

***NEW YORK STATE
COMPREHENSIVE EMERGENCY MANAGEMENT PLAN***

**RADIOLOGICAL HAZARDS ANNEX
FOR FIXED NUCLEAR FACILITIES**



**PREPARED BY THE NEW YORK STATE
DISASTER PREPAREDNESS COMMISSION**

Andrew M. Cuomo, Governor

July, 2014

Disclaimer

Certain information and sections of this plan have been removed for privacy and public safety reasons.

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**RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
SECTION I: GENERAL CONSIDERATIONS/PLANNING GUIDELINES**

***New York State Comprehensive Emergency
Management Plan:***

**Radiological Hazards Annex for Fixed Nuclear
Facilities**

Section I: General Considerations and Planning Guidelines

1.0 INTRODUCTION

New York State has continuously addressed the matter of the safety of its citizens in regard to ionizing radiation. The New York State Department of Health (DOH) is the State agency having primary responsibility in this particular area. The status of primary responsibility was designated by the former State Atomic Energy Council in 1971 and later formally affirmed by the Governor of New York in his letter of March 18, 1975, to the United States Nuclear Regulatory Commission.

The New York State Public Health Law (Section 206) gives the Commissioner of Health broad authority for protecting the health and life of the people of New York State. Section 201 of that law further assigns the Commissioner of Health the responsibility for the protection of the public health regarding the use of ionizing radiation. The State Sanitary Code, Part 16, which implements the Public Health Law, includes requirements relating to accidents, emergencies, or incidents. Radiation dose limits are prescribed therein. Upon the release of radioactive materials, which exceed these limits, from any radiological installation into an uncontrolled area, certain actions are required to correct the situation and to prevent exposure to the public.

To carry out these actions the State developed and implemented an emergency plan for radiation accidents in 1971. This plan provided for a coordinated effort among Federal, State, and local agencies, to prevent or minimize hazards to life and health in the event of a radiological emergency. The plan assigned the State Health Commissioner the responsibility for recommending protective actions. It also recognized that the primary responsibility for implementing actions to mitigate the effects of a radiological emergency rests with the local political subdivisions affected by the emergency.

Since that State emergency plan for radiation accidents was written, certain key events have occurred manifesting a need for extensive revision to that Plan. Article 2-B of the New York State Executive Law (State and Local Natural and Manmade Disaster Preparedness) was enacted in 1979 which, among its

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provisions, created a State Disaster Preparedness Commission (DPC). This Commission is charged with a wide variety of powers and responsibilities designed to provide a comprehensive emergency system to prevent or react to emergencies or disasters within the State.

Among these responsibilities are:

- Develop and maintain a State emergency plan and to assist local government in developing such plans
- Direct State disaster operations and coordinate State operations and resources with local disaster operations
- Coordinate recovery operations and recovery assistance
- Provide training to assure that responsible personnel are familiar with plans and procedures

Article 2-B was amended in 1981 to deal with certain aspects of Radiological Emergency Preparedness specifically. The law provides that counties are the first line of defense in handling emergencies subject to an assumption of responsibility by the State pursuant to a State Declaration of Disaster Emergency (see Executive Law, Section 24, McKinney's Consolidated Laws of New York, Volume 18).

In 2012, the Nuclear Regulatory Commission and the Federal Emergency Management Agency implemented a final radiological emergency preparedness rulemaking which included the consolidation of various planning requirements and guidance documents. Specifically, the FEMA Radiological Emergency Preparedness (REP) Program Manual was issued in April 2012 that detailed requirements for offsite response organizations (OROs) to implement the planning standards and criteria contained in NUREG-0654-FEMA-REP- I: "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants". New planning requirements included criteria for Hostile Action Based (HAB) events, changes to an 8-year exercise planning cycle and scenario variability requirements, among others. Accordingly, New York has addressed these requirements in the current plan, in Procedure O, and within site specific Annexes.

The State Office of Emergency Management (NYSOEM), as the staff arm of the DPC and its Chair, is responsible for developing, implementing, and maintaining comprehensive emergency plans and procedures for prompt reactions to potential emergencies at nuclear power plants in New York, in bordering states and in Canada.

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2.0 PURPOSE AND RELATION TO THE NYS CEMP

The State Comprehensive Emergency Management Plan (CEMP) has been structured into three distinct, but interconnected volumes. These are:

- Volume 1: All-Hazard Mitigation Plan
- Volume 2: Response and Short-Term Recovery
- Volume 3: Long-Term Recovery Plan

The purpose of the CEMP is to identify the State's overarching policies, authorities and response organizational structure that will be implemented in an emergency or disaster situation that warrants a State response. In addition, the CEMP identifies the lines of coordination and the centralized coordination of resources that will be utilized in directing the State's resources and capabilities in responding to and recovering from a disaster. Further, the CEMP serves as the foundational framework for the State's response levels, and serves as the operational basis of which other functional and hazard-specific annexes will build upon.

The purpose of the Radiological Hazards Annex for Fixed Nuclear Facilities (formerly the Radiological Emergency Preparedness Plan) is to minimize the risk to the health of the inhabitants of the State of New York in the event of a radiological emergency. This will be accomplished by identifying measures to prevent and mitigate such an emergency by developing mechanisms to coordinate Federal, State, local and private sectors resources, prior, during and after such an emergency; and by providing for recovery following a radiological emergency. A radiological emergency is an accident at a nuclear power plant that may result in the loss of control of a radiation source, leading to a hazard or potential hazard to health or property.

This Hazard Specific Annex also ensures that the strategic and broad-based nature of the State Comprehensive Emergency Management Plan is more defined to allow the State to adequately prepare for, respond to and recover from a major radiological emergency. This will include utilizing individual agency activities as well as the activities of the State's Functional Branches, as appropriate. Further, this Annex identifies the key mechanisms in coordinating with the local response and identifies the lines of coordination to interoperate with the Federal response via the National Response Framework (NRF).

3.0 SCOPE

This Hazard Specific Annex applies to any radiological emergency at a fixed nuclear facility within the borders of New York State, contiguous states or in the Province of Ontario, Canada that warrants a response beyond standard agency statutory obligations to a collective State Disaster Preparedness Commission (DPC) response. This Annex applies to all State agencies and authorities that may be directed to respond to such an event, and builds upon the process and

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structure of the State Comprehensive Emergency Management Plan by addressing unique policies, situations, operating concepts and responsibilities. Response operations to this type of event will encompass the efforts identified in this annex and utilize existing capabilities of other functional and hazard-specific annexes to the State Comprehensive Emergency Management Plan. Further, this Annex acknowledges that local and State response capabilities may be exceeded, necessitating the use of Federal agencies and resources.

It is important to note that several other State plans, either agency-specific or multi-agency, may be utilized to support the implementation of this Annex. For the purpose of redundancy, such plans are not reiterated here, but referenced where appropriate.

Figure 1 below identifies the structural relationship between the State CEMP, its annexes, and this Radiological Hazards Annex for Fixed Nuclear Facilities. In reviewing, note the linkage to other documents that fall under Volume 2. Additionally, several other documents exist in State OEM to manage the activities of the EOC in response to the event.

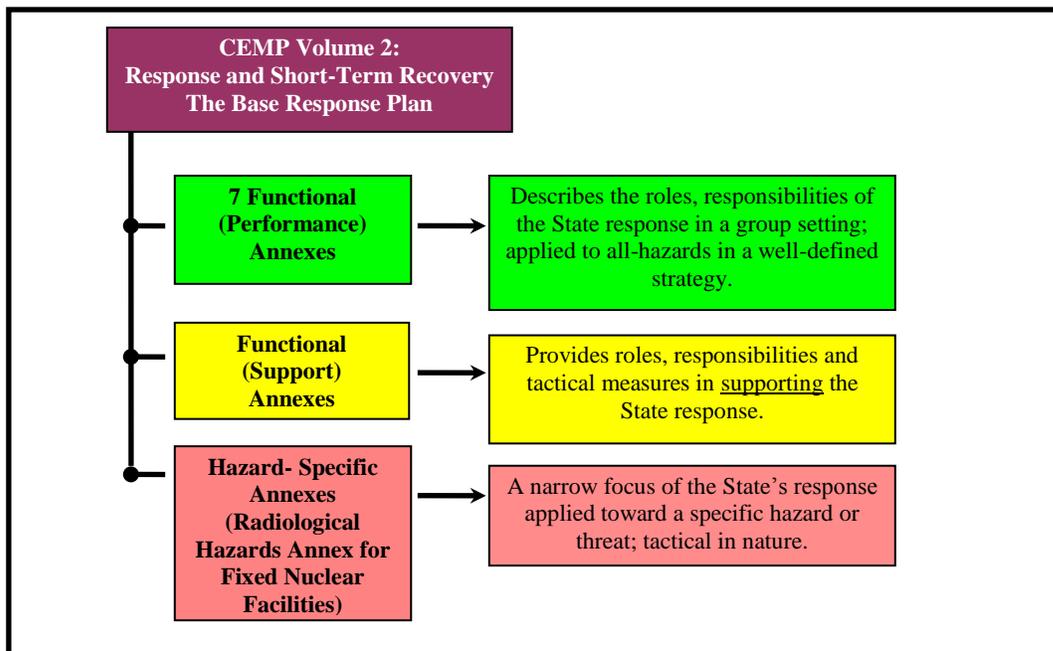


Figure 1: *Structural Relationship of the State Comprehensive Emergency Management Plan and the Radiological Hazards Annex for Fixed Nuclear Facilities.*

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4.0 SITUATION

4.1 Fixed Nuclear Power Facilities

Within New York State, there are three nuclear power plant sites that are briefly described below. The contiguous states of Connecticut, New Jersey, Vermont and Massachusetts, and the Province of Ontario have operating sites that could impact portions of New York State and therefore, are referenced in this plan.

4.1.1 Indian Point Energy Center Site

Indian Point site is located on the east bank of the Hudson River in the Village of Buchanan in Westchester County. Rockland, Putnam, and Orange Counties are in the 10-mile Emergency Planning Zone (EPZ). The site is 24 miles north of the New York City line and is comprised of 239 acres containing three units of which two are operating. Indian Point Units 2 and 3 are Pressurized Water Reactors (PWR) owned and operated by Entergy Nuclear Northeast. Indian Point Unit One is not operable. Indian Point Unit 2 produces 1020 megawatts and Indian Point Unit 3 produces 1025 megawatts of electricity. Westinghouse Electric Corporation designed the two operating plants.

4.1.2 Robert E. Ginna Nuclear Power Plant Site

Robert E. Ginna site is located on the south shore of Lake Ontario in Wayne County; it is a 426-acre area 20 miles east northeast of Rochester, 45 miles west southwest of Oswego. A portion of Monroe County is also in the 10-mile EPZ. The reactor is a PWR, which produces 581 megawatts of electricity. It is owned and has been operated by Constellation Energy Nuclear Group since 2004. Constellation Energy Nuclear Group, a joint venture between Exelon Corporation and EDF Group, owns 100 percent of R.E. Ginna Nuclear Power Plant. Westinghouse Electric Corporation designed the plant.

4.1.3 Nine Mile Point and James A. FitzPatrick Nuclear Power Plant Site

The Nine Mile Point/J.A. FitzPatrick site is located in Oswego County, on the south shore of Lake Ontario, in the Town of Scriba, it is seven miles northeast of the City of Oswego, and 36 miles northwest of Syracuse. It is an area of 1,500 acres and contains three operating Boiling Water Reactors (BWR). Nine Mile Point Unit 1 produces 621 megawatts and Nine Mile Point Unit 2 produces 1140 megawatts of electricity. Constellation Energy purchased Nine Mile Point in 2001 from Niagara Mohawk Power Corporation and other utilities. Constellation Energy Nuclear Group, a joint venture between Exelon Corporation and EDF, now owns 100 percent of Unit 1 and 82 percent of Unit 2. Long Island Power Authority owns 18 percent of Unit 2. Exelon, through its subsidiaries, owns 50.01 percent of CENG.

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The James A. FitzPatrick Nuclear Power Plant, owned and operated by the Entergy Nuclear, Northeast produces 838 megawatts of electricity and has been operating since 1975.

4.2 Other Non-Commercial Reactors in New York State

4.2.1 Knolls Atomic Power Laboratory

Knolls Atomic Power Laboratory operates two sites in the Schenectady, New York area: the Knolls site in Niskayuna and the Kenneth A. Kesselring site in West Milton, 19 miles to the northwest. Niskayuna is the primary site for the KAPL, focusing on the design and development of naval propulsion plants and reactor cores. The West Milton site operates land-based prototypes of shipboard reactor plants. This site is also used to train officers and enlisted personnel for the U.S. Navy's fleet of nuclear-powered vessels.

4.2.2 Brookhaven National Laboratory

Three research reactors operated for several decades and have ceased operations. The Brookhaven Graphite Research Reactor was used for research in medicine, biology, chemistry, physics and nuclear engineering. It was shut down in 1969. The High Flux Beam Reactor, which began operations in 1965, was closed in 1999. The Brookhaven Medical Research Reactor, operating from 1959-2000, was built specifically for medical research. All are in various stages of decommissioning.

4.3 Contiguous States or Provinces

4.3.1 Millstone

Millstone is on the Connecticut shore of Long Island Sound, on the east shore of the Niantic Bay, three miles west-southwest of New London City limits, and 39 miles southeast of Hartford. The main station area is located on a peninsula jutting into Long Island Sound, and is 7.5 miles northwest of Fishers Island and 8 miles north of Plum Island both of which are in Suffolk County. (Plum Island is a U.S. Department of Agriculture (USDA) Animal Disease facility.)

The Millstone site is 500 acres on which there are three reactors. Millstone Unit One is permanently shut down. Millstone Unit Two is a PWR producing 882 megawatts of electricity, and has been operating since 1975. Millstone Unit Three (PWR) produces 1,155 megawatts of electricity. The reactors are primarily owned and operated by Dominion Nuclear Connecticut Inc.

The plume exposure EPZ responsibilities of New York State and Suffolk County/Town of Southold with respect to Fishers Island and Plum Island are described in each community's local radiological emergency response plan. The

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USDA's plan for Plum Island was directly submitted to the Federal Emergency Management Agency (FEMA). Both of these plans have been approved by FEMA as part of the State of Connecticut's submittal of Millstone site emergency response plans. Notification procedures, protective action recommendations and emergency response actions for Fishers and Plum Islands are in accordance with the Connecticut State Plan.

4.3.2 Vermont Yankee

Vermont Yankee Nuclear Power Station is located in Vernon, Windham County, in southeastern Vermont and is 27 miles from the New York border. It has one reactor that is a BWR, producing 620 megawatts of electricity. It is owned and operated by Entergy Nuclear, Northeast and has been operating since 1972.

4.3.3 Oyster Creek

Oyster Creek Nuclear Power Station is located in Forked River, Lacey Township, (Ocean County), New Jersey and is 45 miles from Staten Island. The station has one BWR, producing 619 megawatts of electricity and is currently owned and operated by Exelon Nuclear. The unit has been operating since 1969.

4.3.4 Pickering Nuclear Generating Station

Pickering Generating Station is located on Lake Ontario in Pickering, Ontario, Canada. It is approximately 20 miles northeast of the City of Toronto, approximately 18 miles from the New York State border and 36 miles from the New York State land area. Pickering could affect some 50-mile ingestion pathway counties in Western New York. There are currently six CANDU (Canadian Deuterium Uranium) reactors each with a gross electrical generating capacity of 431 megawatts. The Pickering site is owned and operated by Ontario Power Generation (OPG) and has been operational since 1971.

4.3.5 Darlington Nuclear Generating Station

Darlington Nuclear Generating Station is a Canadian nuclear power station located on the north shore of Lake Ontario in Clarington, Ontario. The facility derives its name from the Township of Darlington, the former name of the municipality in which it is located. Darlington could affect some 50-mile ingestion pathway counties in Western New York. The Darlington station is a large nuclear facility and comprises 4 CANDU nuclear reactors located on the northern shore of Lake Ontario, having a total output of 3,512 MWe (capacity net) when all units are online. The facility was constructed in stages between 1981–1993 by Ontario Hydro. Unit 2 was brought online in 1990, Unit 1 in 1992, and Units 3 and 4 in 1993. Since 1999, Ontario Power Generation (OPG) has operated the Darlington Station.

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5.0 PLANNING BASIS

5.1 Emergency Classifications

The Nuclear Regulatory Commission has established, and this Plan adopts, four emergency classification levels (ECLs) for nuclear power plants. The NRC requires that, when an initiating condition for any of the four emergency classification levels exists, the Nuclear Facility Operator (NFO) shall provide early and prompt notification to both State and local officials. The four emergency classification levels are:

Emergency Classification Level	Description
Notification of Unusual Event (NUE)	Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.
Alert	Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.
Site Area Emergency	Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near site boundary.
General Emergency	Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Table 1: Emergency Classification Levels

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The following information summarizes the actual operating experience, both by emergency classification level, and by cause category as reported by fixed nuclear facilities in the United States over the past decade (see Figures 2 and 3):

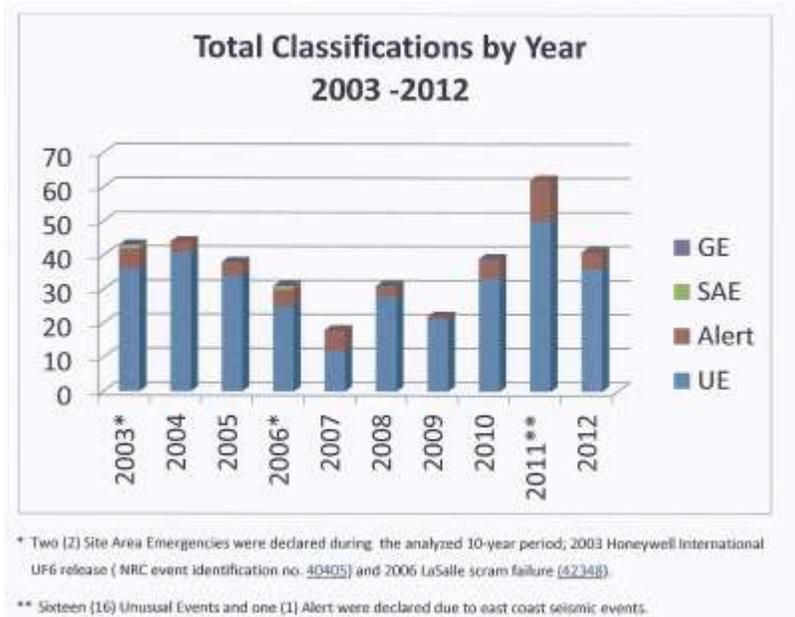


Figure 2: Total Emergency Classifications in US by Year (2003-2012)
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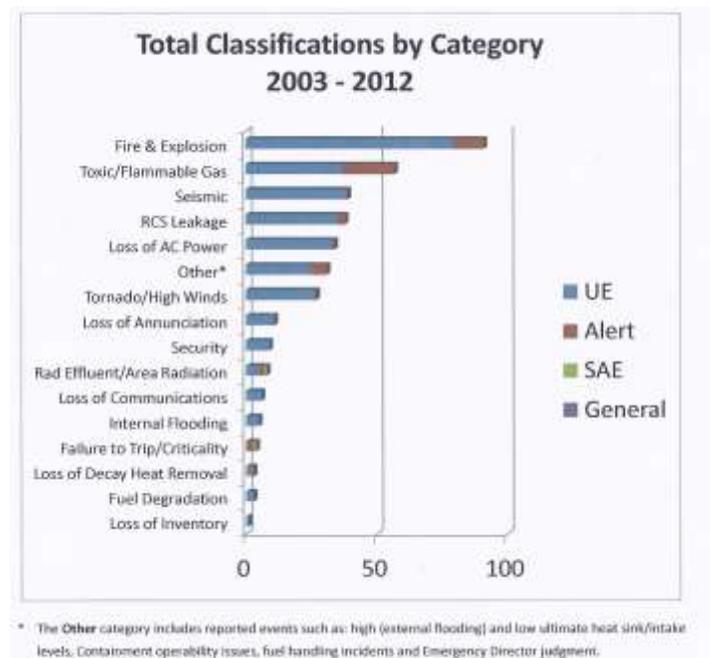


Figure 3: Total Emergency Classifications in US by Category (2003-2012)
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5.2 Emergency Planning Zones

New York State has adopted the Federal concept of Emergency Planning Zones for nuclear power plants. Emergency Planning Zones (EPZs) around each nuclear facility must be defined for both short term and long term periods of exposure to ionizing radiation. Such zones are defined as the areas for which planning is needed, to assure that prompt and effective actions can be taken, to protect the public in the event of an accident. They have been designed in size to accommodate the need for actions in regard to potential degree and radiological exposure.

There are two EPZs for each nuclear power plant site. The first EPZ is the Plume Exposure Pathway, which is the area within (approximately) a ten-mile radius from the site. Although the radius for an EPZ implies a circular area, the actual shape would depend upon the physical and demographic features within that zone. The principal exposure sources within this zone are external whole body exposure to gamma radiation and exposure through the inhalation of radioactive materials.

The potential exposure within the Plume EPZ would depend on the duration of a release and meteorological conditions at that time and could range from one-half hour to any number of days.

The second zone is the Ingestion Exposure Pathway, which is the area within (approximately) a fifty-mile radius from the site. The principal exposure sources within this zone would be the ingestion of contaminated water or foods such as milk or fresh vegetables. The duration of potential exposures in this zone could range in time from hours to months. Therefore, protective actions for the Ingestion Exposure Pathway are planned for an extended time period. It is the intent of this planning effort to initiate protective actions at an early time period to prevent or minimize potential radiological contamination of milk or other agricultural products.

The concept of these zones and their respective sizes represent a judgment on the kind and extent of planning which must be done and on the appropriate types of response activities needed for the effective protection of the public health. In a given emergency, protective actions might be restricted to a small part of either or both planning zones.

Figure 4 depicts the 10-mile and 50-mile Emergency Planning Zones (EPZs) surrounding the commercial nuclear power generating plants located within New York State and within contiguous states.

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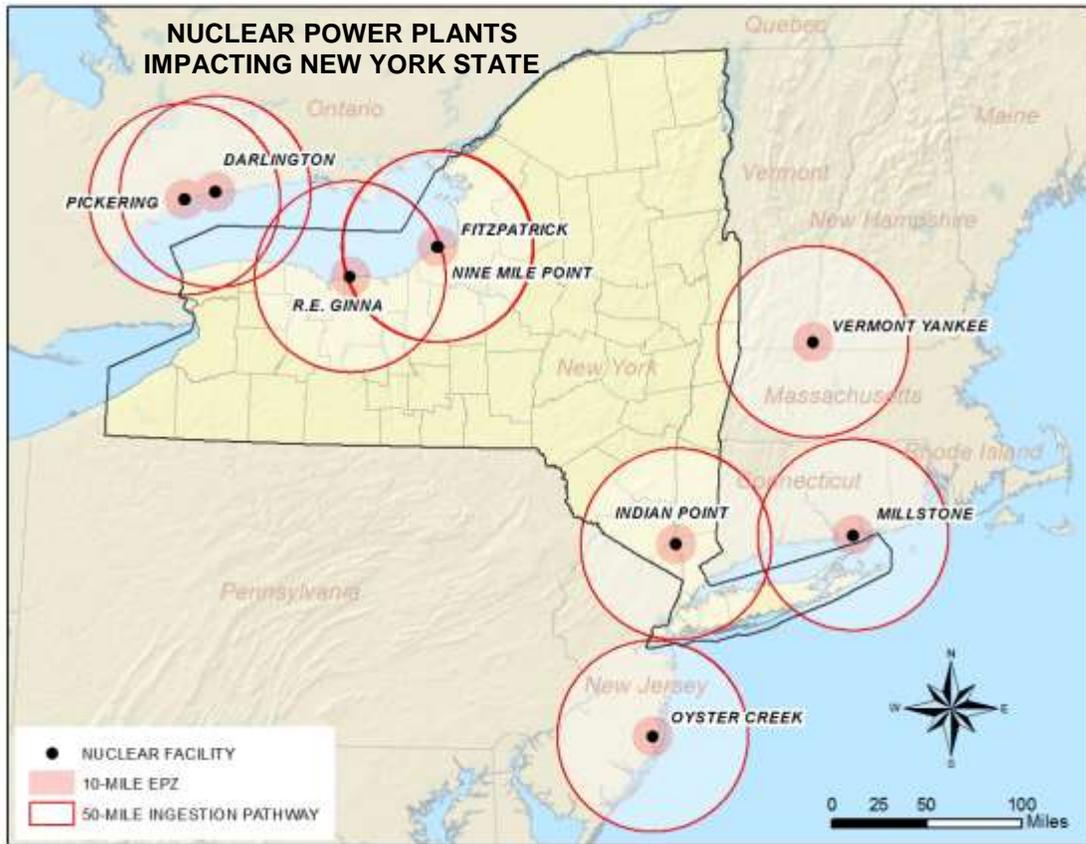


Figure 4: 10-Mile and 50-Mile Emergency Planning Zones (New York State and Contiguous States)

5.3 Protective Action Guides

The concept of Protective Action Guides (PAGs) was introduced to radiological emergency response planning in order to assist public health and other governmental authorities in deciding how much of a radiation hazard in the environment constitutes a basis for initiating emergency protective actions. These guides (PAG's) are expressed in units of radiation dose (rem) and represent initiation (trigger) levels of preplanned protective actions should the projected future dose to be received by an individual exceed the designated level. These PAGs are used as the basis for initiating activities to minimize the potential exposure of individuals.

