organization does not have an RRT member activated for the response, the Radiological Officer performs this function.

A Radiological Monitor (RM) is an individual trained in basic radiation protection and in the use of radiation detection instruments. They are generally directed by RRT members from their organization or by RO's. The function of an RM is to obtain important information to insure safety of those at the scene by providing advice and detecting the presence of radiation and contamination. The RM only makes radiological measurements which are necessary to handle the scene safely while awaiting the arrival of the Health Department radiological experts. Conduct of detailed radiological survey and supervision of cleanup are not their functions.

A critical preparedness factor is to insure the rapid availability of properly operating radiation detection instruments by trained individuals for all emergency support services, vital facilities and essential industries. For a large-scale emergency, instruments may be distributed from bulk storage and special training arranged to insure the necessary public protection in shelters.

The involvement of industry, research and medical expertise in radiological protection can be of great benefit. Where possible attempts should be made to recruit personnel and use capabilities which these resources represent.

Arrangements should be made with certain hospitals to admit accident victims who may be contaminated. This would be appropriate for those hospitals who have had appropriate staff trained in contaminated patient handling or experience in the handling of radioactive materials through their nuclear medicine program.

C. ALERT AND NOTIFICATION:

When an incident occurs which involves radioactive materials, the County or City Health Department should be notified. Similarly the 24-hour State Warning Point must be notified as soon as possible and provided all available information. The State Warning Point will follow its alert procedures and insure notification of the State Department of Health and the State Emergency Management Office (SEMO).

The State Department of Health will immediately initiate its response actions and contact local health officials. SEMO will alert the local emergency management office. The local Emergency Management Office then should contact the Radiological Officer who arranges for and coordinates the needed local response, pending the arrival of appropriate health experts.

V. RESPONSE:

A. LEVELS OF ACTIVATION:

It must be recognized that the degree of response to an incident may vary according to circumstances. Most incidents will be minor and may require the activation of only one or two radiological personnel to the scene.

In more serious situations where many people or large areas are involved, a more structured team approach is required. It may even be necessary to activate radiological staff to the local Emergency Operations Center (EOC), especially if local agency representatives are at the EOC.

For widespread problems, a network of reporting sources is needed for information on radiation exposure rates. The EOC radiological staff should include a radiological officer and analysis staff such as readout analysts and plotters. Monitor data can then be analyzed in the EOC location to help develop advice for decision-makers on protective actions.

B. EVALUATING THE SITUATION:

Responders should be aware of all hazards at an accident scene and insure their own protection while providing assistance.

If only radiological hazards are present, immediately provide life-saving assistance.

If other hazardous materials are present, their threat must be evaluated. Special resources such as CHEMTREC, the DOT Guidebook, and other references and resources should be used. Hazardous Materials Response Procedures should be followed in addition to those actions included in this Annex.

Isolate the area and identify the probable nature and location of the radioactive material. Obtain any paperwork which describes the package contents.

Wear and periodically check (at least hourly) self-reading dosimeters when in a radiation area. Provide a dosimeter to other individuals who must remain in the radiation area and check them periodically. Make sure they are returned when the threat is over.

Approach any radiological containers and packages from the upwind direction while monitoring with the CDV-700 Geiger Survey Meter. Do not enter any area where more than 2 mR/hr is detected, unless engaged in rescue. Carefully examine package labels without unnecessarily handling or disturbing the packages. Observe and report the condition of the packages. If the package contents is obviously spilled or containers are involved with fire, keep away.

C. COMMUNICATING INCIDENT INFORMATION:

Notify the Local Health Department and the Local Emergency Management Office.

Notify the State Warning Point.

The following information will be needed to properly evaluate the situation and to obtain the appropriate assistance:

- Time and location of incident
- Description of incident
- Name of shipper, carrier or facility involved
- Injuries
- Isotope(s) involved
- Activity in Curies (Ci), mCi, or uCi
- Form (sealed source, solid, liquid, special, etc.)
- Description of container or package
- Type of label (Radioactive I, II or III)
- Container or package damage, signs of spill
- Protective measures undertaken
- Organizations responding at the scene
- Technical assistance at the scene
- Name of contact at the scene
- Phone No. or means of contacting the scene

D. ON-SCENE ACTIVITIES:

Periodically brief the on-scene commander about the radiological situation. Provide advice to minimize exposure and avoid spread of contamination.

Find out if the radioactive material present can be detected by the instrumentation available. Emergency management instrumentation can measure gamma radiation and detect many beta emitters, but cannot detect alpha radiation.

If only alpha emitters are present, protect against the primary hazard of internal contamination from inhalation, ingestion, or through open wounds.

Prohibit eating, drinking and smoking at the scene.

After rescue and identification of the material, isolate the area. The exposure rate at the exclusion boundary should not exceed 2 mR/hr.

If fire is present, avoid the smoke and the areas beneath. Fight fires as if toxic materials are present.

Advise that involved persons should be detained pending health department release and that the names and addresses of all those at the scene should be collected.

Monitor individuals who may have been contaminated by radioactive materials removed from any containers and packages.

Keep records on all monitoring done and the results. Specify the instrument used by serial number and the name of the monitor.

Seek health department advice on contamination problems which affect individuals.

Send any possibly contaminated accident victim to a hospital with the capability to deal with such cases. Notify the hospital in advance of such patient transport, so they can prepare for admission. Minimize the spread of contamination by wrapping the patient in a blanket. Advise that the ambulance should be monitored following patient delivery and before being used elsewhere. If appropriate, send a monitor with the ambulance.