The PAG units represent such initiation levels as tools to be used as a decision aid to a response situation. They are not intended to represent "acceptable" radiation dose levels in other than emergency situations.

These guides are used in Section III of this Annex, entitled RESPONSE.

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6.0 RISK ASSESSMENT

6.1 Nuclear Facility Conditions

Upon detection of an initiating condition for any of the four ECLs, the NFO will immediately notify the State and counties within the plume exposure EPZ. The notification from the NFO shall be by the RECS communications network described in Procedure B, and the County Radiological Emergency Response Procedures. The State and County Warning Points are manned on a 24-hour per day basis (detailed procedures are set forth in Communication/Warning Procedure B)

The initial notification message from the NFO will contain some elements as listed below, but a complete list can be found in section three:

- Date/time of incident
- Name and location of the facility, or location of incident
- Class of emergency
- Reactor operating or shutdown status
- Whether a release is taking place or not;
- Potentially affected population;
- Protective action recommendation
- Brief event description
- Weather conditions, wind speed and direction

The NYS Watch Center will ensure that the notification message is received by the State, according to the State Communication/Warning Procedures.

Subsequent information available from the NFO includes:

- Estimate of quantity of radioactive material released or being released and the points and height of releases;
- Estimates of the relative quantities and concentration of noble gases, iodines and particulates;
- Actual or projected dose rates at site boundary; projected integrated dose at site boundary;
- Projected dose rates and integrated dose at the projected peak and at 2, 5, and 10 miles, including ERPAs (Emergency Response Planning Areas/Protective Action Areas) affected.
- Estimate of any surface radioactive contamination onsite or offsite;
- Recommended emergency actions, including protective measures;
- Prognosis for worsening or termination of event based on plant information.

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6.2 Radiological Dose Modeling

Dose-distance procedures and computer models have been developed by the NFOs for different radiological release and meteorological conditions, which will correlate the expected doses at various down-range distances to the duration of the incident. The State Assessment and Evaluation (A&E) Branch has four primary resources to use during the assessment phase:

- Previously developed accident analysis data and information
- Relayed data on the prevailing radiological release rates and on-site meteorological conditions and real-time plant parameters
- Radiological laboratory analysis
- On-going assessments from nuclear safety specialists from the NFO, NRC, and State agencies.

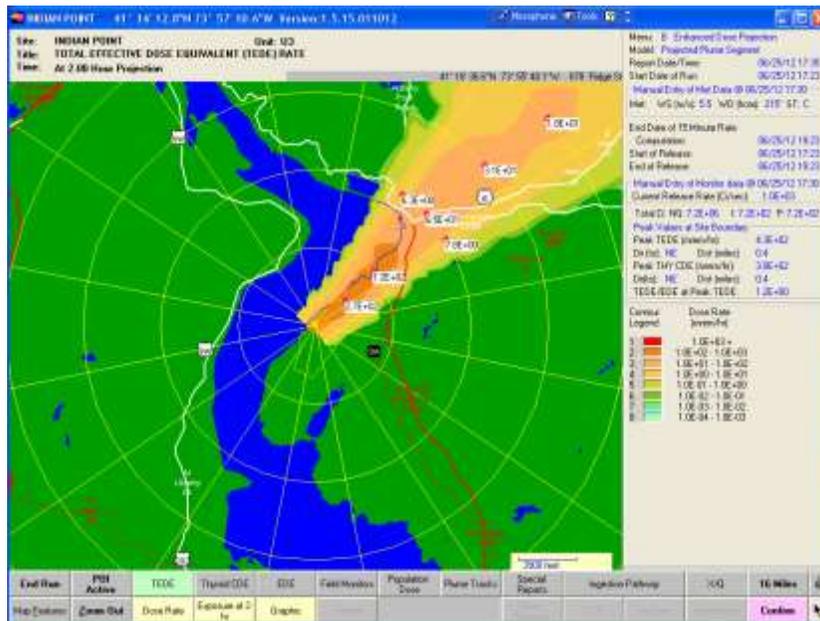


Figure 5: Example of MIDAS Dose Assessment Output (Indian Point Site)

6.3 Environmental Assessment

Relayed data from meteorological monitors at the reactor sites will be available to the State A & E branch. This information, when integrated with data from the National Weather Service, can be used to determine the actual and projected meteorological conditions for the area of concern.

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The State will receive relayed data from numerous fixed radiation monitors wherever available. The State may also receive relayed real-time data derived from NFO plant data so as to enable the State to make an independent, but parallel, evaluation.

Mobile radiation monitoring teams will be deployed by the NFO and by Federal resources primarily through Radiological Assistance Program (RAP) administered by the Brookhaven Area Office of the U.S. Department of Energy. Initial monitoring during the plume phase will be conducted by the risk county and the NFO. Additional radiation surveillance resources of the State and local agencies will work cooperatively with the NFO and Federal field assessment teams and will be made available for assistance in determining and verifying off-site consequences. All data will be transmitted to the State EOC in Albany. NFOs have mutual agreements where monitoring assistance will be afforded each other in the event of an emergency.

6.4 Plume Exposure Pathway Protective Measures

The State A&E branch will evaluate the assessment data to determine whether implementation of one or more of the plume protective action response options should be recommended to the State Commissioner of Health.

Under most circumstances, the State Commissioner of Health recommends implementation of protective actions for the plume pathway (Early Phase) to the Chief Elected Official of the affected counties.

In evaluating which of the protective action response options to implement during the Early Phase of the emergency, the State A & E branch will integrate the following input data and boundary conditions to establish a basis for the decision-making process:

- EPA PAGs;
- Implementation time requirements for the protective action response options, including analysis of the applicable Evacuation Time Estimates (ETE);
- Current status of road and meteorological conditions;
- Site prognosis via the NFO and NRC.

The following plume exposure protective action response options are described:

- Initial Precautionary Options (e.g., park closures, special population relocations);
- Shelter-In-Place;
- Evacuation;
- Thyroid Blocking Agents (emergency workers and general population).

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The PAGs for evacuation, or as an alternative in certain cases shelter-in-place, are expressed in terms of the projected sum of the effective dose equivalent from external radiation and the committed effective dose equivalent incurred from inhalation of radioactive materials from exposure and intake during the Plume or Early Phase.

6.5 Ground Deposition Assessment

External gamma radiation exposure from deposited radioactive materials (groundshine) is a potential exposure pathway for the general public following a nuclear accident. Furthermore, internal radioactive exposure from inhalation of resuspended radioactive materials is an additional potential pathway in the Intermediate Phase of an accident. This plan adopts PAGs, for use in the event of extensive deposition of radioactive materials, developed by the Environmental Protection Agency.

6.6 Ingestion Pathway/Relocation Protective Measures

The Ingestion Pathway Protective Action Options enable the State Commissioner of Health to recommend effective actions to ensure that the potential for the general population to receive radiation doses in excess of recommended limits through the various ingestion pathways is minimized. These options may involve restricting public consumption of contaminated drinking water and agricultural products. Routine operations would be resumed in those areas cleared for unrestricted use.

Another major relevant protective action during this phase is relocation of the public to areas of lesser radiological exposure. Projected doses for the second year and total 50 year dose are also determined to ascertain whether protective actions other than relocation are required.

The established PAGs for deposited radioactive materials are expressed in terms of the projected doses, over a one year period of time, above which specified protective actions may be warranted. The PAGs should be considered mandatory only for use in planning purposes. During the course of a radiological emergency, because of unanticipated local conditions and constraints and because the immediacy of the emergency has passed, application of these PAGs should be considered flexible.

These exposure pathways have a single Protective Action Guide. If the exposure to the public in any given area, based on isotopic soil samples, equals or exceeds 2 rem (= or >) projected for a 1 year exposure period, relocation of the public from that area is recommended. For projected 1 year exposures of less than 2 rem (<) simple dose reduction techniques for the general public are recommended. These techniques can include decontamination techniques such as scrubbing or flushing of hard surfaces, soaking or plowing of the soil, or minor

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removal of soil in areas where radioactivity is concentrated. Simply spending more time indoors or in other low exposure areas is also an effective dose reduction technique.

7.0 CONCEPT OF OPERATIONS

7.1 National Response Framework and NIMS/ICS

The National Response Framework (NRF) enacted in March 2008, along with NIMS/ICS principles have been incorporated into emergency response plans in New York State. Where, by tradition, emergency plans have been primarily concerned with response activities, New York State has adopted an overall emergency preparedness system which includes four interrelated critical phases:

7.2 Comprehensive Emergency Management

7.2.1 Readiness: This is the initial phase of activities that is aimed at eliminating or reducing the probability of the occurrence of a radiological emergency, and at minimizing the impact of a radiological emergency on public health and property. These activities include the development of legislation and development of preparedness plans and training programs. Taken together, these activities form a basis for and enhance the quality of response operations.

7.2.2 Response: The Response phase follows the identification or notification of an emergency. Generally, response activities are planned to minimize the adverse impact on public health and to protect property, to the extent possible, through emergency assistance. These activities include accident assessment and evaluation, radiological exposure control, and protective action orders and recommendations. They also reduce the probability of secondary damage and speed recovery operations.

7.2.3 Recovery: The Recovery phase begins when the emergency situation has been brought under control, there is no further threat to the public, the initiation of response activities has ended, and the relaxation of protective response options taken is being considered. Recovery activities continue until the community life of the affected area returns to its previous level or better. Also, recent experiences with coastal storms (Irene, Sandy) have highlighted the need for a well-defined process to assess the cumulative impacts on local infrastructure surrounding nuclear generating plants following such an event, and to assure the continued adequacy of offsite emergency response capabilities. A Disaster Initiated Review (DIR) process has been defined by the State working with its federal and local partners and included in the new Procedure I to this Annex.

These three phases are parts of an on-going cycle in which one phase leads into another. This Plan has been developed and patterned consistent with and supportive of the State Comprehensive Emergency Management Plan, which

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incorporates this comprehensive cyclical approach in planning and in dealing with all types of emergencies.

Under the provisions of Article 2-B, local governments have developed radiological emergency plans consistent with this State Plan. This State planning effort is designed to cope with a variety of potential radiological emergencies at a nuclear power plant that could have a public health impact.

In addition to the general State and local radiological plans, nuclear power plants licensees have developed and maintain site emergency preparedness plans.

The Nuclear Regulatory Commission (NRC), by law, can grant licenses for nuclear power plants only if the health and safety of the public is adequately protected. Although the law (The Atomic Energy Act) does not specifically require emergency plans and related preparedness measures, the NRC requires consideration of overall emergency preparedness as part of the licensing process. The NRC now requires adequate on and off-site emergency plans for the continuance of a license or the issuance of a new license.

The U. S. Federal Emergency Management Agency (FEMA) has the lead responsibility for review and recommendation or approval of all off-site nuclear emergency planning.

All personnel carrying out State emergency assistance activities, including the distribution of supplies, processing of applications, and other relief and assistance activities, shall perform their work in an equitable and impartial manner, without discrimination on the grounds of age, race, creed, color, national origin, sexual orientation, military status, sex, disability, predisposing genetic characteristics, marital status or by victim status.

When considering radiological emergencies, Readiness, Response, and Recovery are responsibilities that are shared by all levels of government and the private sector. However, as stated in Executive Law, Sections 24 and 28, the affected counties have lead responsibility for carrying out emergency activities unless a "State Declaration of Disaster Emergency" is declared by the Governor. This action invokes additional State and possible federal support for ensuring protection of the health and safety of the general public.

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8.0 AUTHORITIES AND SUPPORTING PLANS

8.1 Authorities

The authorities to develop this Annex and implement specific response actions to effectively respond to a radiological emergency involving fixed nuclear facilities can be found in a variety of New York State and Federal laws, regulations and guidance documents, including:

New York State

New York State Executive Law – Sections 20 – 29 (Article 2-B)

Provides State and Local natural and man-made disaster preparedness. Establishes the existence of the Disaster Preparedness Commission and its powers and responsibilities. Provides the duties and responsibility of local Chief Executives.

New York State Public Health Law Section 201:

Provides the Commissioner of Health the responsibility for public health aspects in the use of ionizing radiation.

New York State Public Health Law Section 206:

Provides the Commissioner of Health broad authority for protecting the health and life of the people of New York State.

New York State Sanitary Code Part 16:

Implements the Public Health Law. Requires actions to be instituted to correct and prevent unnecessary exposure due to the release or any radiation installation of radiation sources or materials exceeding acceptable dose limits.

New York State Defense Emergency Act as enacted by Chapter 784 of the Laws of 1951:

Enacted in accordance with the Civil Defense Act to establish a Civil Defense Office in every county which also functions as the County disaster-coordinating agency. Provides for construction and utility of the EOC, development of communication and warning systems and the involvement of volunteer CD workers.

Interstate Civil Defense and Disaster Compact, Chapter 2 Section 9231 Unconsolidated Laws:

Provides mutual aid among contracting states in meeting an emergency.

Agriculture and Markets Law Article 17, Section 199-1 Prohibition as to adulterated or misbranded food:

Provides the Commissioner of Agriculture and Markets the ability to test food or foodstuffs for contaminants.

Environmental Conservation Title 6, Chapter IV, Subchapter C, Radiation Part 380:

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Provides for the prevention and control of environmental pollution by radioactive materials.

New York State General Business Law Article 28D:

No person shall possess or use radioactive material without a valid license issued by the (Industrial) Commissioner except where the use or possession of radioactive material or radiation equipment are subject to the regulatory powers and jurisdiction of the State Department of Health or the Health Department of the City of New York.

On State Civil Defense Emergency Act, Article 6, Section 9160 Closing or Restricting Use of Highways; Posting of Properties:

Provides the Commissioner of Transportation the authority to open or close highways, waterways, railroads, etc.

The New York State Comprehensive Emergency Management Plan:

This plan establishes the methods and procedures to cope with the effects of a disaster by comprehensive management of all private and public resources available in New York State.

NYS/NRC Letter of Agreement 10/62:

Permits New York State to assume some NRC responsibilities for licensing and inspection of some radiological by-products. (Signatories: Gov. Rockefeller and the Atomic Energy Commission)

Executive Order # 26.1 of 2006, as amended:

NYS Adoption of the Incident Command System.

Emergency Management Assistance Compact (EMAC)

EMAC is the Governor's interstate mutual aid compact that facilitates the sharing of resources, personnel and equipment across state lines during times of disaster and emergency. EMAC is formalized into law by member states. EMAC was adopted by NYS in September 2001.

Federal Government

Atomic Energy Act of 1954:

Requires that the NRC grant licenses only if the health and safety of the public is adequately protected.

Title 10 Code of Federal Regulations Part 50. Nuclear Regulatory Commission, Emergency Planning, Final Regulations:

Provides requirements for licensee emergency plans for onsite and offsite emergency preparedness measures for nuclear reactors, fuel cycle facilities and certain other fuel cycle and materials licensees.

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NUREG-0654 - FEMA - REP-I Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants:

In addition to the 16 Planning Standards for radiological emergency preparedness, 44 CFR § 350.5 incorporates by reference NUREG-0654/FEMA-REP-1, which includes associated Evaluation Criteria that further define the Planning Standards. The 16 Planning Standards and associated Evaluation Criteria set the standard that FEMA uses to assess offsite planning and preparedness.

Radiological Emergency Preparedness Program Manual, April 2012:

Serves as the principal source of policy and implementation guidance for the FEMA Radiological Emergency Preparedness (REP) Program.

Title 44 Code of Federal Regulations Part 350:

Establishes policy and procedures for review and approval of State and local emergency plans and preparedness for coping with the offsite effects of radiological emergencies at commercial nuclear power reactors by the Federal Emergency Management Agency.

Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 100-707), as amended):

Constitutes the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and FEMA programs.

EPA 400-R-92-001 Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

Provides Protective Action Guides for the early (plume) and the intermediate (ingestion and relocation) phases of an incident. In addition to the PAGs, EPA established separate guidance on dose limits for emergency workers

Food and Drug Administration (FDA) Guidance on Use of Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies, December 11, 2001 Federal Register Notice:

Established guidance for the use of potassium iodide (KI).

National Response Framework:

This document is a guide to how the Nation conducts all-hazards response. It is built upon scalable, flexible, and adaptable coordinating structures to align key roles and responsibilities across the Nation. The NRF replaced the National Response Plan effective March 22, 2008.

Interim Protective Action Guides and Planning Guidance for Radiological Incidents

This Manual provides radiological protection criteria for application to all incidents that would require consideration of protective actions, with the exception of nuclear war.

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8.2 Supporting Plans

- New York State Comprehensive Emergency Management Plan
- Monroe County Radiological Emergency Preparedness Plan
- Oswego County Radiological Emergency Preparedness Plan
- Orange County Radiological Emergency Preparedness Plan
- Putnam County Radiological Emergency Preparedness Plan
- Rockland County Radiological Emergency Preparedness Plan
- Wayne County Radiological Emergency Preparedness Plan
- The Indian Point Radiological Emergency Preparedness Plan for Westchester County
- Onondaga County Radiological Emergency Response Host Plan
- Entergy Nuclear Northeast, Emergency Plan for Indian Point Units Nos. 2 and 3
- Constellation Energy Nuclear Group for Nine Mile Point Nuclear Station Units 1 and 2 Emergency Plan
- Constellation Energy Nuclear Group, Ginna Nuclear Emergency Plan
- Entergy Nuclear Northeast, James A. Fitzpatrick Site Emergency Plan
- Dominion Generation, Millstone Nuclear Radiological Emergency Response Plan
- Entergy Nuclear Northeast, Vermont Yankee Site Emergency Plan
- Brookhaven Area Office, US Department of Energy Radiological Assistance Program
- Exelon Nuclear, Oyster Creek Site Radiological Emergency Plan
- State of New Jersey Radiological Emergency Response Plan
- State of New Jersey RERP Annex B for the Oyster Creek NGS

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- State of New Jersey RERP Standard Operating Procedures
- Ontario Provincial Nuclear Emergency Response Plan- Trans Border Nuclear Emergency
- Darlington Nuclear Generating Station, Ontario Provincial Nuclear Emergency Response Plan
- Pickering Nuclear Generating Station, Ontario Provincial Nuclear Emergency Response Plan
- Department of Energy, Knolls Atomic Power Laboratory interface Plan with NY State

9.0 PLAN MAINTENANCE

Planning is an ongoing process, resulting in an ever-constant evolution and refinement of emergency plans. As such, this Annex to the CEMP will be routinely updated and supplemented as Federal, State, and local plans and procedures evolve. Plan changes may be based upon experiences and lessons-learned from exercises, or from real-world events. Ongoing planning efforts will focus on ensuring that the necessary and appropriate contacts with local, State, and Federal officials have coordinated their response.

The State Office of Emergency Management will be the lead agency responsible for coordinating the update and distribution of this document and associated appendices and implementing procedures. The NYSOEM will conduct the review/revision process once each year, beginning on or about April 1st.

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SECTION III: RESPONSE

***New York State Comprehensive Emergency
Management Plan:***

Radiological Hazards Annex for Fixed Nuclear Facilities

SECTION III: Response

1.0 INTRODUCTION

1.1 Response Roles

The Response phase of a radiological emergency deals with the reaction to an emergency which encompasses the Federal, State, local and private sector response roles and how the activities of these organizations will be coordinated. This effort minimizes the impact of the emergency on the health and safety of those in the affected areas.

A nuclear power plant emergency is defined as a series of events at a nuclear power plant which leads to an actual or potential release of radioactive materials into the environment to warrant consideration of protective actions. Protective actions are those actions taken which are intended to minimize the radiation exposure of the general public.

1.1.1 Private Sector

The Response phase to a radiological emergency within a nuclear facility begins with the NFO. The NFO has the first line responsibility for assessing the magnitude of a radiological emergency and its potential consequences and for taking immediate actions to mitigate or terminate the emergency. This responsibility includes classifying the event and notifying State and local governments, as well as the NRC, on-site and off-site monitoring, sample collection and analysis. After the initial notification, technical personnel from the nuclear facility will remain in contact with the representatives of the State Commissioner of Health and local officials for consultation and ongoing assessment of the emergency.

1.1.2 Local Government

Each county has the primary responsibility for responding to a radiological emergency with their resources and, when necessary, for requesting additional assistance from other jurisdictions. These resources are contained in each county plan.

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Local government response efforts will be based on information from the NFO and guidance from the DPC. Local resources will be made available for the effective implementation of the appropriate protective action response options.

1.1.3 State Government

Each respective local government has the primary responsibility for responding to a radiological emergency. State agencies are expected to provide necessary support to local government. However, upon a State Declaration of Disaster Emergency by the Governor, the DPC assumes direction and control of emergency response activities through the local Chief Elected Official. County agency duties and responsibilities are not changed. The State Declaration simply allows the State to mobilize additional resources and assume responsibility for action decisions, and coordination with the local Chief Elected Official.

The Department of Health, as the State lead agency in radiological emergencies, and by order of the Commissioner of Health, under the auspices of the DPC, shall request necessary monitoring and activate assessment and evaluation personnel, equipment, and other resources. Upon evaluation and after consultation with the local Chief Elected Official, the Commissioner will recommend appropriate protective action response options. In those instances where more than one county is impacted, protective action decisions are coordinated between the State and affected counties via the Executive Hotline. The DPC will deploy to the respective nuclear power plant EOF, county(s) Emergency Operations Center(s), Joint Information Center (JIC) and other States or local EOCs as required. After a State Declaration of Disaster Emergency pursuant to Executive Law, Article 2B, section 28, the Commissioner may order appropriate protective actions. State agencies are responsible for support. The NYSOEM, as staff to the DPC, is the State coordinating agency of State and local operational resources and will perform this function from the State Emergency Operations Center (SEOC). There will also be an ongoing exchange of information between local and State agencies.

After the initial notification of an emergency, disaster preparedness response activities will be coordinated through the NYSOEM. County Health Departments or Public Health offices will continue ongoing communication with the State DOH. County agencies will communicate through their State contacts and/or the NYSOEM liaison.

As previously stated, the DPC will have a representative in each county emergency management office, in the EOF, in the JIC and, with the DPC Chair at the State EOC to facilitate the proper implementation of the plan.

1.1.4 Federal Government

Management of the Federal response requires the coordination of a number of Federal agencies with each other and with the appropriate State and local authorities. The

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responsibility for the overall management of the Federal response is identified in the National Response Framework (NRF).

The NRC will be responsible for the on-site technical direction of the Federal response. "Technical" refers to all aspects of radiological monitoring, evaluation, assessment and reporting, the application of sophisticated technology to control or predict the impact of radiological contamination and the use of all available instrumentation to develop recommendations for protective action measures.

In accordance with the NRF, FEMA will serve as the primary point of contact for State officials and will coordinate and manage all non-technical aspects of the Federal response. "Non-technical" refers to all types of assistance to Federal and State/local organizations, such as transportation, communication, housing and assistance to State/local response activities. For Federal notification contacts refer to Procedure B, Attachment 9, contact numbers are maintained in a separate file in the NYS Watch Center.

At the direction of the State Commissioner of Health or designee, the Department of Energy (DOE), through the Federal Radiological Monitoring and Assessment Center (FRMAC), will coordinate all off-site monitoring, evaluation, assessment and report the activities of participating Federal agencies.

The NRC and DOE will coordinate their on-site and off-site data and will jointly advise the State Assessment and Evaluation staff on the Federal assessment and evaluation of the emergency and the availability of support.

The State Coordinating Officer at the State EOC is the designated State liaison to Federal agencies that have been requested to provide response support to the State. The U.S. Department of Agriculture has established an USDA Emergency Board in every State and county to coordinate USDA State or county disaster assistance efforts. All of the USDA agencies having major emergency responsibilities are represented on these boards. USDA emergency personnel are to establish continuing liaison with State and/or county agricultural agencies to insure coordination of assistance activities and damage assessments. For USDA contact, refer to Procedure B, Attachment 11, contact numbers are maintained in a separate file in the NYS Watch Center.

2.0 GENERAL OPERATIONS

2.1 Response Activities and Assignments

Table 1 is a list of response activities assigned to State agencies, local governments, the private sector, and the Federal Government. This list is composed of those activities directly related to response to a radiological emergency. Those activities that are related to other types of emergencies that might occur in conjunction with a radiological emergency, such as flood, earthquake, snowstorm, etc., are found in Volume II Part III of the New York State Comprehensive Emergency Management Plan

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(CEMP). If the event is a hostile action based incident refer to Procedure O and facility specific response procedures.

2.2 Direction and Control

The activities within direction and control are to assign missions; make assessments and evaluations; direct and coordinate operations; supply special resources; and implement applicable laws and regulations. These activities will be directed by assigned agency representatives at the State EOC, using the NYSOEM communications system, which will be supported by the existing operational capability of other assigned agencies.

2.2.1 Local Government

At the county level, this direction and control activity will be implemented by local government agencies, with the county Chief Elected Official in charge. Operations will be directed from the county EOCs, using county communications (refer to Communication procedures in each appropriate county radiological emergency preparedness plan). In those instances where a county does not have the capability to implement all or part of its Radiological Emergency Response Plan, or the Chief Elected Official of a county does not elect to put such a plan into effect, the Governor shall declare a State of Disaster Emergency for that county and direct State agencies to implement those measures of the county's plan that may be appropriate and necessary under the direction of the DPC. State and local resources and personnel shall be utilized in carrying out these measures.

2.2.2 State Agencies

The Department of Health is designated the lead State agency for a radiological emergency. The Commissioner of Health or designee will provide guidance to local government agencies and will direct State agencies as to appropriate protective actions. The Department of Health is also the lead agency in protecting drinking water supplies. The DOH will advise the public on water use, consumption and coordinating testing of potentially impacted water supplies.

The DPC will position liaisons at the EOF, County EOC(s), JIC and other States and local EOCs as required. NYSOEM will coordinate the assistance furnished by various Federal and State agencies, emergency forces from political subdivisions and quasi-public and private organizations.

The Department of Agriculture and Markets controls the safety of food and livestock subjected to radiological contamination including such measures as seizure, embargo and salvage. It will also give advice to farmers on emergency problems including livestock and crop contamination. In cooperation with the DOH it will implement response programs for sampling milk and other agriculture products.

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The Division of Military and Naval Affairs (DMNA) has assets to augment command and control and Incident Management Assistance Teams as well as to position liaisons to assist with the coordination and direction of operations.

2.3 Communications

Communications activities include: notification of Federal, State, and county emergency organizations, the news media; notification of the general population and special facilities within the plume exposure EPZ and reporting of radiological and meteorological information.

2.3.1 Local Government

Local communications will be activated at the local level using existing county emergency communications. (The specifics of these systems are set forth in the county Communication procedures.)

2.3.2 State Agencies

The NYSOEM has communications systems with both plume and ingestion exposure EPZ counties, NYSOEM field offices and the NFO to provide initial notification and ongoing communication during the emergency. These systems include dedicated telephone lines Radiological Emergency Communication System (RECS) and the Executive Hotline, commercial telephone and radio communications including the NYSOEM Notification System (NYALERT). The Supervisor of the State Watch Center (SWC) is responsible for the on-going 24-hour operation of the Center. The supervisor is responsible for scheduling adequate NYSOEM SWC staff and also maintains a quarterly updated notification list of NYSOEM response personnel and of State Agency emergency contacts to ensure a 24-hour capability.

NYSOEM has the National Warning System (NAWAS). The NYSOEM SWC participates in twice daily communications tests with NAWAS at the Federal level and at the local level to selected counties and cities. NYSOEM also conducts twice daily communications tests with the National Weather Service (NWS). NYSOEM field offices have radio systems on State agency networks of the Department of Transportation, Department of Environmental Conservation, Fire Prevention and Control, and the Division of State Police. NYSOEM is the lead agency for this response activity.

NY-Alert is New York State's All-Hazards Alert and Notification system. This web based portal offers one-stop shopping through which State agencies, county and local governments, emergency service agencies and institutions of higher learning can provide emergency information to a defined audience be it local, county, regional or statewide. Information provided can include information on protective actions ordered, road closures, etc. The portal will disseminate emergency information through EAS, blast faxing, cell bursting, emails to media, businesses and individuals, text messaging,

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press releases and postings on the NY-Alert website. NY-Alert can be accessed through www.nyalert.gov.

The Division of State Police uses E-JusticeNY which allows intercommunication among local government emergency managers, the DPC/NYSOEM, law enforcement agencies and the National Weather Service. It is routinely used to transmit emergency traffic between these agencies. DSP also has a radio communications system consisting of fixed and mobile units that allows communications virtually anywhere in the state.

State of the art mobile communications vehicles with satellite communications capability have been developed and are operated by DHSES (procedure B attachment 12).

The Thruway Authority has a radio communication network, along the entire length of the Thruway, which allows Thruway personnel to coordinate movement of emergency vehicles and supplies. The Thruway radio system is available to assist in emergency situations within the parameters of its operating capabilities, which are approximately ten miles each side of the Thruway.

The Department of Environmental Conservation has a statewide radio system which connects regional headquarters to mobile units.

The Department of Health has mobile radio communications equipment which enables the Emergency Medical Services program to be in contact with local EMS personnel (ambulance, fire, rescue squads). The Bureau of Environmental Radiation Protection, Department of Health has an extension of the RECS for Indian Point, James A Fitzpatrick, and Nine Mile Point.

The Division of Military and Naval Affairs can activate radio communications between armories as well as an internal Alert and Notification system.”

The Office of Parks, Recreation and Historical Preservation has bullhorn and loudspeaker communication capabilities within State parks and recreational facilities.

The Department of Transportation has a statewide system which connects regional headquarters to residencies and mobile units.

The Office of Fire Prevention and Control has radio equipment which can contact the Office's field representatives and County Fire Coordinator offices. Information can be relayed on the assigned State fire radio frequency from the county offices to all counties in the State. This is a back-up system to get information to the fire service in New York State if other systems are not functioning.

The Civil Air Patrol has a radio network for emergency backup to NYSOEM.

The American Red Cross provides communications from congregate care centers.

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Radio Amateur Civil Emergency Services (RACES) operates a sophisticated radio system in the state on the HF and VHF bands. These volunteers routinely provide primary and back-up radio communications during emergencies.

The Nuclear Facility Operator is responsible for initiating the primary notification system via the RECS or backup utilizing backup radio or telephone.

2.4 Public Notification

Each county within the 10 mile EPZ has the capability to provide a prompt notification signal to the public, followed by provisions for disseminating instructions to the public on the appropriate protective actions to be taken. Equipment and procedures are in place to ensure notification to the public in a timely fashion of the decision to issue a protective action recommendation (PAR). NY-Alert is also a component of the public notification system as described above.

2.4.1 Local Government

The activation and control of this public notification system will be implemented at the local level in coordination with the State DPC.

Initial Notification Requiring a Protective Action:

In the event an emergency requiring an initial notification to the State and affected county(ies) that a General Emergency has been declared (i.e. a fast breaking incident), the county(ies) will activate their public notification system and release a prearranged EAS message to the public prior to coordination with the State. NY-Alert may be utilized for initial notification purposes. In the case of multiple county involvement, a lead county has been selected to activate the EAS system and authorization and procedures to activate the siren system immediately. Procedures are contained in each county plan.

2.4.2 State Agencies

The NYSOEM will verify that public notification systems are activated, including the coordinated use of the EAS to include dissemination of information through NY-Alert.

The Division of State Police will assist, as directed, in the local program to alert the public.

The Department of Health will advise the public on the emergency impact and on what protective actions are necessary.

The Office of Parks, Recreation and Historical Preservation will notify populations in State parks and recreation facilities about the emergency and will issue instructions for appropriate protective actions to be taken.

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The Division of Military and Naval Affairs has assets to augment local agencies to perform door knocks to alert the public and advise the public on the emergency impact and on what protective actions are necessary.

2.5 Accident Assessment

Radiological and meteorological capabilities exist to provide information for assessing the public health impact of radiological emergencies. Accident assessment includes obtaining radiological and meteorological data and the use of such data in determining the actual or potential impact on public health in order to determine the appropriate protective action.

2.5.1 Local Government

Will make an assessment based on information from the NFO, the State Commissioner of Health, and its own resources.

2.5.2 State Agencies

The Department of Health assesses the magnitude and impact of an emergency on the public health and where appropriate provides calibrated portable survey instruments and manpower. DOH conducts epidemiological surveillance; provides laboratory analysis of air, water, and agricultural products samples; collects potable water samples; provides information on hospitals with radiological medical personnel and thyroid uptake scanners for screening potentially exposed populations; and provides meteorological evaluation for transport of airborne radioactive materials, using the United States Department of Energy National Atmospheric Release Advisory Capability (NARAC) system and the NFO's assessment system. DOH is the lead agency for this response activity.

The Department of Agriculture and Markets, in cooperation with the Departments of Health and Environmental Conservation, implements programs in sampling milk and other agricultural products for radiological contamination.

The Department of Environmental Conservation implements environmental monitoring programs, providing meteorological data from both the New York State Continuous Monitoring Network and the National Weather Service locations and interpreting this information concerning the transport of airborne radioactive materials.

The State Office of Emergency Management provides technical support at the request of DOH with radiological responders, equipment and meteorological data.

The Division of Military and Naval Affairs Weapons of Mass Destruction-Civil Support Team (WMD-CST) assets to perform radiological surveying, monitoring, sampling and testing during the plume phase in order to assess and assist with determining the actual

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or potential impact on public health in order to determine the appropriate protective action.

2.5.3 Federal Agencies

Upon the request of the Commissioner of Health, through the Bureau of Environmental Radiation Protection, technical assistance will be provided through the Department of Energy, Brookhaven Area Office RAP Team and the NRF/Nuclear Radiological Annex and the FRMAC for radiological assessment to support State and local agencies. This support includes the use of the United States Department of Energy National Atmospheric Release Advisory Capability (NARAC) system.

2.5.4 Nuclear Facility Operator (NFO)

The NFO provides the initial radiological and meteorological assessment and continues to provide this data throughout the emergency. The NFO also provides assessment and recommendations throughout the emergency to the DOH and local officials.

2.6 Protective Response Evaluation

Protective response options are determined following evaluation of all pertinent data so the most appropriate decisions in recommending protective action are made. (Refer to Attachment 1 for protective action decision rationale).

2.6.1 Local Government

Local governments evaluate information from the NFO, DOH, and their own resources before determining the appropriate protective action.

2.6.2 State Agencies

The Department of Health evaluates all pertinent data to provide guidance to local government and State agencies as to appropriate protective actions. DOH is the lead agency for this response activity.

The State Office of Emergency Management coordinates the collection and transfer of information needed for the evaluation process from appropriate State agencies and local governments.

The Department of Agriculture and Markets evaluates pertinent data regarding protection of food and livestock.

2.6.3 Federal Agencies

Evaluative input will be provided through Federal radiological and meteorological programs.

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2.6.4 Nuclear Facility Operator

Initial and ongoing protective action recommendations will be provided by the NFO.

2.7 Radiological Exposure Control

Procedures for controlling exposures of the public and emergency workers to radioactive materials will be established.

Control of radiological exposure of local emergency workers and the public will be accomplished at the local level based on the existing situation and on the protective response actions recommended by the State Commissioner of Health.

2.7.1 State Agencies

The Department of Health recommends appropriate protective actions for controlling the exposure of the public to radiation. DOH has lead agency role for this response activity.

The State Office of Emergency Management provides radiological monitoring equipment to support the operation of State Emergency Worker Personnel Monitoring Centers (PMC). The Division of State Police, the Department of Transportation, the Department of Health and the Office of Fire Prevention and Control provide primary staffing for these State emergency worker PMCs.

2.8 Public Information

Public information includes a coordinated program to keep the public informed on the up-to-date status of a radiological emergency situation and to insure that there exist methods to advise the public of all recommended public protective measures. Also, a system shall exist to monitor all media coverage to insure that misinformation is not released. The public information program is under the supervision of the State Public Information Officer (PIO), typically a representative from NYSOEM. The State PIO will be the single source of information on State response activities and recommended public protective measures. The State PIO will ensure the establishment of a public inquiry center to receive questions from all sources. Once improper information is received it will be logged, evaluated and necessary corrective actions will be taken.

2.8.1 Local Government

The Governor, or designee and the local Chief Elected Official are responsible for issuing announcements on public health and safety relating to a radiological emergency. Public information officials from the local jurisdiction and the State PIO will consult with one another to ensure that factual information will be available for reporting to the public in a timely manner at both State and local levels.

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2.8.2 Nuclear Facility Operator

The NFO's information officer will consult with the State PIO and appropriate local information officials prior to the release of any information which may affect the general public.

2.8.3 State Spokesperson & Public Information Officer

The Chair, State Disaster Preparedness Commission will designate the lead spokesperson for radiological emergencies. This spokesperson, (typically identified as a representative from the Department of Health) will be the single, State agency source for official information during a radiological emergency. Various state agency public information personnel work in support of this function.

The State PIO coordinates news releases with appropriate local government PIO(s), the licensee information officer, and the Federal PIO(s).

2.9 Evacuation

Evacuation encompasses the movement of people out of a threatened area and the resources necessary to support this movement. Included are the movement of people from designated areas over designated routes; keeping these routes clear for travel; the identification of needs of special populations (e.g. mobility impaired, hearing impaired, school children, transportation dependent); and the care and support of evacuees (refer to each respective County Radiological Emergency Preparedness Plan).

2.9.1 Local Government

The evacuation plan will be implemented at the local level, using all available local resources, supplemented by available State resources.

2.9.2 State Agencies

The State Office of Emergency Management coordinates and provides technical assistance to the local governments.

The Division of State Police assists in notification and providing control with local law enforcement agencies, enforces emergency highway traffic regulations, and assists in ensuring the security of evacuated areas.

The Department of Transportation assists in keeping evacuation routes clear and in traffic control; supplies route designations for expedient movement and control mechanisms (signs, road blocks, signals, etc.); as required, can waive restrictions on transportation systems and assists in locating buses for mass transit.

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The Division of Military and Naval Affairs on order of the Governor, aids civil authorities with ground and air evacuation capabilities.

The Department of Corrections makes decisions on the movement of prisoners based upon their internal plans and procedures. State facilities may shift prisoners within the State system. There is no county authority to shift county prisoners into the State system. Upon request of county officials, the State Commission on Corrections will advise the county and the Department of Corrections as to the protective action that is to be taken relative to incarcerated individuals.

2.10 Reception/Congregate Care Centers

The special needs of the evacuated population will be assessed and addressed. These needs include: monitoring, decontamination, reception/registration, lodging, feeding and clothing.

2.10.1 Local Government

Activities to register and monitor evacuees at Reception Centers and to house, feed and clothe them at Congregate Care Centers will be implemented by local agencies and the American Red Cross. These agencies share the primary responsibility for this response activity.

2.10.2 State Agencies

NYSOEM will, at the request of local government, coordinate State assistance for the monitoring of evacuating personnel.

The Office of Temporary and Disability Assistance (OTDA) will, at the request of local government, assist in the registration of evacuees at the reception centers. The department will also coordinate the activities of the Red Cross, Salvation Army, and other recognized organizations at the congregate care centers, as needed.

The State Human Services Branch coordinates State agency activities in this area.

2.10.3 Federal Agencies

In the event of a presidential disaster declaration the Federal government may provide mass shelters, emergency supplies and potable water, sell government-owned feed grains to livestock owners at reduced prices, assign personnel to screen contaminated food, and provide emergency clothing.

2.10.4 Voluntary/Private Agencies

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Various voluntary organizations will assist local agencies in the operation of reception and congregate care centers. The Voluntary Organization Active in Disaster (VOAD) will coordinate private activities with the State Human Services Branch.

2.11 Human Services

Provision will be made for the needs of those affected by the emergency, including special populations.

Other services which will be available are crisis counseling, psychiatric counseling, information, legal, and referral service casework services, and other welfare services.

2.11.1 Local Government

Human Services activities will be implemented at the local level, with support from the State.

2.11.2 State Agencies

The Office of Temporary and Disability Assistance (OTDA) will support activities of the Red Cross, Salvation Army, and other recognized volunteer organizations, and is the lead agency for this response activity.

The Department of Health provides information and referral services, in coordination with local health jurisdictions. Twenty-one counties are served by State district health offices, which provide direct health services to communities without established health departments. The appropriate district office will advise the affected population.

NYSOEM coordinates efforts of various public and private human needs agencies.

American Red Cross will operate Congregate Care Centers to shelter and feed evacuees and assist government and other agencies responsible in the operation of reception centers.

The Human Services Branch coordinates volunteer agencies which carry out their traditional role in assisting disaster victims.

2.12 Public Health, Medical and Sanitation Services

Provision will be made for the continuation of basic public health services during radiological emergencies. Primary and emergency care and treatment for the ill and injured will also be provided, including for radiologically contaminated/injured patients. The movement or consolidation of patients, equipment, and personnel of hospitals, nursing homes, and other special facilities will be coordinated, as will the allocation of medical resources. Primary and backup hospitals for the treatment of contaminated injured individuals have been identified and are listed in Appendix F. An additional

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listing of public and private hospitals within New York State capable of providing medical support for radiologically contaminated, injured individuals is also included in Appendix F. Annual training is provided to selected medical transportation providers in the vicinity of each nuclear power plant site for the safe and expeditious pre-hospital care and transportation of contaminated/injured individuals.

2.12.1 Local Government

Most of the activities dealing with health problems and protective actions will be implemented at the local level, with support supplied by the State.

2.12.2 State Agencies

The Department of Health provides laboratory testing of samples to assure safe food and water supplies and orders any protective actions; monitors potable water supplies; provides technical assistance and risk assessment; issues orders related to affected public water supply; and recommends alternatives regarding the above in concert with the Departments of Agriculture and Markets and Environmental Conservation. DOH is the lead agency for this response activity.

All other State Agencies activities will be implemented consistent with New York State CEMP through the NYSOEM.

2.12.3 Federal Agencies

Advice and technical assistance will be provided in accordance with the National Response Framework.

2.13 Public Security

The measures necessary to protect the public by the enforcement of normal and emergency laws will be provided.

2.13.1 Local Government

Public security measures will be implemented at the local level and will be supplemented by the State (refer to each Police/Law Enforcement procedure in the County Radiological Emergency Response Plans).

2.13.2 State Agencies

The Division of State Police provides staff and equipment to protect life and property; establishes ingress and egress control; maintains traffic and crowd control; closes highways; suppresses riots and disorders; investigates accidents; enforces laws, emergency orders, and curfews; arrests violators; secures evacuated areas; and

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coordinates these support activities with the Federal, other State agencies, and the local government efforts. DSP has lead agency role for this response activity.

The Division of Military and Naval Affairs, on orders from the Governor, can assist civil authorities and law enforcement agencies in the prevention of looting, perimeter control, and to maintain or restore law and order.

The Division of Homeland Security is responsible for coordinating and enhancing anti-terrorist efforts in the State, specifically with developing a comprehensive statewide strategy to detect, protect against, respond to, and prevent acts of terrorism.

2.14 Fire and Rescue Service

Manpower and equipment for fire protection, surveillance, and suppression will be provided for the affected emergency areas, including on-site assistance. Decontamination activities and search and rescue operations including air, land, and water operations will also be provided.

2.14.1 Local Government

Local fire and rescue services will be utilized at the local level, with available support from the State.

2.14.2 State Agencies

The Office of Fire Prevention and Control activates the New York State Fire Mobilization and Mutual Aid Plan upon request. This involves coordination of independent local fire protection resources. They also provide available staff, communication vehicles and technical assistance to local fire departments and State agencies.

The OFP&C will provide to NYSOEM:

- The OFP&C operational procedures manual for implementing the State Fire Mobilization and Mutual Aid Plan, including the assignment of OFP&C personnel
- The Directory of Fire Service Communications in the State of New York, which includes essential radio information for all county fire coordinators and the approximately 1,850 local fire jurisdictions
- A basic inventory of the local fire service equipment and personnel resources available throughout the State

The Division of State Police provides search and rescue capabilities, using boats, land vehicles, and helicopters, to locate missing persons and rescue stranded people.

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The Department of Environmental Conservation provides search and rescue capabilities, using boats, and land vehicles, to locate missing persons and rescue stranded people.

The Civil Air Patrol provides aircraft and personnel to conduct air search missions.

2.15 Engineering Services

The repairing of damaged roads, the clearing of obstructions on roadways, and the removal of impediments on designated evacuation routes will be provided.

2.15.1 Local Government

The engineering effort, providing personnel, expertise, and equipment in the affected area, will be a primary responsibility of the local jurisdiction(s) for their roads. State and Federal agencies will provide heavy equipment and manpower to operate equipment and will coordinate their activities with the local effort.

2.15.2 State Agencies

The Department of Transportation and the Thruway Authority provides available resources (equipment and manpower) and coordinates assistance from other agencies in the use of evacuation routes.

The Division of Military and Naval Affairs can provide heavy equipment and manpower to operate equipment and assist at the local level in keeping evacuation routes open.

The Office of Parks, Recreation and Historical Preservation provides equipment and personnel to assist in keeping evacuation routes open.

2.16 Transportation

The transportation of the injured and of critical equipment, supplies, food, and emergency personnel will be provided.

2.16.1 Local Government

Vehicles to move emergency supplies and equipment to the affected areas will be provided, supplemented with available support from the State.

2.16.2 State Agencies

The Department of Transportation provides limited resources for the movement of equipment and supplies and supports the ingestion sampling teams.

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The Division of Military and Naval Affairs, on orders from the Governor, can provide helicopters and vehicles to support the State effort.

The Department of Environmental Conservation provides aircraft, boats, snowmobiles, and other vehicles to support the State effort.

The State Office of Emergency Management coordinates emergency transportation resources where local, State, and Federal governments are involved in a common overall effort.

The Division of State Police provides helicopters, boats, and vehicles to transport personnel, and radiological samples.

The Civil Air Patrol will provide transportation courier services.

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TABLE 1

AGENCY RESPONSE ACTIVITY ASSIGNMENT CHART

RESPONSE ACTIVITIES

AGENCIES	Direction and Control	Communications	Public Notification	Accident Assessment	Protective Response	Exposure Control	Public Information	Evacuation	Reception/Mass Care	Social Services	Public Health	Public Security	Fire and Rescue	Engineering Services	Transportation
Health (DOH)	P	X	X	P	P	P	X		X	X	P				X
NYSOEM	X	P	P	X	X	X	P	P	X	X					P
Ag and Markets	X		X	X	X	X									
Corrections								X							
Education		X			X		X	X	X						
NYSERDA				X											
PSC	X			X											
DEC	X	X		X											X
OGS															X
Mental Health										X					X
DMNA		X						X				X		X	X
Parks and Recreation		X	X											X	
OTDA								X	P	P					
Fire Prevention and Control		X				X							P		
NYS Police	X	X	X		X	X		X				P	X		X
Thruway Authority		X													X
Transportation (DOT)		X				X	X	X						P	X
Civil Air Patrol		X											X		X
County Government	X	X	X	P R	X	X	X	X	P R	X	X	X	X	X	X
Federal Government				X	X						X			X	
American Red Cross		X							P R	X			X		X
Salvation Army									X	X					
Human Services Group									X	X					
Nuclear Facility Operator		X		P R			X								

This chart reflects the previous descriptions of State, local and other agency responsibilities during an emergency.

Each “P” represents the State agency that has primary responsibility to assist local governments upon request and to have lead responsibility after a Gubernatorial Declaration.

Each “PR” represents organizations other than State agencies that share a primary role in that activity.

Each “X” represents involvement in an activity regardless of the level of involvement.

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3.0 STATE IMPLEMENTATION OF A COUNTY'S PLAN

3.1 State Role and Actions

The DPC assigns a representative to the County EOC to act at the DPC's direction in assigning missions and tasks, directing courses of action to control the situation, informing the public and acting in conjunction with other affected counties' Radiological Emergency Preparedness Plans and Procedures, the New York State Radiological Emergency Preparedness Plan and Procedures, and the NFO Site Emergency Plan and Procedures. These activities shall be carried out in accordance with the county's Radiological Emergency Preparedness Plan.

3.1.1 State Agencies

The State Office of Emergency Management assigns a REP liaison to the County EOC to provide advice and technical interpretation of information to the county Chief Elected Official and Emergency Manager. The liaison also provides direct reports to DPC command so as to provide "heads up" information on activities at the county level. NYSOEM will also send a representative to the County EOC to support, assist and coordinate as necessary with representatives of the DPC and of other State agencies assigned to the County EOC.

The Department of Health assigns a representative to the County EOC to act on behalf of the State Commissioner of Health and the DPC in directing the performance of protective actions to assure public health and safety, during a radiological emergency in accordance with the county's Radiological Emergency Preparedness Plan.

The Division of State Police assigns a representative to the County EOC to act on behalf of the DPC to direct activities to maintain law and order, insure citizen safety, protect public and private property, provide traffic direction and control, control access to radiologically affected areas and assist in the dissemination of emergency information and announcements in accordance with the county's Radiological Emergency Preparedness Plan.

The Office of Fire Prevention and Control assigns a representative to the County EOC to act on behalf of the DPC to coordinate fire service activities, including search and rescue efforts and the provision of assistance in emergency first aid and medical transport services, relating to the radiological emergency operations as discussed in the county's Radiological Emergency Preparedness Plan.

The Office of Temporary and Disability Assistance assigns a representative to the County EOC to act on behalf of the DPC to direct activities to provide aid to those people who have been affected by a radiological emergency, and organize and maintain

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reception centers, in accordance with the county's Radiological Emergency Preparedness Plan.

The Department of Transportation can assign upon request a representative to the County EOC to act on behalf of the DPC to direct public works, highway and engineering activities for the construction, rehabilitation and repair of essential highways and facilities during a radiological emergency. The Department of Transportation can also assign a representative upon request to the County EOC to act on behalf of the DPC to direct the utilization of public and private transportation resources for the provision of transportation services during a radiological emergency for people without transportation. The DOT representative will also interface with the Regional Transportation Management Center (TMC) to provide the latest information on traffic conditions in the impacted area. These activities shall be carried out in accordance with the County's Radiological Emergency Preparedness Plan.

The State Education Department assigns a representative to the County EOC to act on behalf of the DPC to coordinate and oversee and support the initiation and completion of each schools "disaster emergency" plans for early dismissal and the use of school buildings during the emergency.

4.0 DIRECTION AND CONTROL

4.1 State Emergency Operations Center

The State Emergency Operations Center (EOC), located at 1220 Washington Avenue, Bldg. #22, Suite 101, State Campus, Albany, NY will have representation from all assigned State agencies. From this location, State direction and control of emergency operations will be conducted. The NYSOEM also maintains an alternate State Emergency Operations Center (ASEOC) at the New York State Traffic Management Center (TMC) in Hawthorne, Westchester County.