E. EXPOSURE LIMITS:

It is possible that emergency workers maybe exposed to radiation or may be contaminated while carrying out important activities. The underlying radiation protection principle is to limit their exposure to as low as reasonably achievable, within the whole body limits prescribed for radiation users, which is 5 rem per year. NOTE: For emergency response 1 rem = 1 R.

In an emergency situation, these guidelines may not provide the flexibility required for essential emergency operations. In these cases, all possible measures will be taken to limit radiation exposure of emergency workers. If possible, when a dose above 10 rem is expected, use emergency workers above the age of 45, and who volunteer to accept the exposure.

For lifesaving activities, planned exposures should not exceed 75 rem whole body. The hands and forearms may receive an additional dose of up to 200 rem (i.e., a total of 275 rem). Authorization to receive these exposures should be obtained from the Department of Health if time permits.

For other extraordinary activities associated with rescue of endangered or injured personnel, limit any planned dose to 25 rem whole body. The hands and forearms may receive an additional dose of up to 75 rem (i.e., a total of 100 rem).

Have individuals working in a radiation area wear a self-reading radiation dosimeter. These are to be checked frequently, but at least hourly. Keep a record of all exposures to emergency workers.

Protective Action Guides are aids to decisionmaking, especially when large areas are involved, and are based on projected population doses. They are used for planning and response to nuclear power plant accidents and are unlikely to be of value for other accident types. If the whole body dose of 1 rem or a thyroid dose of 5 rem is expected, protective actions should be considered, and will usually result in a decision to shelter the population. A whole body dose of 5 rem or a thyroid dose of 25 rem requires consideration of protective actions and will often result in a decision to evacuate.

For decisionmaking on large exposures, refer to the NCRP 42 Penalty Table (p.51) to insure that the benefit outweighs the risk.

F. DECONTAMINATION:

DECONTAMINATION SHOULD ONLY BE ATTEMPTED UNDER EXTREME CONDITIONS OF SERIOUS NEED AND THEN ONLY BY KNOWLEDGABLE AND EQUIPPED EXPERTS. UNLESS CAREFULLY PERFORMED IT MAY INCREASE THE HAZARD.

The purpose of decontamination during the response phase is to remove radioactive material from locations which are immediately harmful to individuals. This includes contamination of people, clothing, vital equipment, or areas which are critical to the response. Individuals removed from contaminated areas should be monitored prior to release or entry into community shelters to avoid spreading contamination. Monitors and decontamination staff should wear protective clothing to simplify their own cleanup.

The presence of contamination is determined by radiological monitoring with the CDV-700 Geiger Survey Meter or equivalent. However, since this instrument cannot detect the presence of alpha emitting materials, knowledge of the material involved is important.

To avoid confusing gamma radiation from undamaged packages with the presence of contamination, monitor people and equipment away from gamma sources. If possible, use a controlled area already monitored and found to be free of radiation.

Contamination is indicated by any reading clearly above background. 0.1 mR/hr can be used as the level which indicates contamination.

Decontamination and containment procedures for different needs are:

- BODY SURFACES. Wash the area until clean.
(Radiation readings decrease to below 0.1 mR/hr)
- CLOTHING. Remove and pile in secure area or seal in a clear plastic bag.
- VITAL EQUIPMENT. Carefully wash or wipe clean.
- GROUND SURFACES. Cover with plastic. Do not decontaminate.
- CRITICAL VEHICLES. Hose off exterior, avoiding runoff.
Contain runoff if possible. If interior is contaminated,
take the vehicle out of service.

Remember that all equipment and materials (towels, rags, etc.) used in decontamination will become contaminated and must be bagged and secured for final disposition by the experts.

DO NOT PERFORM ANY UNNECESSARY DECONTAMINATION.

IF IN DOUBT, CONSULT THE EXPERTS.

G. MILITARY INCIDENTS:

In the case of military aircraft accidents assume that nuclear weapons may be involved, and notify the nearest U.S. Air Force Base, reporting the accident as a "suspected BROKEN ARROW."

Carefully attempt to locate and rescue all injured personnel.

Beware of the presence of high explosives, which may be detonated by minor shock.

Radioactive contamination may not be detectable with emergency management instruments. Weapons involve alpha emitters.

Avoid the front and rear of the aircraft.

Secure the area and wait for military assistance.

VI. RECOVERY:

The Department of Health will determine the recovery actions needed following a radiological incident.

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Decisions will be based upon incident severity, results of sampling, reentry criteria for evacuated areas, and the analysis of exposure pathways which may be involved.

Utilization of emergency management and emergency services radiological resources will depend on the situation, the tasks to be undertaken, and the training of available personnel.

Final cleanup of a spill of radioactive material is the responsibility of the spiller. The Department of Health will monitor the cleanup process to insure that public safety objectives are met.

VII. ADDITIONAL REFERENCES:

New York State Radiological Response Plan

CPG 1-8 Guide for Development of State and Local Emergency Operation Plans

CPG 1-8A Guide for the Review of State and Local Emergency Operation Plans

CPG 1-20 Guide for the Design and Development of a Local Radiological Defense Support System

Local In-Place Shelter Annex

Local Mass Evacuation Management Annex

Local Hazardous Materials Annex