4.2 New York State Emergency Communications Network

New York State Radiological Emergency Communications System (RECS): The New York State Radiological Emergency Communications System for Fixed Nuclear Facility notification is a dedicated telephone line between:

- Indian Point Unit 2 and Unit 3 and the State Watch Center, Albany; Westchester, Orange, Rockland and Putnam Counties; City of Peekskill; West Point; State Department of Health, Albany.
- Nine Mile Point Nuclear Station Units 1 & 2 and James A. Fitzpatrick Nuclear Power Plant and State Watch Center, Albany; Oswego County, Fulton; State Department of Health, Albany.

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- Ginna Nuclear Station and State Watch Center, Albany; Wayne County, Lyons; Monroe County, Rochester.

The Radiological Staff of the DOH will receive notification and follow-up with the NFO to verify information and obtain additional details of the potential or actual emergency.

The Executive Hotline Emergency Communications System is a dedicated telephone line between:

- The DPC command room in Albany, the EOF, and the command rooms in Westchester, Rockland, Orange and Putnam counties for the Indian Point Site;
- The DPC command room in Albany and the command rooms in Monroe and Wayne counties for the Ginna Site.

The DPC command room in Albany and the command room in Oswego County use commercial telephone conference calling for the Nine Mile Point site. Radio, E-Justice and NAWAS will be used as backup to telephone systems. Communications/Warning operating procedures are contained in Procedure B.

4.3 Joint Information Centers

The DPC PIO will be located at the JIC which has been established to serve the affected nuclear reactor site. (Refer to Procedure C)

JICs will be accessible to all media sources. These centers will be manned by pre-designated personnel from the licensee, local, State and Federal governments.

The purpose of this center is to provide a central facility for the accurate release of all information to the news media and the public. Joint news conferences and briefings will be held. Details of each center are found in the respective JIC Procedures and Work Plan for each site.

5.0 INITIATION OF RESPONSE ACTIVITIES

The emergency response phase is initiated upon the identification by the NFO of a radiological emergency which falls into any one of the four emergency classes as defined by the NRC. The identification of an emergency is promptly followed by notification of State and local authorities, confirmation of the occurrence, activation of emergency personnel and equipment, and verification of the readiness of these State and local personnel.

5.1 Emergency Classification

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The NRC has established, and this Plan adopts, four emergency classification levels (ECLs) for nuclear power plants. The NRC requires that, when an initiating condition for any of the four emergency classification levels exists, the NFO shall provide early and prompt notification to both State and local officials. The four emergency classification levels are:

5.1.1 Notification of Unusual Event (NUE)

Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

5.1.2 Alert

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

5.1.3 Site Area Emergency (SAE)

Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or (2) prevents effective access to equipment needed for the protection of the public. Any releases are not expected to exceed EPA Protective Action Guideline exposure levels except near site boundary.

5.1.4 General Emergency (GE)

Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

5.1.5 Rationale

The rationale for the Notification of Unusual Event and Alert classifications is to provide early and prompt notification of minor events, which could lead to more serious consequences, given operator error or equipment failure, or which might be indicative of more serious conditions, which are not yet fully realized. A gradation is provided to assure complete response preparations for more serious indicators.

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The Site Area Emergency classification reflects conditions where radiological releases are possible but where a core-melt situation is not indicated, based on current information. The General Emergency classification involves actual or imminent substantial core degradation or melting with the potential for loss of containment resulting in a radiological release to the environment. For both Site Area Emergency and General Emergency, full mobilization of emergency personnel in the near-site environs is indicated. For a General Emergency immediate public protective actions may be necessary.

The State Commissioner of Health, based on information obtained from the NFO and other sources and the Commissioner's own understanding of events and circumstances, may recommend to State and local agencies protective actions different from that recommended by the NFO.

5.1.6 Hostile Action Based Events



5.2 Notifications

5.2.1 Plume Emergency Planning Zone

Upon detection of an initiating condition for any of the four ECLs, the NFO will immediately notify the State and counties within the plume exposure EPZ. The notification from the NFO shall be by communications network described in Procedure B, and the County Radiological Emergency Response Procedures. The State and County Warning Points are staffed on a 24-hour per day basis (detailed procedures are set forth in Communication/Warning Procedures, Procedure B)

The initial notification message from the NFO will contain:

- Class of emergency
- Whether a release is taking place or not;
- Potentially affected population;
- Protective action recommendation

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The SWC will ensure that the notification message is received by the State DOH and the NYSOEM, according to the State Communication/Warning Procedures.

The State DOH will contact the NFO via commercial telephone to confirm initial notification and obtain additional emergency information.

Subsequent information available from the NFO includes:

- Date/time of incident;
- Name and location of the facility, or location of incident;
- Class of Emergency;
- Type of actual or projected release (airborne, waterborne, surface spill) and estimated duration/impact times;
- Estimate of quantity of radioactive material released or being released and the points and height of releases;
- Chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines and particulates;
- Meteorological conditions at appropriate levels (wind speed, direction (from), indicator of stability and precipitation, if any);
- Actual or projected dose rates at site boundary; projected integrated dose at site boundary;
- Projected dose rates and integrated dose at the projected peak and at 2, 5, and 10 miles, including ERPAs (Emergency Response Planning Areas/Protective Action Areas) affected.
- Estimate of any surface radioactive contamination onsite or offsite;
- Recommended emergency actions, including protective measures;
- Prognosis for worsening or termination of event based on plant information.

Upon the direction of the Commissioner of Health, the State Watch Center (SWC) will advise appropriate State and local agencies. If warranted, the NYSOEM will activate the State EOC and notify the appropriate State agency personnel and the NYSOEM field staff. County warning points will notify the appropriate county officials according to their procedures. For emergencies classified as Alert, Site Area Emergency or General Emergency, FEMA Region II will be notified by the SEOC. If Federal radiological monitoring and assessment assistance is needed, it will be requested by the Commissioner of Health or designee in accordance with the radiological assistance procedure of the Brookhaven Area Office, USDOE. If specific assistance from EPA is required, the assistance will be requested either directly by the Bureau of Environmental Radiation Protection or through USDOE and in accordance with the National Response Framework (NRF), Nuclear Radiological Annex.

5.2.2 Ingestion Pathway Emergency Planning Zone

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The SEOC will notify potentially affected counties within the Ingestion Pathway EPZ and FEMA at the Alert ECL for information purposes only. This notification will be made to County warning points by means of commercial telephone and/or the NYSOEM Communicator. In critical situations, the National Warning System (NAWAS) in the NYSOEM will be available for notification to affected counties' warning points. The county warning points will notify the appropriate county officials. NYSOEM and FEMA will notify any affected States and Canadian Provinces within the ingestion pathway EPZ.

5.3 Activation

5.3.1 State Agencies

For a Notification of Unusual Event classification, all involved State agencies will utilize their normal working quarters for response activities.

For an Alert, Site Area Emergency, and General Emergency classification, the NYSOEM will, according to its alerting procedures, notify specific pre-designated State agency personnel to report to the State EOC in Albany for response activities (refer to Procedure D).

For an Alert, Site Area Emergency and General Emergency classification, pre-designated State personnel from the DPC will report to the NFO's Emergency Operations Facility (EOF), the affected States, Counties, local EOCs and the JIC.

5.3.2 Local Government

Counties may choose to activate limited staff at the NUE if circumstances so require. For emergencies classified as alert or higher there may be full activation of County EOCs within the plume exposure EPZ. Host counties may also activate at this ECL.

For an Alert, Site Area Emergency and General Emergency classification, plume exposure EPZ County pre-designated personnel may report to the NFO's EOF.

5.3.3 Verification

Upon activation of the State EOC, appropriate County EOC's, and the NFO's EOF will communicate with each other and confirm that each emergency response facility has been activated and is operational.

5.4 Initial Release of Public Information

Upon direction of the State Commissioner of Health, the State PIO will issue a press release containing specific information on the emergency and a description of State emergency response actions to date. This press release will be shared with the affected

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County (ies) PIO(s) and the NFO information officer (refer to Procedure C). Press releases specifically pertaining to the ingestion pathway EPZ will be issued jointly by the DPC.

5.5 Assessment and Evaluation

The NFO has the primary responsibility for the initial assessment of the magnitude and consequences of radiological accidents at fixed nuclear facilities. This responsibility includes requirements for on-site and off-site monitoring, sample collection and analysis, classification of the emergency based upon predetermined emergency action level criteria, and notification of appropriate Federal, State, and local officials. The Planning Section, Assessment and Evaluation (A&E) Branch also obtains real-time data from each NFO which permits independent, parallel, evaluation of potential problems.

After the initial notification, technical personnel from the NFO will remain in continual contact with technical personnel from the State A&E staff for consultation and continued assessment and evaluations of the accident consequences. The Commissioner of Health is responsible for determining appropriate protective actions to accomplish the objectives of this plan and will recommend the implementation of such actions to the DPC.

In an emergency, when the nuclear facility's EOF is activated, technical personnel from the DPC will be dispatched to the NFO's appropriate EOF. This will provide the State with on-the-scene staff for liaison and coordination of the assessment and evaluation activities.

Radiological releases have direct effects on the population. Inhalation of radioactive material by individuals causes internal radiation exposure to various organs of the body. Contamination of milk, potable water, or agriculture products that may enter the food chain and are ingested also causes internal radiation exposure. If no remedial actions are taken, the relative dose to an individual from ingestion of contaminated food products (primarily milk) may be of much greater significance from the passing plume than exposure due to inhalation and whole body exposure.

Radiological emergencies at nuclear power reactors in other States may require significant assessment and evaluation activities as well as response actions to protect the public from exposure from the ingestion pathways.

Planning must take into consideration all possible accident scenarios. The procedures in this plan provide flexibility for responding to a continuum of situations, from those requiring only notification; to those requiring increased environmental surveillance; to those requiring milk, food and water control, to those radiological emergencies that may require extensive evacuation or sheltering.

5.5.1 Assessment

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The State Assessment and Evaluation (A&E) Branch has various resources to use during the assessment phase:

- Previously developed accident analysis data and information
- Relayed data on the prevailing radiological release rates and on-site meteorological conditions and real-time plant parameters
- Radiological laboratory analysis
- On-going assessments from nuclear safety specialists from the NFO, NRC, and State agencies.
- Previously Developed Data
- Field and Other Environmental Monitoring Data
- Radiological Laboratory Analysis (see Appendix G and Procedure N)
- Ongoing Assessments From Nuclear Safety Specialists

5.5.2 Evaluation

The State A&E branch will evaluate the assessment data to determine whether implementation of one or more of the protective action response options should be recommended to the State Commissioner of Health.

The State Commissioner of Health will assist counties in their protective actions decisions for the plume pathway (Early Phase).

Additional information on assessment procedures is contained in Procedure H.

5.6 Protective Action Guides (PAGs)

This plan contains Protective Action Guides (PAGs) for determining appropriate responses during the Early, Intermediate and Late Phases of radiological emergencies. The PAGs for the three phases are given in Procedure H and are briefly described below.

5.6.1 Plume Exposure (Early Phase) Protective Action Guides

This plan adopts the PAGs, developed by the EPA for determining appropriate responses during radiological emergencies involving plume exposure pathways. In keeping with the objective of preventing or minimizing radiation exposure of the population in the event of a radiological emergency, the State Health Commissioner may recommend protective actions for projected doses lower than the EPA PAGs.

In evaluating which protective action response options to implement during the Early Phase of the emergency, the State A & E branch will integrate the following input data and boundary conditions to establish a basis for the decision-making process:

- EPA PAGs;

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- Implementation time for the protective action response options, including analysis of the applicable Evacuation Time Estimates (ETE);
- Current status of road and meteorological conditions;
- Plant conditions and prognosis via the NFO and NRC.
- Field monitoring data

The PAGs for evacuation, or as an alternative in certain cases - shelter-in-place, are expressed in terms of the projected sum of the effective dose equivalent from external radiation and the committed effective dose equivalent incurred from inhalation of radioactive materials from exposure and intake during the Plume or Early Phase.

Evacuation of the general public will usually be justified when the projected total effective dose equivalent (TEDE) savings to an individual may exceed one (1) rem, or the projected committed dose equivalent (CDE) savings to the thyroid is five (5) rem. (see Table 2)

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TABLE 2

PAG's for the Early Phase of a Nuclear Incident

Protective Action	PAG (projected dose)	Comments
Evacuation (or Sheltering-in-Place)	1-5 rem [b]	Evacuation (or for some situations, Sheltering-in-Place [a]) should normally be initiated at 1 rem
Administration of Stable Iodide [d]	5 rem [c]	Requires approval of NYS of Health

[a] Sheltering –In-Place may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions.

[b] The sum of the effective dose equivalent resulting from exposure to external sources and the committed effective dose equivalent incurred from all significant inhalation pathways during the early phase. Committed dose equivalents to the thyroid and to the skin may be 5 and 50 times larger, respectively.

[c] Committed dose equivalent to the child thyroid from radioiodine.

[d] Recommendation will be made at the General Emergency ECL.

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5.6.2 Ingestion Exposure Pathway (Intermediate Phase) Protective Action Guides

This plan adopts PAGs, for use in the event of accidental radiation contamination of milk, other food and water, developed by the Food and Drug Administration (FDA) for the ingestion pathway.

The 1982 FDA recommendations were developed from the prevailing scientific understanding of the relative risks associated with radiation as described in the 1960 and 1961 reports of the Federal Radiation Council (FRC 1960, 1961). Since 1982, FDA and the other federal agencies in the United States have adopted the methodology and terminology for expressing radiation doses provided by the International Commission on Radiological Protection (ICRP) in 1977 (ICRP 1977, ICRP 1984a, EPA 1987). The ICRP's dose quantities for radiation protection purposes include effective dose equivalent, committed effective dose equivalent, dose equivalent for a specific tissue, and committed dose equivalent for a specific tissue.

These current recommendations replace the Preventive and Emergency PAG's with one set of PAG's for the ingestion pathway. The PAG's are 5 mSv (0.5 rem) for committed effective dose equivalent or 50 mSv (5 rem) committed dose equivalent to an individual tissue or organ, whichever is more limiting. These correspond to the "intervention levels of dose" consensus values set by international organizations. Intervention levels of dose are radiation doses at which introduction of protective actions should be considered (ICRP 1984b). The FDA guidance retains use of the term Protection Action Guide (PAG) for consistency with the U.S. federal and state needs.

5.6.3 Deposited Radioactive Materials (Intermediate Phase) PAGs

External gamma radiation exposure from deposited radioactive materials (groundshine) is a potential exposure pathway for the general public following a nuclear accident. Furthermore, internal radioactive exposure from inhalation of resuspended radioactive materials is an additional potential pathway in the Intermediate Phase of an accident. This plan adopts PAGs, for use in the event of extensive deposition of radioactive materials, developed by the Environmental Protection Agency. In keeping with the objective of preventing or minimizing radiation exposure of the population in the event of a radiological emergency, the State Health Commissioner may recommend protective actions for projected doses lower than the EPA PAGs. The major relevant protective action during this phase is relocation of the public to areas of lesser radiological exposure. Projected doses for the second year and total 50 year dose are also determined to ascertain whether protective actions other than relocation are required.

The established PAGs for deposited radioactive materials are expressed in terms of the projected doses, over a one year period of time, above which specified protective actions may be warranted. The PAGs should be considered mandatory only for use in planning purposes. During the course of a radiological emergency, because of

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unanticipated local conditions and constraints and because the immediacy of the emergency has passed, application of these PAGs should be considered flexible.

These exposure pathways have a single Protective Action Guide. If the exposure to the public in any given area, based on isotopic soil samples, equals or exceeds 2 rem (= or >) projected for a 1 year exposure period, relocation of the public from that area is recommended. For projected 1 year exposures of less than 2 rem (<) simple dose reduction techniques for the general public are recommended. These techniques can include decontamination techniques such as scrubbing or flushing of hard surfaces, soaking or plowing of the soil, or minor removal of soil in areas where radioactivity is concentrated. Simply spending more time indoors or in other low exposure areas is also an effective dose reduction technique.

5.7 Critical Time Frames

Once the input parameters and boundary conditions have been established, the State A & E branch will identify the critical time frames necessary to complete the missions of this Plan for a particular emergency. Specifically, the critical time frames to be identified for a particular emergency are the implementation time frames for the various protective action response options and the time frame until the safe termination of the emergency.

The implementation time frame for a particular protective action has three components - notification time, preparation/mobilization time and execution time.

Notification time refers to the time required to notify the population-at-risk. Preparation/mobilization time is the time needed by that population to begin to take the recommended protective action and to deploy whatever emergency services personnel and equipment are necessary for the particular protective action response option(s) ordered. Execution time refers to the time, after notification and preparation/mobilization is completed, required for the completion or full execution of that particular protective action.

Other critical time frames for evaluation include the projected time before any release is initiated, the time period that any release is projected to persist, and the time for the arrival of the plume at various distances.

Additional time factors must be considered in determining appropriate ingestion protective actions. Examples of these time factors include time period for peak concentration in milk after ingestion of contaminated feed, critical period for harvesting, time period for agricultural products to go through the processor to the retail market, and storage time.

For deposited radionuclides, a one year time period is the minimum time frame that must be considered when estimating radiological exposure to the general public when relocation of the public may be necessary. Two and fifty year cumulative dose time

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frames are also considered to ensure that the public is not exposed to excessive doses of radiation.

5.8 Plume Pathway (Early Phase) Protective Action Options

The protective action options have been developed to provide the State Commissioner of Health the capability to execute the primary mission of the State Plan. The State Commissioner of Health may recommend more than one of the protective action response options at the same time for a particular radiological emergency. In addition, the State Commissioner of Health can recommend implementation of the protective action response options for the specific population-at-risk. This flexibility will tend to maximize the effectiveness of the protective action response options. The options consist of plume exposure pathway actions, ingestion pathway actions and soil deposition actions. A section of each county plan also specifies actions necessary to protect special populations and special facilities.

In this section the following plume exposure protective action response options are described:

- Initial Precautionary Options;
- Shelter-In-Place;
- Evacuation;
- Thyroid Blocking Agents.

5.8.1 Initial Precautionary Options

The Initial Precautionary Option has been developed to provide an effective initial protective action which can be relatively easily implemented and which will facilitate the implementation of the other protective action response options, if they become necessary.

The implementation of the Initial Precautionary Option will require a minimal commitment of emergency resources and will cause a minimal amount of inconvenience for the general public while yielding maximum benefits, such as simplifying and facilitating the implementation of the other protective action options. Also, the implementation of this option will effectively decrease the number of individuals who have to be addressed under other protective action options, as well as effectively increasing the number of available emergency response personnel.

The implementation and execution of the initial Precautionary Option may include the following:

- Temporary closing of tourist areas, such as parks and campgrounds, within the appropriate EPZ;

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- Temporary closing of elementary, secondary schools and day care centers within the appropriate EPZ;
- Temporary suspension of noncritical patient admissions at hospitals within the appropriate EPZ;
- Establishment of access control traffic check points for all major routes into the plume exposure EPZ; and

5.8.2 Shelter-In-Place

In general, protective actions will be taken in accordance with the EPA PAG guidelines. The Commissioner of Health may recommend protective actions at projected doses below these guidelines to minimize radioactive exposure to particular groups such as individuals who could not be safely evacuated, if an evacuation were recommended. This would include individuals who have been designated medically unable to withstand the physical and/or psychological stress of an evacuation, as well as those individuals who require constant, sophisticated medical attention.

The implementation and execution of the Shelter-In-Place Option will include the following:

- Appropriate local health officer, in conjunction with the special facilities administrators and other local officials will make an initial determination of the number of those individuals unable to evacuate and their medical care requirements. This will be compared with the sheltering and medical capabilities otherwise available to these individuals;
- If this preliminary disposition indicates that additional medical personnel, equipment, and/or supplies are needed, local and State officials will assist in acquiring whatever is needed;
- Local health officer will conduct an on-going assessment as to the possibility and desirability of evacuation for those persons initially determined to be unable to be evacuated. This assessment would be based on the availability of evacuation capabilities, which would minimize the medical risk to those persons; and
- When the projected dose rates outside any facility reach the various protective action levels, the local health officer will notify the facility and other local officials, who will begin the
- Immediate implementation of sheltering for these persons.

For actual or projected off-site doses of 1 to 5 rem TEDE, the protective action option shelter-in-place may be implemented for the general public in the affected areas of the plume exposure EPZ. This response option can also be implemented for puff-type

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releases of low doses, as a precautionary measure. For doses where evacuation would be indicated, but where evacuation cannot be implemented because of a hostile action, hazardous weather and/or impediments to highway movement, shelter-in-place may be implemented in lieu of evacuation.

Instructions to shelter-in-place are provided for each household, school, special facility, and place of business in the plume exposure EPZ. These instructions are contained in the emergency public information brochure or calendar distributed annually to the plume exposure EPZ population.

Shelter-in-place information is initiated by the county public notification system with explicit directions over the EAS. Implementation can be affected for various Emergency Response Planning Areas or Protection Action Areas (a subdivision of the plume exposure EPZ) or for the entire EPZ. Instructions to the public include directions to stay indoors; close all doors and windows; turn off air conditioners and other ventilation systems, extinguish fires in fireplaces and then close flues; and stay off the roads. (Goal is to minimize air exchange where possible). Members of the public will also be directed to take KI in concert with this protective action. The seven nuclear counties have all implemented a plan to pre-distribute KI within the 10 mile EPZ. Directions for post event distribution of KI will be included in EAS follow- on message.

5.8.3 Evacuation

For actual or projected off-site dose levels of 1 to 5 rem TEDE, the protective action evacuation may be implemented for the affected areas of the plume exposure EPZ. Members of the public will also be directed to take KI in concert with this protective action. The seven nuclear counties have all implemented a plan to pre-distribute KI within the 10 mile EPZ. Directions for post event distribution of KI will be included in EAS follow- on message.

Upon declaration of a General Emergency by the NFO, evacuation of an area 2 miles in radius and 5 miles downwind will be immediately considered.

Evacuation will be implemented by the local Chief Elected Official, following consultation with or upon the recommendation of the State Commissioner of Health. Each County within the plume exposure EPZ has a detailed evacuation plan and maps showing evacuation routes. Each County plan also includes the Emergency Response Planning Areas/Protective Action Areas, Reception Centers and Congregate Care Centers.

Telephone numbers may be announced through the news media public inquiry and which will inform mobility impaired on how to obtain transportation assistance. In addition, these impaired persons may be identified in advance by registering as detailed in the emergency public information brochure and calendar distributed annually to the plume exposure EPZ population.

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These public information mailings also provide instructions on evacuation for each household, school, special facility, and place of business.

Implementation of evacuation is initiated by the county public notification system, with explicit direction over EAS. Implementation can be effected for various ERPA's or for the entire EPZ.

Public transportation will be provided to persons without transportation. Special traffic control procedures and mechanisms will be implemented to insure an efficient vehicle flow. Congregate Care Centers will be provided in host areas, including provisions for feeding, lodging, and medical care. Special facilities, including hospitals and nursing homes, have specific evacuation procedures, including the acquisition of special transport vehicles. Each NFO has evacuation plans for onsite personnel. NFOs will coordinate evacuation procedures with local authorities to insure coordination of evacuation activities. Normally, on-site personnel will use the evacuation routes that are used by the public in the ERPA or PAA where the nuclear power plant is located. Evacuation plans with detailed evacuation routes are shown in the County Plans.

5.8.4 Harriman/Bear Mountain State Park Evacuees

The Harriman and Bear Mountain state parks are located in Rockland and Orange Counties north and west of the Indian Point Nuclear Power Plant Station. It is the policy of the State and local governments as a precautionary option to close the parks at the Alert classification of an emergency at Indian Point. In the event of an immediate General Emergency involving a release of radioactive materials, the counties may require supplemental monitoring assistance to assist with the monitoring of the park transients.

5.8.5 Thyroid Blocking Agents

Potassium Iodide (KI) in water soluble tablet form (65mg & 130 mg) or liquid (65 mg) form is recommended as an appropriate thyroid blocking agent for use by emergency workers, captive populations and the general public including school children.

Distribution of KI will be in accordance with Appendix K.

5.9 Ingestion Pathway (Intermediate Phase) Protective Action Options

The Ingestion Pathway Protective Action Options enable the State Commissioner of Health to recommend effective actions to ensure that the potential for the general population to receive radiation doses in excess of recommended limits through the various ingestion pathways is minimized. During the early phase of an emergency, certain precautionary actions may be recommended to minimize introduction of radioactive materials in the ingestion pathway.

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5.9.1 Milk Pathway, Agricultural Produce and Water Supplies

Initial precautionary directives to place lactating animals on stored feed to prevent contamination of the milk chain will usually be prescribed in the early phase of the radiological emergency.

The primary protective action option prerequisite for the milk pathway is to place milk animals on stored feed and water to limit their intake of any radioactive contaminants. Other protective action response options include:

- Environmental surveillance in and around potentially affected areas;
- Sampling and laboratory analysis of milk, crops and drinking samples taken from, in and around the affected area.

Other options may involve restricting public consumption of contaminated drinking water and agricultural products. Routine operations would be resumed in those areas cleared for unrestricted use.

Further details for intermediate and late phase protective actions are described in Section IV and implementing procedures L, M and N.

5.10 Emergency Personnel - Radiological Exposure Control

The Radiological Exposure Control procedure (Procedure G) has been developed to provide the State Commissioner of Health with the capability of controlling and minimizing the radiological exposure of emergency response personnel. Emergency response personnel include individuals engaged in accident assessment, rescue of endangered or injured personnel, lifesaving activities, evacuation of affected populations, and protection or prevention of property damage or loss within the 10 mile emergency planning zone.

Emergency activities may be necessary to protect lives and reduce escalation of the radiological problem. It is possible that involved emergency workers may be exposed to radiation and become contaminated while carrying out their duties. The underlying radiation protection principle is to limit their exposure to as low as reasonably achievable, within the whole body limits prescribed for radiation workers, which is 5 rem total effective dose equivalent per year. 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. Specific exposure guidance, when lifesaving actions or extraordinary emergency operations are required, is provided below. If possible, volunteers should be used for emergency operations which are projected to exceed established guidelines.

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Exposure control procedures for emergency response personnel include the following:

- Instructing emergency response personnel to wear their personnel dosimetry to include permanent record dosimeters and direct reading dosimeters;
- Issuing emergency response personnel direct-reading dosimeters and chargers, upon activation for field operations;
- Emergency workers have been supplied potassium iodide (KI) as a thyroid blocking agent.
- Instructing each person performing emergency service functions inside affected areas of the 10 mile EPZ following a release to take dosimeter readings at 15 to 30 minute intervals. Should an indicated exposure exceed 1R of accumulated dose at any time during the shift, a report will be made to the individual's immediate supervisor or team leader who will report it to the appropriate location in the EOC. If an accumulated exposure of 3R is registered, personnel will immediately report the reading to the individual's supervisor or the appropriate EOC and request instructions. Doses in excess of 5 rem TEDE or 25 rem CEDE Thyroid must be authorized by the Commissioner of the NYS DOH; (different limits for reporting dosimeter readings may be provided based on the specific type(s) of radioactive materials released)
- Instructing decontamination personnel who perform a decontamination function to remain upstream of any water spray utilized in decontamination activities;
- Establishing provisions for obtaining whole body counts or bioassays for radiological evaluation of emergency personnel, including identification of medical service facilities equipped to evaluate and/or treat contaminated/injured individuals;
- Allowing female emergency workers the opportunity to declare pregnancy;
- Recording the radiological doses received by all exposed emergency workers;
- Establishing facilities for the monitoring and decontamination of emergency personnel;
- Selecting emergency personnel for lifesaving actions or protection of large populations using the following criteria, if practical:
 - Emergency personnel for needed lifesaving actions should be volunteers and preferably professional rescue personnel;

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- Emergency personnel should be familiar with the consequences of radiological exposure;
 - Pregnant women or women capable of reproduction should not take part in these actions;
 - Volunteers above the age of 45 should be selected.
- Maintaining emergency worker dose limits as outlined in Table 3 as follows:
 - The Department of Health A & E branch leader will activate the State Emergency Worker PMC's at the Site Area Emergency Classification Level (SAE ECL) or when emergency workers have been assigned in the 10 mile EPZ.
 - Providing expert medical treatment, consultation, and service to emergency personnel receiving radiation doses equal to or in excess of those indicated above (25 Rem or more TEDE).

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TABLE 3

Guidance on Dose Limits for Emergency Workers

Dose limit [a] (Rem)	Activity	Condition
5	All	
10	Protecting valuable property	Lower dose not practicable
25	Lifesaving or protection of large populations	Lower dose not practicable
>25	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

[a] Sum of external effective dose equivalent and committed effective dose equivalent to non-pregnant adults from exposure and intake during an emergency situation. Workers performing services during emergencies should limit dose to the lens of the eye to three times the listed value and doses to any other organ (including skin and body extremities) to ten times the listed value. These limits apply to all doses from an incident, except those received in unrestricted areas as members of the public during the intermediate phase of the incident.

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6.0 RESPONSE ORGANIZATION STRUCTURES

The State responds to any emergency situation of localized scope with no special organizational change. State Agencies, working through the NYSOEM will provide initial emergency assistance to one or more affected counties. When conditions become serious enough to require the Governor to execute a "State Declaration of Disaster Emergency" the Executive Law provides, under Article 2-B, section 21, that the DPC consider creating a temporary organization to manage the necessary response efforts. In a radiological emergency the DOH has been pre-designated as the "lead agency". For assessment and evaluation the Commissioner of Health will act as the head of this temporary organization. The integration and coordination of the organizations implementation responsibilities will be directed by the NYSOEM under the auspices of the DPC.

The following charts reflect these interrelationships:

A. PRIOR TO GUBERNATORIAL "STATE DECLARATION OF DISASTER EMERGENCY"

B. AFTER GUBERNATORIAL "STATE DECLARATION OF DISASTER EMERGENCY"

C. ACTIVATION OF EMERGENCY OPERATIONS CENTERS

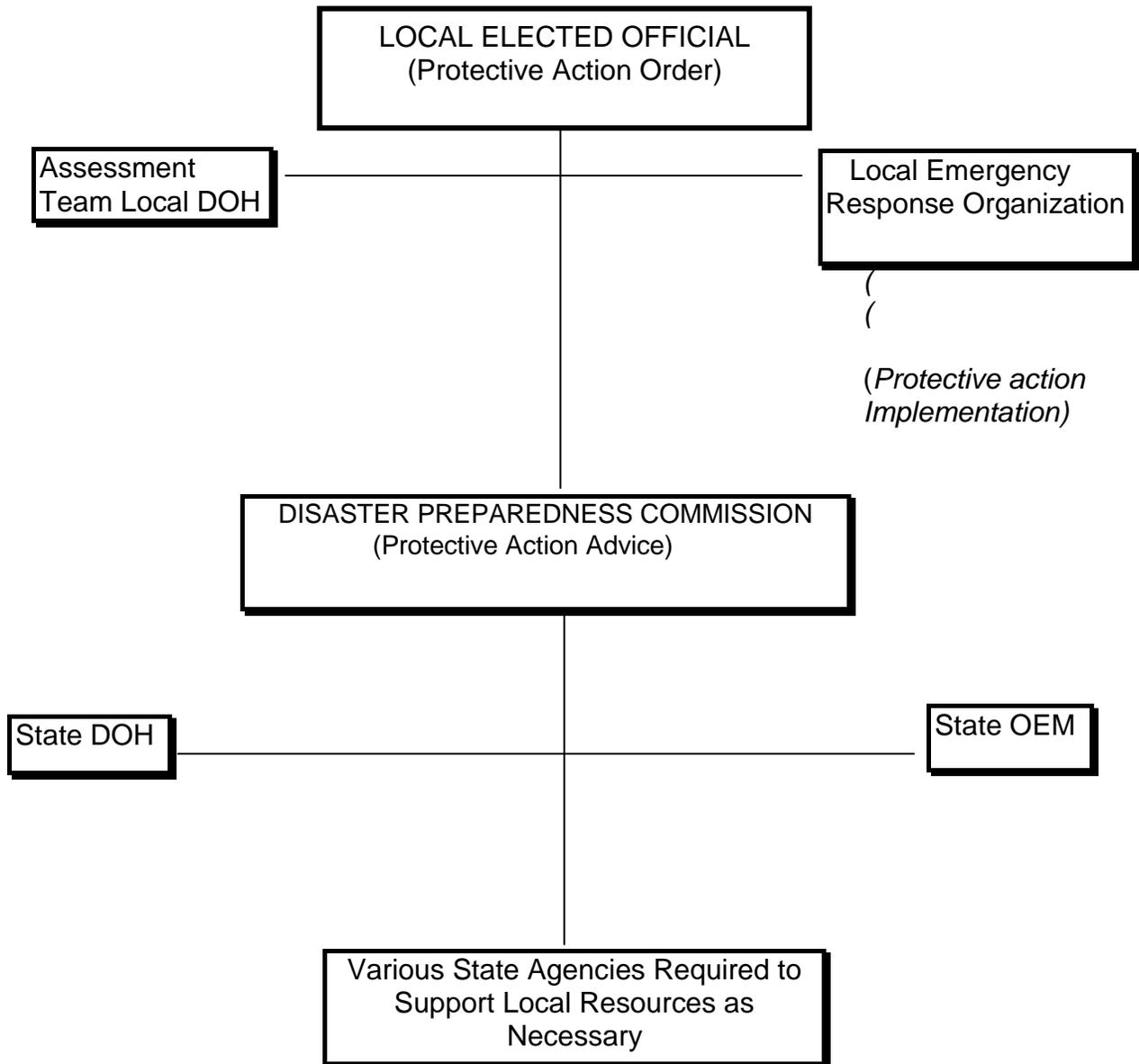
Additional Support Information:

Attachment 1 provides a summary of the document entitled: "Alignment of Public Protective Actions for Nuclear Power Plant Incidents with Updated Guidance" prepared by the New York State Nuclear Emergency Preparedness Subcommittee Technical Issues Task Force, (November, 2005). This consensus document details New York strategy that aligns the protective actions and terminology used by the Licensee, State, and counties.

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A. RESPONSE ORGANIZATION STRUCTURE
LINES OF AUTHORITY

Prior to State Declaration of Disaster Emergency



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**RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
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C. ACTIVATION OF EMERGENCY OPERATIONS CENTERS

1. Emergency Classification- Notification of Unusual Event (NUE)

State Activation	10 Mile EPZ County Activation	50 Mile EPZ County Activation
All involved State agencies will utilize their normal working areas for response activities.	All involved County agencies will utilize their normal working areas for response activities.	All involved County agencies will utilize their normal working areas for response activities.

2. Emergency Classification- Alert

State Activation	10 Mile EPZ County Activation	50 Mile EPZ County Activation
Notify appropriate State agency personnel to report to State EOC. (See Procedure B), Send NYSOEM Liaisons to affected counties, States, or local EOCs, JIC and EOF.	Full activation of County EOC. Send designated County liaison officer to EOF.	County agency personnel to report to county EOC if required.

3. Emergency Classification- Site Area Emergency (SAE)

State Activation	10 Mile EPZ County Activation	50 Mile EPZ County Activation
Full activation of State EOC. (See Procedure B) Send NYSOEM liaisons to affected counties, States, or local EOCs, JIC and EOF	Full activation of County EOC.	County agency personnel to proceed to County EOC,

4. Emergency Classification- General Emergency (GE)

State Activation	10 Mile EPZ County Activation	50 Mile EPZ County Activation
Full activation of State EOC (See Procedure B) Send NYSOEM liaisons to affected Counties, States, local EOCs, JIC and EOF.	Full activation of County EOC.	Advise specific County agency personnel to proceed to County EOC.

New York State
Nuclear Emergency Preparedness Subcommittee
Technical Issues Task Force

***Alignment of Public
Protective Actions
for Nuclear Power
Plant Incidents with
Updated Guidance***

November 2005

The following individuals and organizations participated in the development of this position paper, and agree to its purpose and contents. All participants agree to implement the guidance contained herein, to the extent possible.

RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
SECTION III: RESPONSE

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RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
SECTION III: RESPONSE

Executive Summary

The purpose of this position paper is twofold. First, it reconciles different terminology used by Licensees, State and County officials when issuing protective action recommendations during a radiological emergency at a nuclear power plant, and second, it establishes consistent criteria that can be used for making such recommendations. This issue was prompted by the issuance of NRC Regulatory Information Summary (RIS) 2004-13, "Consideration of Sheltering in Licensee's Range of Protective Action Recommendations", and the identification of inconsistent definitions of protective actions within the Licensee, State and County emergency plans.

The table below summarizes the agreed upon definitions for the protective actions.

Decision/Protective Action	Expected Public Response
No Need for Protective Actions	No action
Evacuate specified ERPAs	Evacuate if located in the specified ERPAs
Shelter-in-place specified ERPAs or designated populations	Shelter-in-place if located in the specified ERPAs or designated populations: <ul style="list-style-type: none"> • Go indoors • Limit outside sources of air • Make preparation to evacuate • Listen to EAS
Monitor the EAS	Continue listening to EAS for additional information
Implement the KI plan	Follow provided direction regarding the use of KI

1.0 Purpose

The terminology used in the protective actions recommended by nuclear power plant licensees differs from that recommended by current regulatory guidance. In addition, definitions of certain protective actions vary between Licensee, State and county emergency plans. The purpose of this position paper is to recommend a strategy that will align the protective actions and terminology used by the Licensee, State, and counties.

2.0 Regulatory Requirements and Guidance

2.1 10 CFR 50.47(b)(10) states that licensees are to develop a range of protective actions for the public in the plume exposure pathway Emergency Planning Zone (EPZ) and that in developing this range of protective actions, consideration is to be given to sheltering (Ref. 1).

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2.2 NUREG-0654 FEMA-REP 1 section J.9 states that “Each state and local organization shall establish a capability for implementing protective measures based upon protective action guides and other criteria. This shall be consistent with the recommendations of the EPA regarding exposure from the passage of radioactive plumes...” (Ref. 2).

2.3 NUREG-0654 FEMA-REP 1 Supplement 3 states that an actual or projected severe core damage or loss of control of the facility should require a recommendation to evacuate a 2-mile radius and 5 miles downwind unless conditions make evacuation dangerous, and advise the remainder of plume EPZ to go indoors to monitor EAS broadcasts. Notes: (3) If there are very dangerous travel conditions initially shelter rather than evacuate the population until conditions improve, (4) Transit-dependent persons should be advised to remain indoors until transportation resources arrive if possible, (5) Shelter may be the appropriate action for controlled releases of radioactive material from the containment if there is assurance that the release is short term (puff release) and the area near the plant cannot be evacuated before the plume arrives (Ref. 3).

2.4 NRC Regulatory Information Summary (RIS) 2004-13, “Consideration of Sheltering in Licensee’s Range of Protective Action Recommendations,” states that sheltering may be the appropriate action for controlled releases of radioactive material from the containment, if there is assurance that the release is short term (puff release) and the area near the plant cannot be evacuated before the plume arrives. Also sheltering may be appropriate (when available) for areas not designated for immediate evacuation because: (1) it positions the public to receive additional instructions; and (2) it may provide protection equal to or greater than evacuation. Additionally, a licensee’s emergency plan, implementing procedures, and notification forms need to include the consideration of sheltering consistent with Federal guidance (Ref. 4).

2.5 NRC RIS 2004-13, Supp. 1, “Consideration of Sheltering in Licensee’s Range of Protective Action Recommendations” confirms NRC’s position that licensees must develop a range of protective actions that includes the consideration of sheltering and states that NRC will begin evaluating the use of enforcement action for licensees in noncompliance (Ref. 5).

2.6 Nuclear Energy Institute (NEI) Guidance, “Range of Protective Actions for Nuclear Power Plant Incidents” describes the industry perspective on protective actions (Ref. 6).

2.7 NRC RIS 2005-08, Endorsement of NEI Guidance “Range of Protective Actions for Nuclear Power Plant Incidents” states the NRC’s endorsement of NEI’s recommendations for use of specific protective actions, including sheltering as an alternative to evacuation for short term releases or when impediments to evacuation exist (Ref. 7).

RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
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2.8 EPA 400-R-92-001 “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents” states that sheltering may be appropriate (when available) for areas not designated for immediate evacuation because: 1) it positions the public to receive additional instructions; and 2) it may provide protection equal to or greater than evacuation (Ref. 8).

3.0 Definitions

3.1 A **“General Emergency”** is defined as actual or projected severe core damage or loss of control of the facility.

3.2 “ All remaining ERPA’s monitor the Emergency Alert System (EAS)” **is an action that:**

- Will always and only be used in conjunction with a recommendation for evacuation or shelter-in-place
- Is not intended to provide dose reduction
- May involve a variety of actions, including:
 - Listening to EAS
 - Collecting medications, important papers, etc.
 - Packing (in case it is later recommended to evacuate)
 - Does not mean shelter-in-place
- Although it may be advisable to go indoors to monitor EAS in order to minimize traffic and other outdoor congestion, it is not required that the public go indoors in order to monitor EAS

3.3 “Shelter-in-place” is an action that:

- May be recommended by the licensee for short duration releases (defined as a release of one hour or less duration) during a General Emergency
- May be recommended by offsite response agencies for persons who should be evacuated but cannot because of impediments such as:
 - Transportation resource shortfalls
 - Dangerous travel conditions
 - Long mobilization times (special populations such as prisons, nursing homes, etc.)
- Would only be recommended during a General Emergency
- Would be taken for the purpose of reducing dose
- May involve a variety of actions, including:
 - Going indoors
 - Limiting outside sources of air
 - Making preparation to evacuate
 - Listening to EAS

RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
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3.4 “Evacuation” is an action that:

- Is defined as the urgent removal of people from an area to avoid or reduce high-level, short-term exposure, usually from the plume or deposited activity
- Would only be recommended during a General Emergency
- Would be taken for the purpose of reducing dose

3.5 “Short-Duration Release” is defined as a release of radioactive materials, less than one hour in duration.

4.0 Implementation Considerations

This section provides suggestions for aligning the protective actions described above.

4.1 Licensee actions

- The New York State Radiological Emergency Data Form, Part 1, item 6 should be modified to read as follows (See Appendix C):
 - A. No Need for Protective Actions outside the site boundary
 - B. Evacuate and implement the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System ...
 - C. Shelter-in-place and implement the KI Plan for the following ERPAs and all remaining ERPAs monitor the Emergency Alert System ...
 - A “Note” should be added to 6B which states that “Offsite authorities should consider ‘shelter-in-place and take KI’ if evacuation is not feasible.” This statement acknowledges that during an emergency, licensees are typically unaware of emergent impediments to evacuation because that information is obtained and acted upon by offsite officials.
- Licensee emergency plans should be revised to include the protective action recommendation of “shelter-in-place” for short duration releases during a General Emergency. A short duration release is defined as a release of radioactive materials less than one hour in duration.
- Licensee emergency plans may be revised to reflect arrangements that have been made with State and/or county officials to identify and accommodate special evacuation circumstances.
- Licensees may consider additional actions for long-term impediments to evacuation per their site emergency plan and procedures.

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4.2 County and State Actions

- Emergency plans should be revised to include:
 - Shelter-in-place as a protective action for the public.
 - Implementation of the shelter-in-place protective action when persons who should be evacuated cannot. See decision tree in Appendix B for additional information.
 - A concurrent recommendation to ingest KI will be made if the public is directed to shelter-in-place during a General Emergency.

- Public information plans should be revised as follows:
 - Incorporate information on the purpose of monitoring EAS, and actions to take while monitoring EAS into public education materials and press releases.
 - Incorporate “Monitor the EAS” into EAS follow-up messages.
 - Incorporate the purpose of shelter-in-place, and actions to take in order to shelter-in-place, into public education materials. See Appendix D for references for additional information on recommended actions.
 - Incorporate shelter-in-place protective action details into EAS follow-up messages and press releases.
 - Incorporate KI protective action details, as they relate to a recommendation to shelter-in-place, into public information materials, press releases, and EAS follow-up messages.

RADIOLOGICAL HAZARDS ANNEX FOR FIXED NUCLEAR FACILITIES
SECTION IV: RECOVERY

***New York State Comprehensive Emergency
Management Plan:***

**Radiological Hazards Annex for Fixed Nuclear
Facilities**

Section IV: Recovery

1.0 INTRODUCTION

The intermediate phase of an accident at a nuclear power plant is defined as that period beginning after the source and releases have been brought under control and environmental measurements are available for use as a basis for decisions on protective actions.

During this phase the primary source of exposure to the population is assumed to be due to deposited radionuclides which include the following pathways:

- External gamma and beta radiation from deposited radioactive materials (or “groundshine”) which is expected to be the dominant source;
- Internal exposure from inhalation of resuspended materials;
- Ingestion of food and water

During this phase of an accident, protective action responses will include restrictions on food and/or water (detailed in Section III); and relocation. It is expected that this phase of an accident might last from weeks to many months.

The late phase of a nuclear power plant accident consists of recovery activities aimed at reducing radiation levels in the environment so as to permit unrestricted, long-term use of property. This phase of the accident, which may last from months to many years, ends when all recovery activities have been completed.

Measures the State will take in managing short-term and long-term recovery efforts are described in Volumes 2 and 3 of the State Comprehensive Emergency Management Plan. State Executive Law, Article 2-B authorizes the Disaster Preparedness Commission to create a disaster Recovery Organization and

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ensure adequacy of staffing to effectively manage the recovery process. To assist in the recovery efforts, the DPC may assign responsibilities to State agencies that are above and beyond an agency's normal, day to day obligation. The delineation of these activities will be coordinated through the MAC, if activated, to the activated functional groups, agency liaisons and departmental operations center, as appropriate. The Annexes developed by each of the State Functional Branches identify short-term recovery measures that can be taken by their respective group.

Designated participants in the disaster Recovery Organization will be comprised of representatives of the Commission's membership, and such other agencies as the Commission Chairman may designate. State agency representatives will include, among others, the Department of Agriculture and Markets, Office of Economic Development, Health, Environmental Conservation, Labor, Temporary & Disability Assistance, State, Transportation, Office of General Services, New York State Energy Research and Development Authority, Public Service Commission, Division of State Police, Division of Military and Naval Affairs and NYSOEM. Depending on the severity of the radiological event and conditions, the Recovery Organization will coordinate with federal response program agencies (e.g., FRMAC). Response organizations will be notified that recovery activities are being initiated. This may be accomplished utilizing the Executive Hotline, the RECS line, EOC briefings, DisasterLan, conference calls and press releases.

2.0 ROLES AND RESPONSIBILITIES

2.1 Recovery Organization

The Recovery Organization will be responsible for directing State resources and intermediate and late phase activities and for assisting in the total cooperative effort involving any or all of the other organizations having recognized roles in intermediate and late phase operations. During intermediate and late phase operations the Recovery Organization is responsible for developing practical time parameters and activities consistent with this plan, and ensures that there are adequate communications systems and processes for all State activities. The Recovery Organization keeps the DPC apprised of all matters relating to the recovery effort.

2.2.1 State Role

The New York State Commissioner of Health continues to have the primary responsibility for recommending protective actions i.e. relocation; for overseeing the total related radiological program including recovery activities; for modifying, and relaxing protective actions including allowing the reentry of evacuated or

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restricted areas; and discontinuing protective actions allowing the return of the evacuated population.

The Director of the State Office of Emergency Management (NYSOEM) coordinates State and Federal assistance and programs in support of the local jurisdictions.

2.2.2 Federal Role

If requested by New York State, federal support will be provided in accordance with the Federal Response Framework and appropriate federal agency technical, advisory and other required assistance.

2.2.3 Local Government

Local Chief Elected Officials assess the needs of their affected areas in conjunction with the State Office of Emergency Management. They direct intermediate and late phase operations in their jurisdictions. State directed intermediate and late phase operations and protective actions are coordinated with the respective jurisdictions and the federal government as warranted.

3.0 RELOCATION AND RETURN OPERATIONS

3.1 Technical Assessment

Before assessing relocation and/or reentry of the public, it is necessary to ensure that the source of the release or the threat of a release is under control. The Planning Section, Assessment & Evaluation (A & E) Branch considerations include:

- Whether there is a radioactive material inventory capable of being released offsite;
- Whether barriers to a release are threatened by fire, facility control, the presence of hydrogen or other explosive gas, core melt through, pressure build up (decay heat), direct containment heating (high pressure melt through), or isolation failure;
- Whether the reactor is shutdown (subcritical) and whether or not it can go critical; and
- Whether the core is being cooled.

Based on analysis of survey results including aerial monitoring data, the federal Aerial Measuring System (AMS), ground monitoring (Federal, State, County and

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NFO field team data), and sample isotopic analysis, the A & E branch will determine the location of the isodose line corresponding to the relocation PAG [$>$ (greater than) or $=$ 2 rem projected dose in the first year]. Relocation PAGs are outlined in Table 1.

3.2 Restricted Zone

Based on A & E branch recommendations, and in consultation with local officials, the Commissioner of DOH will order the establishment of a restricted zone which will include that area in excess of the relocation PAG and an appropriate buffer zone. Buffer zone considerations include geopolitical boundaries, major roads and landmarks, neighborhood boundaries, as well as the potential for transport of the deposited radionuclides.

3.3 Access Control

Division of State Police in conjunction with county and local police agencies will identify control points necessary to control access to the restricted zone.

3.3.1 The Recovery Organization, and specifically the Human Services Branch, in coordination with appropriate federal, county and local agencies, will implement the relocation order and address the various needs of the relocating population including short and long term housing, job loss, replacement of belongings, and any special needs that may arise. To the extent possible, human need services, federal disaster assistance, and NFO insurance assistance (e.g., American Nuclear Insurers) will be coordinated at service centers located as to be convenient to the relocating population. Persons previously evacuated from areas now determined to be restricted will be designated as relocated.

3.3.2 Persons previously evacuated from areas which have not been contaminated will be allowed to return. Return orders will be formulated in conjunction with the local chief elected officials and shall be issued via media releases and announcements at reception centers and congregate care centers. Transportation for transit dependent members of the returning population will be arranged.

3.3.3 Persons evacuated from contaminated areas outside the restricted zone will be allowed to return on gradual basis as confidence is gained from sample analysis and field measurements that relocation PAGs (Table 1) will not be exceeded.

3.3.4 Factors being considered prior to allowing the return of evacuees include:

- Sampling and monitoring results

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- Status of decontamination activities
- Public safety status including police, fire and EMS capabilities
- Availability and operability of public utilities including electric power, gas, telephone, water and sewer;
- Adequacy of transportation systems and network; and any other needs identified by the State Human Services Branch.

3.3.5 Additional monitoring/decontamination stations will be established to support control of the restricted zone.

4.0 INGESTION PATHWAY

4.1 Environmental Surveillance

Contaminated lands and water supplies will be identified through environmental surveillance consisting of aerial and ground monitoring. Milk and agricultural sampling is to be performed in a manner which permits sufficient time for action to be taken at an appropriate stage in the farm-processor-retail market cycle. Methods of radionuclide measurement will include complex laboratory methods, rapid analytical methods employing simple laboratory or modified field techniques, and field methods using conventional radiation survey instruments and the DOE's Aerial Measuring System (AMS). In general, these analyses will be the basis for implementing other ingestion pathway protective action options.

Implementing the environmental surveillance response option will include the following:

- Utilizing aerial monitoring (DOE AMS) to establish general patterns of exposure rates from deposited radioactive material;
- Increasing the frequency of air sampling;
- Undertaking field survey readings;
- Additional sampling of water, milk, and vegetation.

4.2 The Milk Pathway

The pathway now has one set of FDA Protective Action Guides (PAGs) for milk and dairy products:

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- 0.5 REM Committed Effective Dose Equivalent (CEDE).
- 5.0 REM Committed Dose Equivalent (CDE) to an individual organ, whichever is more limiting.

The primary protective action option prerequisite for the Milk Pathway is to place milk animals on stored feed and water to limit their intake of any radioactive contaminants. Other protective action response options include:

- Establishing liaison with the industry receiving milk from the affected area;
- Acceptance of milk produced by cattle on stored feed;
- Condemnation of milk produced from all other animals in the affected area.
- Laboratory analysis of milk samples taken from, in and around the affected area.
- Diversion of whole milk potentially contaminated with short-lived radionuclides to products with a long shelf life to allow radioactive decay of the radioactive material.

Initial precautionary directives to place lactating animals on stored feed to prevent contamination of the milk chain will usually be prescribed in the early phase of the radiological emergency.

If laboratory analysis of milk and dairy products indicates that the projected dose may equal or exceed the PAG, the Commissioners of Health and Agriculture and Markets will order the following protective action:

- Condemnation of milk and/or milk products and order their destruction.

4.3 Other Agricultural Products

This response option has the same FDA PAG's covered in the preceding section. This option provides for:

- Establishing liaison with the industry receiving products from the affected area;
- Determining types of products produced in the affected area;
- Embargoing food pending evaluation;
- A sampling program; and
- Procedures for collecting and disposal of contaminated products.

If analysis indicates the projected dose equals or exceeds the PAG 0.5R CEDE or 5 REM CEDE to an individual organ, one or more of the following actions will be ordered:

- Livestock: move livestock to uncontaminated habitat; remove milk

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producing animals and other livestock used for meat production from pasturage to uncontaminated stored feed; provide uncontaminated water.

- Consumable fruits and vegetables: advise home gardeners to remove potential surface contamination by washing, brushing, scrubbing, peeling or processing; advise against public consumption; use substitute sources of specific food items; and remove from marketplace and destroy.
- Meat and meat products: use substitute source of specific food item; advise against public consumption; divert to non-human, non-food pathway use; and remove from marketplace and destroy.
- Grains: mill whole grains, remove the bran from wheat and polish rice; use substitute sources; advise against public consumption; divert to non-human, non-food chain use; and condemn and destroy.
- Animal feeds: prohibit use by livestock; preserve and store for radionuclide decay; use alternate feed sources; divert to non-livestock, non-food chain use; increase time between deposition and harvest, to maximize time for weathering, plant growth, dilution, and radioactive decay; and condemn and destroy.
- Agricultural land: alter use of land to allow radioactive decay of short-lived radionuclides; remove contaminated surface crops and destroy; for grasses, cutting and rolling sod, raking and removing mulch; removal of surface soil, allow natural surface erosion, or irrigate and leach; and isolate and prohibit land use.

Additionally, the following action may be ordered:

- For all of the above agricultural products, immediate action will be taken to isolate these contaminated products and prevent their introduction into commerce. The following factors will be taken into consideration when an embargo of these foodstuffs may be called for; availability of other protective actions, relative proportion represented by the item in the diet, importance of the foodstuff in the diet and available substitutes, relative contribution of other foods to the total dose and time and effort to effect the necessary corrective actions.

4.4 Water Sources

10 NYCRR Part 5 (New York Commissioners Rules & Regulations) has regulations regarding limits on radionuclides in water sources that may be utilized for human consumption, directly or via the food chain. This response option provides for:

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- Identifying public water sources that may be affected by the release;
- Establishing liaison with the water supply operators;
- Collecting and analyzing representative samples; and
- Alerting individuals and water supply operators using water sources that may be contaminated.

One or more of the following protective actions will be ordered for implementation when the projected dose for ingestion of water sources, equals or exceeds the PAG:

- Advising the reduction in population daily intake.
- Using alternate drinking water sources and supplies and restrict use of the contaminated water sources for sanitary and fire-fighting purposes;
- Using of typical water treatment; coagulation, settling, and filtration;
- Using of special water treatment removal techniques; sand, filters, ion exchange, and lime-soda ash softening;
- Altering use to allow radioactive decay of short-lived radionuclides; and
- Prohibition of water supply use.

4.5 Coordination with Government Agencies Outside of New York State

If a serious emergency occurred, that could result in the contamination of milk or food products that may be shipped into New York State, the Departments of Agriculture and Markets and Health will initiate the following actions as appropriate:

- Establishing liaison with their counterpart in the federal government and in the state(s) where milk or food products may have been contaminated;
- Estimating the type and amount of milk, dairy products, or other agricultural products being shipped into the State from the affected area;
- Determining the surveillance and controls being exercised to ensure that products contaminated in excess of acceptable limits will not be shipped into the State; and
- Providing recommendations for a sampling program for surveillance of milk and food shipped into New York State.
- **Note:* The data (e.g., maps, regional and statewide listings of water sources, dairies, food processing plants, etc.) used in making the technical decisions is on file in the State EOC.

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The U.S. Department of Agriculture has established an USDA Emergency Board in every State and county to coordinate USDA State or county disaster assistance efforts. All of the USDA agencies having major emergency responsibilities are represented on these councils. USDA emergency personnel are to establish continuing liaison with State and/or county agricultural agencies to insure coordination assistance activities and damage assessments.

5.0 LONG-TERM RECOVERY

Following any disaster, the response organization must at some point transition from a short-term recovery to a long-term recovery. In the case of a major radiological accident, the long-term recovery phase will involve continued coordination with federal and local agencies for restoring essential services and functionality to the affected areas. This will likely occur when it is recognized that the infrastructure in those areas is able to support reentry, maintain safety and security, provide self-sustaining economic viability, and when some sense of normalcy is evident. **Attachment 2** identifies respective State and Federal roles for coordination of essential functions and services.

5.1 Demobilization of the State Response

When the State response effort is deactivated, specific procedures for deactivation will be followed to ensure proper record keeping and handling of contracts as well as recovery of deployed equipment and materials. Demobilization and deactivation activities are planned, coordinated and executed to ensure that all level of government, tribal, and private sector response and recovery personnel are maintained at a State of readiness commensurate to operational field response and recovery operations. Actions may include:

- Relaxing access control points.
- Follow-up water supply analyses, remediation of contaminated property and long-term monitoring.
- Additional food safety messages, handling practices, inspections and monitoring.
- Estimating the overall impact on the State, including health impacts, financial impacts and the disaster recovery mechanisms that can support the general public.
- Continue risk communications for mental health support, recovery programs, individual and family preparedness, and safety messages regarding mold.

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- Communicating with local government, healthcare providers, the media, and the public.

Attachment 2

State/Federal Coordination
For Emergency Recovery Operations

<i>Critical Infrastructure Sector</i>	<i>State Agency or Branch</i>	<i>Federal Coordination with ESF-resources to support the response.</i>	<i>ESF Coordinating Agency</i>	<i>Federal Sector-Specific Agency (SSA)</i>	<i>State/Federal ESF Coordinative Notes</i>
Agriculture	APB / Ag & Mkts	ESF #11: Agriculture and Natural Resources	USDA	USDA, HHS	ESF 11: Can provide nutrition assistance; control and eradication of an animal./zoonotic disease outbreak, assurance of food safety; support pet sheltering, protection of natural and cultural resources.
Food	HSB	ESF #6: Mass Care, Housing, Human Services	DHS/FEMA	USDA, HHS	ESF 6: Non-medical mass care services to include sheltering of victims, organizing feeding operations, emergency first aid, coordinating bulk distribution of emergency relief items.
	Ag & Mkts	ESF #11: Agriculture and Natural Resources	USDA		ESF 11: Can provide nutrition assistance, assurance of food safety and food security.
Water	HSB	ESF #6: Mass Care, Housing, Human Services	DHS/FEMA	EPA	ESF 6: Coordinating bulk distribution of emergency relief items.
Water, Waste Water Treatment.	CIKR	ESF # 3: Public Works and Engineering	DOD	DOD	ESF 3: Assessments of public works and infrastructure; executing emergency contract support and real estate services.
Dams	CIKR, DEC	ESF # 12: Energy Annex	DOE	DHS	ESF 12: Provide support and assistance to power producers; actions to assess energy supply demands; technical support to hydroelectric facilities.
	LESB	ESF #13: Public Safety & Security	DHS/DOJ		ESF 13: Law enforcement support, credentialing, access control, site security, traffic and crowd control, security for the SNS.
Public Health	HSB	ESF #6: Mass Care	DHS/FEMA	HHS	ESF 6: Human Services include providing victim-related recovery efforts such as counseling, identifying support for persons with special needs, expediting processing of new Federal benefits claims.
	PHMB	ESF #8: Public Health and Medical Services	HHS		ESF 8: Assessment of public health/medical needs (including behavioral health), public health surveillance, medical care (NDMS) personnel, medical equipment and supplies.
	Ag & Mkts	ESF #11: Agriculture and Natural Resources	USDA		ESF 11: Nutrition assistance, control and eradication of an animal/zoonotic disease outbreak, assurance of food safety and food security, pet shelter support
	SOEM / PHMB / DOS	ESF #15: External Affairs	DHS		ESF 15: Public Affairs, community relations, congressional and international affairs, State and local coordination, and Tribal affairs.

Section IV-12

<i>Critical Infrastructure Sector</i>	<i>State Agency or Branch</i>	<i>Federal Coordination with ESF-resources to support the response.</i>	<i>ESF Coordinating Agency</i>	<i>Federal Sector-Specific Agency (SSA)</i>	<i>State/Federal ESF Coordinative Notes</i>
Emergency Services	ESB	ESF #4: Firefighting	USDA/FS	DHS	ESF 4: Provides personnel, equipment, and supplies in support of State, local, and tribal agencies involved in rural and urban firefighting operations.
	ESB	ESF #5: Emergency Management	DHS/FEMA		ESF 5: Deploy staff to support emergency response teams, logistics and material, direction and control, information management, resource acquisition and management, including allocation and tracking.
	ESB, LESB	ESF #7: Resource Support	GSA		ESF 7: Support contracting services and security services, and personnel required to support immediate response activities.
	ESB	ESF #8: Public Health and Medical	HHS		ESF 8: Can support emergency first aid.
	ESB	ESF #9: Urban Search & Rescue	DHS/FEMA		ESF 9: USAR support as needed.
	LESB	ESF #13: Public Safety & Security	DHS/DOJ		ESF 13: Law enforcement support, credentialing, access control, site security, traffic and crowd control, security for the SNS.
Government	DOS, SOEM	ESF #7: Resource Support	GSA	OHS- ICE / FPS	ESF 7: Support contracting services and personnel required to support immediate response activities.
	SOEM	ESF #5: Emergency Management	DHS		ESF 5: Deploy staff to support emergency response teams, logistics and material, direction and control, information management, resource acquisition and management, including allocation and tracking.
	SOEM, DOS, PHB	ESF 15: External Affairs	DHS		ESF 15: Public affairs, community relations, congressional and international affairs, State and local coordination, and Tribal affairs.
Defense Industrial Base	Logistics	ESF # 3: Public Works and Engineering	DOD	DOD	ESF 3: Assessments of public works and infrastructure; executing emergency contract support and real estate services.
	Logistics	ESF # 12: Energy Annex	DOE		ESF 12: Assist with requests for locating fuel for transportation, communications, emergency operations, and national defense.

Section IV-13

<i>Critical Infrastructure Sector</i>	<i>State Agency or Branch</i>	<i>Federal Coordination with ESF-resources to support the response.</i>	<i>ESF Coordinating Agency</i>	<i>Federal Sector-Specific Agency (SSA)</i>	<i>State/Federal ESF Coordinative Notes</i>
Information and Telecommunications	OCS, SOEM, CIKR, OFT	ESF # 2: Communications Annex	DHS	DHS /OCSTC	ESF 2: Coordinates to assess the need for telecommunications industry support, ensures such support is available as needed, including personnel.
	OSC, SOEM, CIKR, OFT	ESF #7: Resource Support	GSA		ESF 7: Telecommunications support in accordance with the Office of Science and Technology Policy (OSTP) National Plan for Telecommunications Support in Non-Wartime Emergencies.
Energy	CIKR	ESF #12: Energy	DOE	DOE	ESF 12: Assist with requests for emergency response actions as they pertain to the Nation’s energy supply, locating fuel for transportation, communications, emergency operations, Federal actions to conserve fuel and electric power; provide energy supply information and guidance on the conservation and efficient use of energy to the State, assesses fuel and electric power damage and energy supply and demand, and identifies requirements to repair energy systems, recommends options to mitigate impacts, and coordinates restoration of energy systems.
Commercial Nuclear Reactors and Waste	CIKR			DHS	ESF 12 (above) and see <i>emergency services</i> for additional State/federal resource support.
Transportation	SOEM, TIB, DOCS, CIKR, SED	ESF # 1: Transportation	DOT	DHS/TSA, USCG	ESF 1: Processing and coordinating requests for federal and civil transportation support, coordinating alternate transportation services; coordinating activities conducted under the direct authority of DOT elements such as air, maritime, surface, rail, and pipelines.
	SOEM (Logistics)	ESF #7: Resource Support	GSA		ESF 7: Contracting services, including transportation services, in coordination with ESF #1.
Banking and Finance	ESDC, Banking, Tax & Finance.	ESF # 2: Communications Annex	DHS	Dept. of Treasury	ESF 2: Coordinates to assess the need for telecommunications support for financial sector ISAC.
	SOEM, State Insurance Department	ESF #7: Resource Support	GSA		ESF 7: Personnel support for requirements not specifically identified in other ESFs. <i>Note: Federal coordination should be maintained through the Treasury to the Financial and Banking Information Infrastructure Committee (FBIIIC) to a host of State, federal and private banking and financial institutions.</i>

Section IV-14

<i>Critical Infrastructure Sector</i>	<i>State Agency or Branch</i>	<i>Federal Coordination with ESF-resources to support the response.</i>	<i>ESF Coordinating Agency</i>	<i>Federal Sector-Specific Agency (SSA)</i>	<i>State/Federal ESF Coordinative Notes</i>
Chemical Industry and Hazardous Materials;	ESB, CIKR, TIB	ESF #1: Transportation	DOT	DHS	ESF 1: Processing and coordinating requests for federal and civil transportation support, coordinating alternate transportation services; coordinating activities conducted under the direct authority of DOT elements such as air, maritime, surface, rail, and pipelines.
	CIKR	ESF #7: Resource Support	GSA		ESF 7: Contracting services, including transportation services, in coordination with ESF #1.
	CIKR	ESF #12: Energy			ESF 12: Assist with requests for emergency response actions as they pertain to the Nation's energy supply, locating fuel for transportation, Federal actions to conserve fuel and electric power; provide energy supply information and guidance on the conservation and efficient use of energy to the State, assesses fuel and electric power damage and energy supply and demand.
Postal and Shipping	DOS, DOCS	ESF #1: Transportation	DOT	DHS/TSA	ESF 1: Processing and coordinating requests for federal and civil transportation support, coordinating alternate transportation services;
	HSB	ESF #6: Mass Care	HHS		ESF 6: Expedites mail services in affected areas.
	SOEM (Logistics)	ESF #7: Resource Support	GSA		ESF 7: Contracting services, including transportation services, in coordination with ESF #1.
National Monuments and Icons	ESB	ESF #4: Firefighting	USDA/FS	DOI	ESF 4: Provides personnel, equipment, and supplies in support of State, local, and tribal agencies involved in rural and urban firefighting operations.
	ESB, LESB	ESF #7: Resource Support	GSA		ESF 7: Support contracting services and security services, and personnel required to support immediate response activities.
	ESB	ESF #8: Public Health and Medical	HHS		ESF 8: Can support emergency first aid.
	ESB	ESF #9: Urban Search & Rescue	DHS/FEMA		ESF 9: USAR support as needed.
	LESB	ESF #13: Public Safety & Security	DHS/DOJ		ESF 13: Law enforcement support, credentialing, access control, site security, traffic and crowd control, security for the SNS.

Section IV-15

<i>Critical Infrastructure Sector</i>	<i>State Agency or Branch</i>	<i>Federal Coordination with ESF-resources to support the response.</i>	<i>ESF Coordinating Agency</i>	<i>Federal Sector-Specific Agency (SSA)</i>	<i>State/Federal ESF Coordinative Notes</i>
Critical Manufacturing	CIKR	ESF #1: Transportation	DOT	TBD-Pending	ESF 1: Processing and coordinating requests for federal and civil transportation support, coordinating alternate transportation services;
	LESB	ESF #13: Public Safety & Security	DHS/DOJ		ESF 13: Law enforcement support, credentialing, access control, site security, traffic and crowd control, security for the SNS.
	CIKR/SOEM Logistics	ESF #7: Resource Support	GSA		ESF 7: Contracting services, including transportation services, in coordination with ESF #1.

Branch Key:

ESB = Emergency Services Branch

APB = Animal Protection Branch

PHB = Public Health and Medical Branch

HSB = Human Services Branch

TB = Transportation Branch

LESB = Law Enforcement and Security Branch

CIKR = Critical Infrastructure and Key Resources Branch

NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX A - DEFINITIONS

DEFINITIONS

Access Control: All activities accomplished for the purpose of controlling entry or re-entry into a restricted zone to minimize the radiation exposure of individuals. This function is needed to prevent the general public from entering the restricted zone and permitting only emergency workers with essential missions and limited members of the general public to enter a restricted zone.

Activation: A process by which a facility is brought up to emergency mode from a normal mode of operation. Activation is completed when the facility is ready to carry out full emergency operations.

Acute exposure: an exposure to radiation that occurs over a short period of time, usually less than an hour.

Aerial Measuring System (AMS): Department of Energy (DOE) operated aerial radiation surveillance program which may be used for plume verification and ground deposition monitoring.

Airborne Radioactive Material: Any radioactive material dispersed in the air in the form of dusts, fumes, mists, vapors or gases.

ALARA: acronym meaning “as low as reasonably achievable.”

Alert: Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Alert system: the hardware system(s) used to get the attention of the public within the plume emergency planning zone. An alert system may include a combination of sirens; tone activated radios; vehicles (including boats and airplanes) that utilize loud speakers/sirens, and other equipment that provides an alert signal.

Alpha particle: a positively charged particle ejected spontaneously from the nuclei of some radioactive elements. It is identical to a helium nucleus that has a mass number of 4 and an electrostatic charge of plus 2. It has low-penetrating power and short range. The most energetic alpha particle will generally fail to penetrate the skin. Alpha is hazardous when an alpha-emitting isotope is introduced into the body. Alpha particles are the least penetrating of the three common types of radiation (alpha, beta, and gamma) and can be stopped by a piece of paper (cannot penetrate skin).

NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX A - DEFINITIONS

Assessment: The compilation and analysis of all available accident data and information in order to determine actual and projected radiation doses to the affected population that may result from the accident.

Atom: the smallest particle of an element that cannot be divided or broken up by chemical means. It consists of a central core called the nucleus, which contains protons and neutrons. Electrons revolve in orbits in the region surrounding the nucleus.

Atomic energy: energy released in nuclear reactions, more appropriately called "nuclear energy." Of particular interest is the energy released when a neutron initiates the breaking up or fissioning of an atom's nucleus into smaller pieces (fission), or when two nuclei are joined together under millions of degrees of heat (fusion).

Background Radiation: Radiation arising from man's natural environment including cosmic rays and radiation occurring from the natural radioactive elements.

Beta particle: a charged particle emitted from a nucleus during radioactive decay, with a mass equal to 1/1827 that of a proton. A negatively charged beta particle is identical to an electron. A positively charged beta particle is called a positron. Large amounts of beta radiation may cause skin burns, and beta emitters are harmful if they enter the body. Most beta particles can be stopped by aluminum foil.

Boiling Water Reactor (BWR): a nuclear reactor in which water, used both as coolant and moderator, is allowed to boil in the reactor vessel. The resulting steam is used directly to drive a turbine.

Buffer Zone: An area adjacent to a restricted zone, to which residents may return, but for which protective measures are recommended to minimize exposure to radiation.

Calibration: the check or correction of the accuracy of a measuring instrument to ensure proper operational characteristics.

Chain-of-Custody Form: The documentation of the transfer of samples from one organization/individual to another with respect to the name of the organization/individual and dates of acceptance and/or transfer of samples.

Check Source: A radioisotope with a relatively fixed activity level used to determine the responsiveness of survey instruments.

Chief Elected Official: A County Executive, the Chairman or other presiding Officer of the county legislative body, the Mayor of a city or village, or the Supervisor of a town.

Chronic exposure: exposure to small doses of radiation over an extended period of time.

NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX A - DEFINITIONS

Cladding: the outer jacket of nuclear fuel elements. It prevents corrosion of the fuel and the release of fission products into the coolant. Aluminum or its alloys, stainless steel and zirconium are common cladding materials.

Commercial nuclear power plant (NPP): facility licensed by the Nuclear Regulatory Commission to use a nuclear reactor to produce electricity for sale to the general public. While there are many types of nuclear facilities, FEMA's responsibility for offsite planning and preparedness and the guidance in the REP Program Manual are applicable only to commercial nuclear power plants.

Committed Dose Equivalent (CDE): The dose equivalent to a single organ from an intake of radioactive material during the 50 year period following the exposure.

Committed Effective Dose Equivalent (CEDE): The sum of the weighting factors applicable to each of the organs of tissue that are irradiated and the CDE to each of these organs or tissues.

Congregate Care Center: A facility where short-term housing feeding would be provided for evacuees.

Containment: the provision of a gas-tight shell or other enclosure around a reactor that confines fission products and prevents their release to the environment in an accident.

Contaminated, injured, or exposed individuals: individuals who are; contaminated, contaminated and otherwise physically injured, or exposed to levels of radiation.

Contamination (Radioactive): Deposition of unwanted material on the surfaces of structures, areas, objects, or personnel.

Control rod: a rod containing a material that readily absorbs neutrons (such as boron). It is used to control the power of a nuclear reactor. By absorbing neutrons, a control rod slows the fission chain reaction by preventing neutrons from causing further fission.

Coolant: a substance, usually water, circulated through a nuclear reactor to remove or transfer heat.

Cool down: the gradual decrease in reactor fuel rod temperature caused by the removal of heat from the reactor coolant system.

Core: the central portion of a nuclear reactor containing the fuel elements, moderator, neutron poisons, and support structures.

Core melt accident: a reactor accident in which the fuel core melts because of overheating.

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curie (Ci): the basic unit to describe the intensity of radioactivity in a sample of material. One curie is equal to 37 billion disintegrations (nuclear transformations) per second. So, in one curie, 37 billion atoms decay in one second. Several commonly used fractions of the curie include:

millicurie: 1/1,000 of a curie, (one thousandth of a curie, abbreviated mCi)

microcurie: 1/1,000,000 of a curie, (one millionth of a curie, abbreviated μ Ci)

nanocurie: 1/1,000,000,000 of a curie, (one billionth of a curie, abbreviated nCi)

picocurie: 1/1,000,000,000,000 of a curie (one trillionth of a curie, abbreviated pCi)

Decay (radioactive): the decrease in the radiation intensity of any radioactive material with respect to time.

Declared Pregnant Woman: A woman who has voluntarily notified her employer in writing, of her pregnancy.

Decontamination: The reduction or removal of unwanted radioactive material from a structure, area, object or person.

Decontamination station: a building or location suitably equipped and organized where personnel and material are cleansed of chemical, biological, or radiological contaminants.

Direction and Control: The management of emergency functions within particular context (e.g., emergency operations center) through leadership and use of authority.

Derived Intervention Levels (DIL): The DILS are limits on the concentrations of various radionuclides permitted in human food distributed in commerce for human consumption.

Disaster Field Office: The temporary operations facility for the coordination of federal response and recovery activities.

Division of Homeland Security and Emergency Services (DHSES): New York State agency created following a 2010 reorganization that now includes the New York Office of Emergency Management.

Dose: A generic term that means absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or total effective dose equivalent.

Dose Equivalent: The product of the absorbed dose in tissue, factor, and all other necessary modifying factors at the location of interest. The unit for dose equivalent is the Rem (R).

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Dose Limits for Emergency Workers: The allowable accumulated during the entire period of the emergency. Action to avoid exceeding the limit is taken based on actual measurements of integrated gamma exposure. In contrast, protection action guides are trigger levels of projected dose at which actions are taken to protect the public. These actions are taken prior to the dose being received.

Dose Rate: The radiation dose delivered per unit of time. Measured, for example, in Rem per hour.

Dosimeter: A personal monitoring instrument that measures radiation exposure to gamma or X-Ray Radiation. (Direct Reading or Permanent Record)

Dosimetry: the measurement of radiation doses. It applies to both the devices used (dosimeters) and to the techniques.

Drill: An event involving organizational responses to a simulated accident to develop, test, and monitor specialized emergency skills that constitute one or more components of an emergency plan and procedure.

Effective Dose Equivalent (EDE): The dose to the body from external radiation sources (assumed to be uniform over the body).

Electron: a stable, negatively charged elementary particle of matter. Electrons orbit the positively charged nucleus of the atom.

Embargo: A legal order which restricts the movement, distribution, and/or sale of food stuffs.

Emergency Alert System (EAS): A system which uses commercial radio and television stations to furnish an expedited means of furnishing real time communications to the public in the event of an emergency (i.e., storm warning, local crises, etc.).

Emergency Classification Level (ECL): classifications used by the licensee to classify incidents. The four ECLs are Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.

Emergency Operations Center (EOC): A secure area with a wide range of communications capability that provides an operating area for those agencies involved in emergency response to man-made or natural disasters.

Emergency Operations Facility (EOF): A facility operated by the licensee for the purpose of evaluating and controlling emergency situations and coordinating responses.

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Emergency Operations Plan: A plan which provides comprehensive emergency management for all types of emergencies within the State. The Radiological Emergency Preparedness Plan is an integral part of the State Emergency Operations Plan.

Emergency Planning Zone (EPZ): The area surrounding a nuclear power plant site for which offsite planning is required. For nuclear power plants, the EPZ is defined as an area with a radius of about ten (10) miles for the plume exposure pathway and a radius of about fifty (50) miles for the ingestion exposure pathway.

Emergency Response Planning Area (ERPA): A subdivision of the plume exposure (10-mile) emergency planning zone.

Emergency Worker: An individual who has an essential mission within or outside the plume exposure pathway emergency planning zone to protect the health and safety of the public who could be exposed to ionizing radiation from the plume or from its deposition. Some examples of emergency workers are: radiation monitoring personnel; traffic control personnel; evacuation; vehicle drivers; fire and rescue personnel, including ambulance crews; medical facilities personnel; emergency operations center personnel; personnel carrying out backup alerting procedures; and essential services or utility personnel.

Evacuation: The removal of the public from an area.

Evacuation Time Estimate: An estimate, contained in emergency plans, of the time that would be required to evacuate general and special populations within the plume pathway emergency planning zone under emergency conditions.

Exercise: An event involving organizational response to a simulated commercial nuclear power plant accident with radiological and other offsite consequences. The purpose of an exercise is to test the integrated capabilities of involved organizations to implement emergency functions set forth in plans and procedures.

Exposure: A measure of the ionization produced in air by X-ray or gamma radiation. The Roentgen (R) is the unit of exposure. The term "dose", sometimes used interchangeably with exposure, actually refers to absorbed radiation.

Exposure Rate: The amount of gamma radiation that an individual would receive in one hour as measured in air (typically expressed in units of milliroentgens per hour or Roentgens per hour).

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Federal Emergency Management Agency (FEMA): the agency responsible for establishing Federal policies for and coordinating all civil defense and civil emergency planning, management, mitigation, and assistance functions of executive agencies. FEMA assists state, local, and tribal agencies in their emergency planning. Its primary role is one of coordinating Federal, state, local, tribal, and volunteer response actions.

Federal Radiological Monitoring Assessment Center (FRMAC): This center is usually located at an airport near the scene of a radiological emergency from which the DOE offsite FRMAC Director coordinates radiological monitoring and assessment assistance to the affected area. This center need not be located near the onsite or Federal-State centers as long as its operations can be coordinated with them.

Field Monitoring Team (FMT): includes groups used to detect and monitor radiation in the environment (e.g., measuring the concentration of radiation in the air, water, vegetation, soil, etc.).

Fission: the splitting of an atomic nucleus into two approximately equal parts accompanied by the release of large amounts of energy and one or more neutrons.

Fixed Contamination: Contamination that remains after loose contamination has been removed by decontamination.

Fuel cycle: the series of steps involved in supplying fuel for nuclear power reactors. It includes mining, fabrication of fuel elements and assemblies, their use in a reactor, reprocessing spent fuel and refabrication into new fuel elements.

Fuel element: a rod or other form into which nuclear fuel is fabricated for use in a nuclear reactor.

Fusion: the formation of a heavier nucleus from two lighter ones, with the release of energy.

Gamma rays: the most penetrating of the three types of ionizing radiation, gamma rays are electromagnetic radiation like light, radio waves and microwaves. Similar to X-rays, but usually more powerful, they have no mass; they are only energy. Gamma rays are best stopped or shielded against by dense material such as concrete or lead.

Geiger-Mueller Detector: A type of radiation detector that can be used to measure the gamma, or detect beta plus gamma radiation depending on whether the detector is covered by a beta shield.

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General Emergency: Indicates that events are in process or have occurred that involve actual or imminent substantial core degradation or melting, with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can reasonably be expected to exceed EPA PAG exposure levels offsite, beyond the immediate site area.

General Population: All people in the plume exposure emergency planning zone including residents and transients but not special facility populations in schools, camps, parks.

Half-life: the time required for the activity of a given radioactive substance to decrease to half of its initial value due to radioactive decay. The half-life is a characteristic property of each radioactive species and is independent of its amount or condition. The effective half-life of a given isotope on the body is the time in which the quantity in the body will decrease to half as a result of both radioactive decay and biological elimination. Half-lives vary from millionths of a second to billions of years.

Homeland Security Exercise Evaluation Program (HSEEP): a capabilities- and performance-based exercise program that provides standardized policy, doctrine, and terminology for the design, development, conduct, and evaluation of homeland security exercises. HSEEP also provides tools and resources to facilitate the management of self-sustaining homeland security exercise programs.

Host Area: A geographical area outside the plume pathway emergency planning zones where functions such as congregate care, radiological monitoring, decontamination, and registration are conducted.

Ingestion Emergency Planning Zone: For planning purposes, the area surrounding a site, where the principal exposure from an accident would be from the ingestion of contaminated water or foods. For nuclear power plants the ingestion EPZ is an area of about a fifty (50) mile radius around a nuclear plant.

Initial Notification: The first notification by a Nuclear Facility Operator to State and local agencies and the Nuclear Regulatory Commission of one of the four event classifications.

Initial Precautionary Options: A response action taken on the basis of the potential for a release of radioactive materials.

Ionization: the process of adding or removing electrons from atoms or molecules, thereby creating ions. High temperatures, electrical discharges or nuclear radiation can cause ionization.

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Ionizing Radiation: Any radiation capable of displacing electrons from atoms or molecules, thereby producing ions. (For example, radiation produced by x-ray equipment.)

Isotope: nuclides having the same number of protons in their nuclei and the same atomic number, but differing in the number of neutrons and atomic mass number. Some isotopes of a particular element may be radioactive while the others are not.

Joint Information Center: The facility used as the central point for dissemination of information by county, State and licensee representatives to the news media. This facility is located offsite, and is the only location which allows media access during an emergency.

KI (potassium iodide): A prophylactic drug that can be used effectively to block the uptake of radioiodine by the thyroid gland.

Local Government: For the purposes of the Plan any County, City, Town or Village.

Millirem (mRem): One-thousandth (1/1000) of a rem.

Mitigation: The emergency phase that is aimed at eliminating or reducing the probability of the occurrence of a radiological emergency, and in minimizing the impact of a radiological emergency on public health and property.

Monitoring: The measurement of radiation levels, usually with a portable survey instrument.

National Atmospheric Release Advisory Capability (NARAC): Atmospheric computer modeling system based at Lawrence Livermore National Laboratory - can be utilized for making dose projections.

New York State Office of Emergency Management (NYSOEM): New York State agency replacing former SEMO.

National Response Framework (NRF): This document establishes a comprehensive all-hazards approach on how the federal government coordinates with state, local and tribal governments and the private sector during incidents.

Neutron: an uncharged particle found in the nucleus of every atom heavier than hydrogen. Neutrons sustain the fission chain reaction in a reactor.

Noble Gases: The chemically inert radioactive gases that are released during an accident at a nuclear power plant.

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Notification of Unusual Event: Unusual events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

Nuclear Facility Operator (NFO): The entity licensed by the Nuclear Regulatory Commission to operate a nuclear facility.

Nuclear radiation: the particulate and electromagnetic radiation emitted from atomic nuclei in various nuclear processes. The important types of nuclear radiation U(from the weapons standpoint)U are alpha and beta particles, gamma rays and neutrons. All nuclear radiations are ionizing radiations, but the reverse is not true.

Nucleus: the dense, central, positively charged core of an atom. All nuclei contain protons and neutrons except the nucleus of hydrogen, which has a single proton.

Nuclide: a general term referring to all known isotopes, both stable (279) and unstable (about 5,000), of the chemical elements.

Nuclear Reactor: A device in which nuclear fission may be sustained and controlled in a self-supporting nuclear reaction.

Off-Site: Area outside the site boundary of a particular nuclear power plant facility.

Offsite Response Organization (ORO): any state, local, and tribal government; supporting private industry and voluntary organizations; and Licensee offsite response organizations (that are formed when state, local, and tribal governments fail to participate in the REP Program) that are responsible for carrying out emergency functions during a radiological emergency.

On-Site: Area inside the site boundary of a nuclear power plant facility.

Optically Stimulated Luminescence Dosimeter (OSLD): A dosimetry badge used to measure possible exposure to ionizing radiation. Replaces Thermo luminescent Dosimeter (TLD) (Permanent record - requires processing to read.)

Personnel Monitoring Center (PMC): Those facilities or locations where emergency workers, vehicles and equipment will be monitored for radioactive contamination and decontaminated if necessary.

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Plume: generally a gaseous atmospheric release from a nuclear power plant, in an accident or emergency, which may contain radioactive noble gases and volatile solids. While emergency plans/procedures must recognize the very low probability that particulates could be released in a serious accident, primary emphasis is given to the development of protective actions against the release of noble gases and volatiles such as radioiodine's. This cloud is not visible to the eye, but can be measured, or "seen" with radiation measurement equipment.

Plume Exposure Pathway: For planning purposes, the area surrounding a site where the principal exposure sources are: (a) whole body exposure to gamma radiation from the plume and from deposited material, and (b) inhalation exposure from the passing radioactive plume. For nuclear power plants the plume EPZ is defined as an area with a radius of about ten (10) miles.

Plutonium (Pu): an element of the periodic table that is an artificially-produced fissile material. The Pu-239 isotope is used primarily in nuclear weapons.

Portal Monitor: A radiation monitor consisting of several radiation detectors arranged in a fixed position within a frame that forms a passageway for individuals being monitored.

Potential dose: the radiation dose that could result from a particular set of plant conditions, not based on estimated or measured releases or environmental levels.

Pressurized Water Reactor (PWR): a power reactor in which heat is transferred from the core to the heat exchanger by water kept under high pressure. The primary system is pressurized to allow the water to reach high temperatures without boiling. Steam is generated in a secondary circuit.

Primary coolant: water used to cool and carry heat away from the core of a pressurized water reactor. Heat is transferred from the primary coolant to a secondary loop using a heat exchanger, producing steam to drive the turbine.

Projected Dose: The estimated or calculated amount of radiation dose to an individual from exposure to the plume and/or deposited materials, over a period of time, in the absence of protective action.

Protective Action: Any action taken to protect the public health in response to a radiological emergency.

Protective Action Area: A subdivision of the plume exposure (10-mile) emergency planning zone around the Indian Point Energy Center.

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Protective Action Decision (PAD): measures taken in anticipation of, or in response to, a release of radioactive material to the environment. The purpose of PADs is to provide dose savings by avoiding or minimizing the radiation exposure received by individuals, thereby minimizing the health risks resulting from radiation exposure. Sheltering and evacuation are the two PADs relied upon for limiting the direct exposure of the general public within the plume exposure emergency planning zone. Preventive and emergency PADs are two categories of PADs relied upon for limiting exposure from contaminated food and water in the ingestion exposure emergency planning zone.

Protective Action Guide (PAG): Projected dose to an individual in the general population that warrants the implementation of protective action. Specific PAGs have been recommended in terms of the level of projected dose that warrants the implementation of evacuation/sheltering, relocation, and limiting the use of contaminated food, water, or animal feed.

Protective Action Recommendation (PAR): NFO recommended protective actions.

Proton: a positively charged atomic particle. Protons, along with neutrons, are the prime components of atomic nuclei. The atomic number of an atom is equal to the number of protons in its nucleus.

rad: radiation absorbed dose, the basic unit of absorbed dose radiation. One rad represents the absorption of 100 ergs of nuclear (or ionizing) radiation per gram of the absorbing material or tissue

Radiation Safety Officer: a health physicist or other individual experienced in radiation protection who advises medical facility staff regarding the hazards associated with high levels of radiation.

Radioactivity: The property of certain nuclides of spontaneously emitting nuclear particles or gamma or X-ray radiation, or of undergoing spontaneous fission.

Radioactive Materials: Material containing atoms having excess energy. It contains excited, unstable atoms that are disintegrating, emitting radiation.

Radioiodines: A family of radioactive iodines - I-131, I-132, I-133 and I-135 - these are the radioiodines of primary significance for radiological emergencies involving nuclear power plants.

Radiological Emergency: A situation which may result in the loss of control of a radiation source causing a hazard, or potential hazard, to health or property.

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Radiological Emergency Preparedness (REP) Exercise: an event involving organizational responses to a simulated commercial nuclear power plant incident with radiological and other offsite consequences. The purpose of an exercise is to test the integrated capabilities of involved offsite response organizations to implement emergency functions set forth in offsite response organization radiological emergency response plans/procedures.

Radiological Emergency Preparedness (REP) Program: the FEMA program that administers emergency preparedness for all commercial nuclear sites.

Radiological Monitoring: The detection and measurement of ionizing radiation from radiological releases by means of survey instruments.

Reception Center: A predesignated location outside the Plume Exposure Pathway through which evacuees will pass to receive assistance which may include registration, first aid, radiation monitoring and direction to a Congregate Care Center or medical facility.

Recovery: The emergency phase in which efforts are carried out to return to pre-emergency conditions.

Re-entry: Temporary entry of individuals into a restricted zone under controlled conditions.

Release: Escape of radioactive materials into the environment.

Relocation: A protective action, taken in the post-emergency phase, through which individuals not evacuated during the emergency phase are asked to vacate a contaminated area to avoid chronic radiation exposure from deposited radioactive material.

Rem: The unit of dose equivalent in body tissue. It is a measure of radiation exposure that indicates the potential impact on human cells.

Response: The emergency phase in which public protective actions are carried out.

Restricted Zone: An area of controlled access from which the population has been evacuated or relocated.

Return: Reoccupation of areas cleared for unrestricted residence or use by previously evacuated or relocated populations.

Roentgen (R): The unit of radiation exposure in air. Roentgens are the units for quantities of X-ray or gamma radiation measured by detection and survey meters. (For planning purposes 1 Roentgen is equivalent to 1 Rem).

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roentgen equivalent man/mammal (rem): one rem is the quantity of ionizing radiation of any type which, when absorbed by man or other mammals, produces a physiological effect equivalent to that produced by the absorption of 1 roentgen of X-ray or gamma radiation.

Sampling: Collecting specimens of materials (e.g. soil, vegetation, or radioiodine in the air) at field locations.

Shelter-In-Place An action taken to minimize exposure to radiologically contaminated air by going indoors and limiting the intake of outside air.

Site Area Emergency: Indicates that events are in process or have occurred that involve actual or likely major failures in the plant functions needed for protecting the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or (2) prevents effective access to equipment needed for the protection of the public. Releases are not expected to exceed EPA PAG exposure levels, except near the site boundary.

Special Facility: Institution or location with a special population.

Special Populations: Groups or individuals that may need assistance when protective actions are implemented.

Spent fuel: nuclear reactor fuel that has been irradiated to the extent that it can no longer effectively sustain a chain reaction.

Strontium: a high-energy beta source that can be used as an energy source for satellites, remote weather stations and navigation buoys. Four naturally stable and 12 unstable isotopes of strontium exist. The most common unstable isotope is strontium-90, a product of nuclear fallout that has a half-life of 28 years.

New York State Watch Center (NYSWC) A location established at the New York State Office of Emergency Management for the purposes of receiving and promulgating warning information 24 hours a day, 7 days a week.

Survey Meter: A portable instrument used to detect and measure ionizing radiation.

Thyroid Blocking Agent: A chemical compound taken to prevent or reduce the absorption by the thyroid of radioiodine. Potassium iodide (KI) is the typical blocking agent used in the United States.

Thyroid Exposure: Exposure of the thyroid gland to radioactive isotopes of iodine which have been either inhaled or ingested.

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Total Effective Dose Equivalent (TEDE): The sum of the external and internal exposures; i.e. $TEDE = EDE + CEDE$.

Traffic Control: All activities accomplished for the purpose of facilitating the evacuation of the general public in vehicles along specific routes.

Transient persons: non-residents. Persons who do not permanently reside in the plume exposure pathway emergency planning zone, but may be present during an emergency.

Tritium: the one radioactive isotope of hydrogen. A small percentage of natural hydrogen is tritium, but the primary source of tritium is nuclear reactors. It has a half-life of 12 years, but will remain in the body only a few days if taken internally. It is not considered a major health hazard since it is a very weak beta emitter and not harmful unless consumed in very large quantities.

Uranium: an element of the periodic table. There are two primary isotopes: uranium-238, which accounts for 99 percent of all uranium; and uranium-235, the fissionable isotope that sustains the fission reaction in a nuclear reactor.

Vapor: the gaseous form of substances that are normally in liquid or solid form.

X-ray: a penetrating form of electromagnetic radiation that is used in medical and industrial applications.

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APPENDIX A - DEFINITIONS

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NEW YORK STATE RADIOLOGICAL PREPAREDNESS PLAN
APPENDIX B – ABBREVIATIONS AND ACRONYMS

ABBREVIATIONS AND ACRONYMS

ACP - Access Control Points

Ag & Mkts. - New York State Department of Agriculture and Markets

AMS - Aerial Measuring System

ARC - American National Red Cross

BERP - Bureau of Environmental Radiation Protection

BWR - Boiling Water Reactor

CEDE - Committed Effective Dose Equivalent

CFR - Code of Federal Regulations

CPM - Counts Per Minute

DEC - New York State Department of Environmental Conservation

DHS- U.S. Department of Homeland Security

DHSES – Division of Homeland Security and Emergency Services

DIL – Derived Intervention Level

DMNA - New York State Division of Military and Naval Affairs

DOE - United States Department of Energy

DOH - New York State Department of Health

DOT - New York State Department of Transportation

DPC - Disaster Preparedness Commission

DRL – Derived Response Level

DSP - New York State Division of State Police

EAL - Emergency Action Level

EAS - Emergency Alert System

ECL - Emergency Classification Level

NEW YORK STATE RADIOLOGICAL PREPAREDNESS PLAN
APPENDIX B – ABBREVIATIONS AND ACRONYMS

EOC - Emergency Operations Center

EOF - Emergency Operations Facility

EPA - United States Environmental Protection Agency

EPZ - Emergency Planning Zone

ERPA - Emergency Response Planning Area

ETE - Evacuation Time Estimate

FDA - United States Food and Drug Administration

FEMA - United States Federal Emergency Management Agency

FRMAC - Federal Radiological Monitoring & Assessment Center

FSAR - (Licensee) Final Safety Analysis Report

GE - General Emergency

GIS – Geographic Information System

JIC - Joint Information Center

KI - Potassium Iodide

LLNL - Lawrence Livermore National Laboratory

LOA - Letter of Agreement

LOCA - Loss of Coolant Accident

MOU - Memorandum of Understanding

mR – Milliroentgen

NARAC – National Atmospheric Release Advisory Capability

NRF – National Response Framework

NAWAS - National Warning System

NFO - Nuclear Facility Operator

NRC - United States Nuclear Regulatory Commission

NEW YORK STATE RADIOLOGICAL PREPAREDNESS PLAN
APPENDIX B – ABBREVIATIONS AND ACRONYMS

NYSERDA - New York State Energy Research and Development Authority

NYSOEM – New York State Office of Emergency Management

NYSWC – New York State Watch Center

NYSPIN - New York Statewide Police Information Network

NUE - Notification of Unusual Event

OCT- New York State Office of Counter Terrorism

OGS - New York State Office of General Services

OSLD- Optically Stimulated Luminescence Dosimeter

PAA- Protective Action Area

PAD – Protective Action Decision

PAG - Protective Action Guide

PAR - Protective Action Recommendation

PIO - Public Information Officer

PMC- Personnel Monitoring Center

PWR - Pressurized Water Reactor

R - Roentgen

RAC - Regional Assistance Committee

RACES - Radio Amateur Communications Emergency Service

RAP - Radiological Assistance Plan

RECS - Radiological Emergency Communications System

REM - Roentgen Equivalent Man

REPP - New York State Radiological Emergency Preparedness Plan

SAE - Site Area Emergency

SEOC- New York State Emergency Operations Center

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APPENDIX B – ABBREVIATIONS AND ACRONYMS

TEDE - Total Effective Dose Equivalent

TSC - Technical Support Center

TCP - Traffic Control Point

USDA - United States Department of Agriculture

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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX C – PERSONNEL MONITORING CENTER RESOURCES**

PERSONNEL MONITORING CENTER RESOURCES

New York State Emergency Worker Personnel Monitoring Centers (EWPMCs) are designated facilities with supplies and resources used for monitoring and decontaminating State emergency workers, vehicles and equipment in the event of an incident at a commercial nuclear power plant in New York State. Note: a list of supplies and resources is found in the NYS EWPMC Manual, Appendix B, dated 10/2012.

NYS DOH Bureau of Environmental Radiation Protection (NYS BERP), in consultation with the NYSOEM, will determine the need to activate State EWPMC's. The NYS BERP will also recommend the number and locations of the PMCs to be activated in response to an event.

In accordance with procedures contained in Procedure G of this plan, and the October, 2012 EWPMC Manual (on file at the State EOC and at each EWPMC), the BERP in consultation with the NYSOEM, will notify DPC agencies having responsibility at State EWPMCs to put their assigned personnel on "standby" at the Alert Classification and will activate the State EWPMC's at a Site Area Emergency classification.

The following DPC agencies have identified and trained staff to support EWPMC's: Division of State Police, State Department of Transportation, NYSOEM, Office of Fire Prevention & Control, and NYS DOH. Other DPC agencies can be requested to assist as needed. Once activated, EWPMC staff will provide the SEOC any initial findings of contamination and provide periodic updates as needed or requested.

[REDACTED]

State EWPMC's will remain operational until the BERP, in coordination with NYSOEM, advises that operations can be terminated. State EWPMC's established for each nuclear facility site are located at the following locations:

A Ginna Site

[REDACTED]

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B Indian Point Site

[REDACTED]

[REDACTED]

C Nine Mile/ J.A. FitzPatrick

[REDACTED]

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APPENDIX D – RESOURCES AND FACILITIES

RESOURCES AND FACILITIES TO SUPPORT THE FEDERAL RESPONSE

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN

APPENDIX D – RESOURCES AND FACILITIES

1.0 INTRODUCTION

New York State possesses a wealth of resource capabilities that can assist local governments in an emergency involving a Nuclear Power Plant. However, a Power Plant emergency may overwhelm these capabilities quickly and therefore require Federal assistance to effectively respond to and recover from these types of events. In fact, a Nuclear Power Plant emergency may warrant an immediate Federal presence absent the exhaustion of State and/or local resources. As specified in the NYS CEMP, and NYS Executive Law, when the Governor finds that a disaster has occurred or may be imminent and local capabilities may be exceeded, the Governor may declare a State Disaster Emergency. If the Governor finds that the event is of such severity and magnitude that the State will be overwhelmed, the Governor and/or his duly appointed representative can request assistance from other states and the Federal Government.

2.0 PURPOSE

The purpose of this appendix is to outline the process to request Federal Resources and support needed for a Federal Response. It will define the roles and responsibilities of Federal agencies in responding to nuclear/radiological incidents. This document will discuss the specific authorities, capabilities, and assets the Federal Government has for responding to nuclear/radiological incidents that are not otherwise described in the NRF or The Nuclear/Radiological Incident Annex (NRIA) which applies to incidents where the nature and scope of the incident requires a Federal response to supplement the State, tribal or local incident response.

Additionally, this appendix will describe the local facilities that have been identified and may be made available to Federal response personnel as well the general geographical and unique features of the areas of these facilities to support a federal response (i.e. FRMAC). Procedure B of this plan will describe the interoperable communications plans/procedures, equipment, and protocols that may be made available to Federal response personnel as it pertains to the appendix.

3.0 SITUATION/SCOPE

A Nuclear Power Plant emergency may be imminent or is occurring and local capabilities may be exceeded, and the Governor has declared a State Disaster Emergency. NY State will request assistance from Federal agencies, through already existing Federal compacts, Federal contingency plans or the President. State response activities will align State agencies or Functional Branches with the appropriate Emergency Support Function(ESF), Principal Federal Official (PFO) and Federal On-scene Coordinator(s) (FOSC). The capability for the State to provide this interoperability will occur at the SEOC and any forward location being utilized to coordinate the local,

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4.0 STATE AND FEDERAL RESPONSE

In the initial phases of response, FEMA Region II is the primary interface for New York State and the Federal government for jurisdictional planning and response and where State and Local needs are converted into Federal support missions until a Joint Field Office (JFO) is established.

FEMA is responsible for activating the NRF and the NRIA annex that describes the policies, situations, concepts of operations, and responsibilities of the Federal departments and agencies governing the immediate response and recovery activities for incidents involving release of radioactive materials to address the consequences of the event.

When the FEMA Region activates the NRF, the NRIA annex identifies different Federal agencies as “coordinating agencies” and “cooperating agencies” and associated strategic concepts of operations based on the authorities, responsibilities, and capabilities of those departments or agencies. The Following table depicts these agencies:

Coordinating Agency	Cooperating Agencies:
Department of Defense (DOD) Department of Energy (DOE) Department of Homeland Security (DHSES) Environmental Protection Agency (EPA) National Aeronautics and Space Administration (NASA) Nuclear Regulatory Commission (NRC)	Department of Agriculture Department of Commerce Department of Defense Department of Energy Department of Health and Human Services Department of Homeland Security Department of the Interior Department of Justice Department of Labor Department of State Department of Transportation Department of Veterans Affairs Environmental Protection Agency Nuclear Regulatory Commission

Once notified, the coordinating agency initiates response in accordance with its authorities. DHS reviews the situation and determines whether to assume Federal leadership for the overall response in accordance with the NRF.

Coordinating agencies and cooperating agencies provide representatives to the NRF elements (e.g., JFO, NOC, etc.) when appropriate. As stated earlier, DHS/FEMA may issue mission assignments to Federal agencies to support such activities. The coordinating agency may request assistance directly from other Federal agencies.

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4.1 Department of Defense (DOD)

As it pertains to the purpose of this appendix DOD is the coordinating agency for Federal actions related to radiological incidents that involve or affect DOD facilities in New York State (i.e. Ft Drum, West Point Military Academy, Stewart AFB) as well as the use of DOD facilities to assist with the overall response. DOD will coordinate with State and local officials to ensure appropriate public health and safety actions are taken as recommended by State and Local authorities.

4.2 Department of Energy (DOE)

DOE is responsible for the implementation of the Federal Radiological Monitoring and Assessment Plan (FRMAP), developed to coordinate Federal radiological assistance. Although FRMAP is a part of the NRF, it may be implemented separately and applies primarily to offsite Federal radiological monitoring and assessment assistance and the technical support for these activities. Radiological assistance from DOE include alpha, beta, and gamma radiation surveys; radiation monitoring for air, food, water, milk and personnel contamination; analysis for samples; radiation medicine and decontamination advice; as well as aerial surveys for plume tracking. Requests for and utilization of the Federal Radiological Monitoring and Assessment Center (FRMAC) is also coordinated through DOE. FRMAC capabilities, functions, resources and facility requirements will be discussed later in this appendix. Within New York State, resources can be requested from the DOE Brookhaven National Laboratory (BNL) in Long Island, or from Knolls Atomic Power Laboratory, located just north of Albany, to assist the state with radiological monitoring. Note, all radiological assistance will be coordinated with NYSOEM and NYS DOH. However, requests for technical assistance may go directly through FEMA to DOE and the DOE Regional Director.

4.2.1 Primary Responsibilities and capabilities of DOE include:

- Coordinating the offsite radiological monitoring assessment, evaluation, and reporting activities of all Federal agencies during the initial phases of an incident. DOE maintains a technical liaison with State and local agencies with similar responsibilities.
- Ensuring the orderly transfer of responsibility for coordinating intermediate and long-term radiological monitoring function to the EPA at a mutually agreeable time after the initial phases of the emergency.
- Providing personnel (including the Offsite Technical Director) and equipment required to coordinate and perform offsite radiological monitoring and evaluation activities.
- Assisting appropriate agencies in assessing the incident potential and developing

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APPENDIX D – RESOURCES AND FACILITIES

technical recommendations on protective actions. DOE assists the State in preparing re-entry recommendations and recovery planning.

- Maintaining a common set of offsite radiological monitoring data, and providing these data and interpretation thereof to the NRC and other appropriate State and local agencies requiring direct knowledge of radiological conditions.
- Requesting supplemental radiological monitoring assistance from other Federal agencies when needed, when requested to do so by the State, or considered necessary to maintain the credibility of the offsite assessment.
- Requesting meteorological, hydrological, geographical, etc., data needed for monitoring and assessment efforts.
- Providing consultation and support services to all other entities (e.g., private contractors) having radiological monitoring functions and capabilities.
- Assisting the U.S. Department of Health and Human Services (USHHS) and other Federal, State, and local agencies by providing technical and medical advice concerning treatment of radiological contamination.
- Assisting the other Federal, State and local agencies in early planning for decontamination and recovery of the offsite area. DOE makes recommendations to avoid the spread of contamination by improper emergency operations.
- Nuclear Emergency Support Team (NEST)

The NEST is a DOE asset with personnel and resources based in Andrews Air Force Base, Lawrence Livermore Laboratory, Los Alamos Scientific Laboratory, Sandia National Laboratories, and an EG&G contracted laboratory. NEST capabilities incorporate a broad spectrum of technical expertise, special instruments and logistical support able to respond rapidly to large-scale emergencies. NEST responses provide special radiation detection systems, a comprehensive communications system; logistics support hardware, the Aerial Measuring System (AMS), airborne radiation surveillance systems, aerial photographic capabilities, multi-spectral scanner systems, and background survey files. The NEST is maintained in a constant state of readiness for assisting in radiological emergencies.

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4.3 Department of Homeland Security (DHS) /US Coast Guard (USCG)

The Secretary of Homeland Security is the principal Federal official for domestic incident management and under the Homeland Security Act; DHS has control of the Nuclear Incident Response Team (NIRT). DHS/USCG is the coordinating agency for the Federal response to incidents involving the release of nuclear/radioactive materials that occur in certain areas of the coastal zone. In NY those primary areas are the shores of Lake Ontario, Lower Hudson River and Long Island Sound.

4.4 Environmental Protection Agency (EPA)

EPA is the coordinating agency for the Federal environmental response to incidents that occur at facilities not licensed, owned, or operated by a Federal agency or an Agreement State, or currently or formerly licensed facilities for which the owner/operator is not financially viable or is otherwise unable to respond.

4.5 National Aeronautics and Space Administration (NASA)

In the event that DHS assumes overall management of the Federal response under HSPD-5 NASA will support DHS under the NRF acting as the coordinating agency for roles defined in the NRA.

4.6 Nuclear Regulatory Commission (NRC)

The NRC is the coordinating agency for incidents at or caused by a facility or an activity that is licensed by the NRC. These facilities include, but are not limited to, commercial nuclear power plants, fuel cycle facilities, independent spent fuel storage installations, radiopharmaceutical manufacturers, and research reactors.

The NRC licensee primarily is responsible for taking action to mitigate the consequences of an incident and providing appropriate protective action recommendations to State, local, and/or tribal government officials. The NRC performs an independent assessment of the incident and potential off-site consequences and, as appropriate, provides recommendations concerning any protective measures. They perform oversight of the licensee, to include monitoring, evaluation of protective action recommendations, advice, assistance, and, as appropriate, direction. The NRC will dispatch, if appropriate, an NRC site team of technical experts to the licensee's facility.

The NRC closely coordinates its actions with State and local government officials during an incident by providing advice, guidance, and support as needed. In the event that DHS assumes overall management of the Federal response under HSPD-5, the NRC will support DHS under the NRF and NIMS, again, as the coordinating agency as stated in the NRA annex.

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5.0 Federal Radiological Monitoring and Assessment Center (FRMAC)

One of the key specialized Federal nuclear/radiological response assets is FRMAC. It is a DOE-led interagency asset available to respond to nuclear/radiological incidents. DOE leads the FRMAC for the initial response, then transitions FRMAC leadership to EPA for site cleanup.

The FRMAC is established at or near the incident location in coordination with DHS, and other Federal, State, tribal, and local authorities. Note: Site locations, facilities, airport availability and resources have been identified and documented by FEMA Region 2 REP staff and NY State. This information is kept in (3) binders located at each Headquarters with associated response plans. Information contained in these binders detail Home Team/FRMAC, FEMA RRCC actions, activities and the integration into the State EOC Operations.

When FRMAC is activated, DOE, through the FRMAC or DOE Consequence Management Home Team (CMHT), coordinates all Federal environmental and agriculture radiological monitoring and assessment activities for the initial phases of the response. When the FRMAC is transferred to EPA, EPA assumes responsibility for coordination of radiological monitoring and assessment activities. Note: Site locations, facilities, airport availability and resources have been identified and documented by FEMA Region 2 REP staff and NY State. This information is kept in (3) binders located at each Headquarters with associated response plans.

FRMAC, when fully staffed has a variety of specialty and assistance teams working in its operation. These teams, in accordance with the NRF and NIMS will integrate their activities into the States ICS organization. The following is a list and brief description of these teams:

5.1 Interagency Modeling and Atmospheric Assessment Center (IMAAC)

A source for airborne hazards predictions responsible for producing and disseminating predictions of the effects from hazardous chemical, biological, and radiological releases. The downwind impact from such releases is a key component of developing a common operational picture for response decision making and providing decision makers with immediate information to protect public health and safety

5.2 Advisory Team

A radiological emergency response group comprised of representatives from the EPA, FDA, CDC and USDA. The Advisory Team's mission is to provide coordinated advice and recommendations for the Federal, State, local and tribal governments in radiation emergencies. The team makes protective action recommendations, not decisions, in providing coordinated technical and scientific advice basing its recommendations on science and best practices.

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5.3 Aerial Measuring System (AMS)

The AMS team provides specialized airborne radiation detection systems to provide real-time measurements of low levels of air and ground contamination. Their mission is to provide a rapid survey of radiation and contamination following a radiological emergency. AMS uses specially equipped aircrafts to conduct the surveys. These aircrafts are equipped to detect and measure radioactive material in the air, and contamination on the ground. The AMS uses a sophisticated radiation detection system to gather radiological information and store it on computers. This information is then used to produce maps of radiation exposure and contamination. This technical information is later used to determine the extent of the hazard, and to decide when and where to send federal, state or local ground monitoring teams for further assessments.

5.4 Radiological Assistance Program (RAP)

The RAP team provides first response radiological assistance to protect the health and safety of the general public and the environment. They assist federal, state, tribal, and local agencies in the detection, identification, analysis, and response to events involving the release of radiological materials in the environment. RAP is implemented on a regional basis, with coordination between the emergency response elements of state, local, and federal agencies.

5.5 Radiation Emergency Assistance Center / Training Site (REAC/TS)

REAC/TS's mission is to maintain 24 hour response operations to provide assistance and/or deploy personnel and equipment for providing direct medical care and consultative assistance involving the exposure to ionizing radiation or radiological contamination from a radiological emergency.

5.6 National Atmospheric Release Advisory Center, (NARAC)

NARAC provides tools and services that map the probable spread of hazardous material accidentally or intentionally released into the atmosphere. NARAC provides atmospheric plume predictions in real time for Local, State and Federal officials to use regarding protective action decision making is necessary to protect the health and safety of people in affected areas.

6.0 FRMAC DEPLOYMENT and LOGISTICS

FRMAC activation and deployment is ordered from the State through FEMA Region 2 Regional Resource Coordination Center (RRCC) and managed by the Consequence Management Home Team (CMHT). There are a total of (109) personnel plus the Advisory Team when FRMAC deploys as planned. The CMHT accomplishes the entire FRMAC deployment of personnel and assets (3) phases:

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r a Phase I deployment, (25) personnel and approximately 3500 lbs. of equipment is deployed to the pre-identified FRMAC location. Phase I personnel will be prepared to deploy within (4) hours of notification. Phase II deployment has (38) personnel and approximately 25,000 lbs. of equipment. These personnel will be prepared to deploy within (12) hours of notification. Phase III has (45) personnel and approximately 45,000 lbs. of equipment. These personnel will be able to deploy within 24-28 hours of notification. In all phases, personnel and agencies will bring their own scientific and communications equipment to fulfill their mission.

6.1 FRMAC Operations and Integration into State Organization and ICS Structure

Upon arrival, FRMAC agencies will integrate into the local ICS, most likely managed by a Unified Command (UC), and as part of a large multiagency/multijurisdictional response. The Advisory Team is expected to integrate into the Planning Section to provide technical expertise to the IC/UC. The Advisory Team may also provide liaisons to and/or coordinate with the JFO and State, tribal, and local government EOCs, (as needed.) Other Key radiological assets such as the RAP team will integrate into the Operations Section of the IC/UC. Monitoring and Sampling Plans that are developed will be reflected in and consistent with the Incident Action Plan (IAP.)

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APPENDIX E – NYS LOA / MOU

NEW YORK STATE

LIST LETTERS OF AGREEMENT

1. James A. Fitzpatrick
2. Nine Mile Point
3. Indian Point Energy Center
4. R.E. Ginna

Copies of current LOAs are on file at the New York State Office of Emergency Management.

New York State agencies will respond in accordance with procedures contained within the State REP Plan. The authority to respond as identified is found in Article 2B of the New York State Executive Law. No letters of agreement are necessary between NYS and its Counties or between NYS and its Agencies.

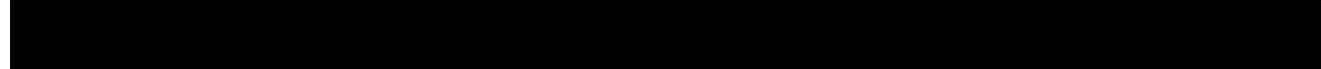
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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX G – NYS RESOURCES**

NEW YORK STATE RESOURCES

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DEPARTMENT OF AGRICULTURE AND MARKETS
DAIRY FARM AND AGRICULTURE RADIOLOGICAL CONTROL RESOURCES LIST

The Department of Agriculture and Markets database has listings of many types of food establishments which generally indicate names and addresses and in some cases inspection information which are also on file within Agriculture and Markets and/or the Bureau of Environmental Radiation Protection, Department of Health. The types of establishments for which there are computer files are as follows:

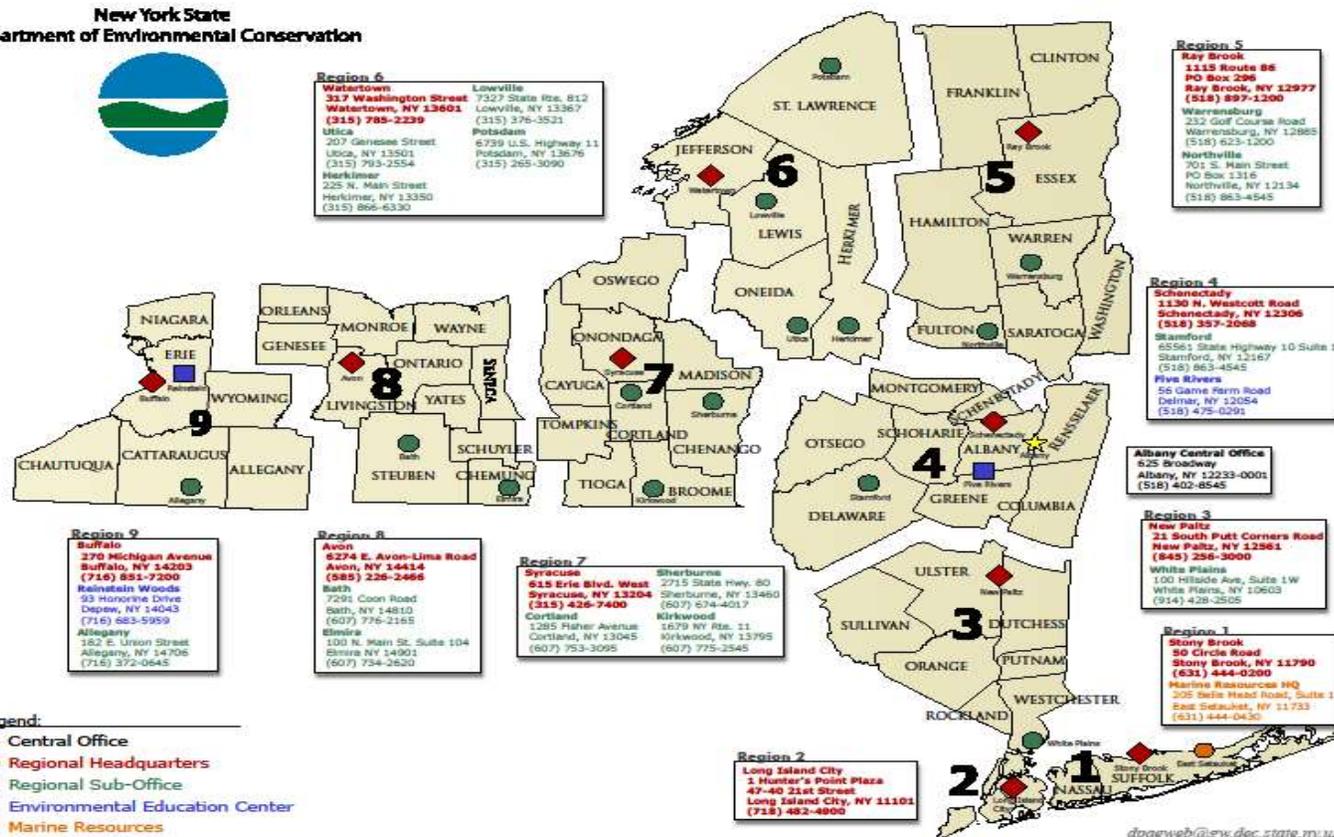
Dairy Farms	Beef Farms
Sheep Farms	Egg Producers
Stores	Bakeries (wholesale)
Food Manufacturers	Food Warehouses
Beverage Plants	Packers
Food Processing Plants	Milk Processing Plants
Nursery Dealers	Nursery Greenhouses
Produce Farms	

The computer listings of facilities and procedures are available at the Departments of Agriculture and Markets and at the State EOC, Albany.

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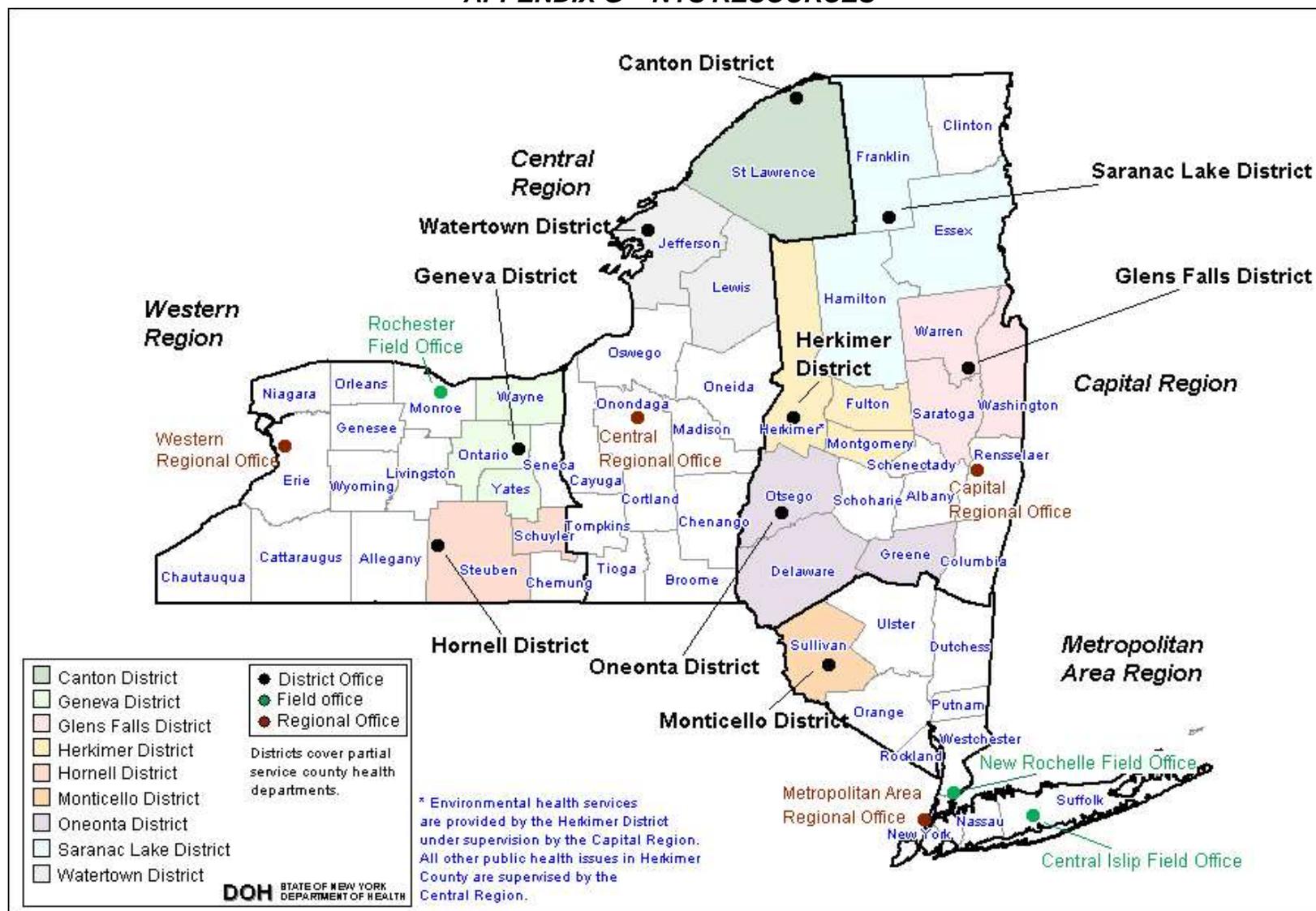
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION REGION JURISDICTION

New York State
Department of Environmental Conservation



dparweb@ecv.dec.state.ny.us

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**NEW YORK STATE REGIONAL OFFICES
APPENDIX G – NYS RESOURCES**

COUNTY HEALTH DEPARTMENT OFFICES

County/ Region	Commissioner &/or PH Director	Address	Environmental Health Director/ Responsibility	EH Phone	EH Email
Albany	James B Crucetti, MD, MPH	175 Green St, Albany 12202	Marcia Lenehan, MS, Director Thomas Brady, Asst. Director	518-447-4620	Marcia.Lenehan@albanycounty.com Tom.Brady@albanycounty.com
Allegany	Loreen Ballenge, MS Interim PH Director	County Office Bldg,7 Court St, Belmont 14813 -1076	Thomas Hull, MS	585-268-9250 D 585-268-9254 M	ballenl@alleganyco.com hullte@alleganyco.com
Broome	Claudia Edwards	225 Front St, Binghamton 13905	Chris Coddington, Senior PHS, Interim Director	607-778-2887 607-778-2895 D	ccoddington@co.broome.ny.us
Cattaraugus	Kevin Watkins, MD, MPH, Public Health Director	1 Leo Moss Dr, Suite 4010, Olean 14760-1154	Eric W Wohlers, PE	716-373-8050 x3437	kdwatkins@cattco.org ewwohlers@cattco.org
Cayuga	Elaine Daly, RN, BSN	8 Dill Street, Auburn 13021	Eileen O'Connor, PE	315-253-1405	eileen.o'connor@dfa.state.ny.us
Chautauqua	Christine Schuyler Public Health Director	Hall R Clothier Bldg, 7 N Erie St., Mayville 14757	Mark Stow	716-753-4769	stowm@co.chautauqua.ny.us
Chemung	Robert E Page	103 Washington St., PO Box 588, Elmira 14902-0588	Thomas G. Kump, PE	607-737-2019	tkump@co.chemung.ny.us
Chenango	Marcas W. Flindt	County Office Bldg, 5 Court St, Norwich 13815	Isaiah L. Sutton	607-337-1673	isaiahs@co.chenango.ny.us
Clinton	Jerie Reid Public Health Director	133 Margaret St, Plattsburgh 12901	John Kanoza, PE	518-565-4870	kanozaj@co.clinton.ny.us
Columbia	<i>Appointment Pending</i>	325 Columbia St, Hudson 12534	James Rich	518-828-3358	James.Rich@columbiacountyny.com

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County/ Region	Commissioner &/or PH Director	Address	Environmental Health Director/ Responsibility	EH Phone	EH Email
Cortland	Catherine Feuerherm Public Health Director	60 Central Ave, Cortland County Office Bldg, Cortland 13045-2746	Dianne Madak-Lamont Mike Ryan, PH Engineer	607-753-5035	dmadaklamont@cortland-co.org mryan@cortland-co.org
Dutchess	Michael C Caldwell, MD, MPH	387 Main Mall, Poughkeepsie 12601-3316	Michael C. Caldwell, MD, MPH Interim Contact for EH Director	845-486-3527	mcaldwell@dutchessny.gov
Erie	Gale Burstein, MD,MPH	95 Franklin Street, Room 910, Buffalo 14202		716-858-6976	Gale.Burstein@erie.gov
		503 Kensington Avenue, Buffalo, 14214	Dolores Funke, PE	716-898-6104 M 716-961-6832 D	Dolores.Funke@erie.gov
Genesee	David Whitcroft, Acting Public Health Director	3837 W Main Street Rd, Batavia 14020-9406	David Whitcroft, Senior PHS	585-344-2580 x5499	dwhitcroft@co.genesee.ny.us
Livingston	Joan H Ellison, RN Jennifer Rodriguez, Pending Interim Public Health Director	2 Murray Hill Rd, Mt Morris 14510-1691	James Mazurowski	585-243-7280	jmazurowski@co.livingston.ny.us
Madison**	Eric Faisst, MS, RES	Public Health Bldg #5, PO Box 605, Wampsville 13163	Geoffrey Snyder, Director Aaron Lazzara, Asst. Director	315-366-2526 315-366-2525 D	geoffrey.snyder@co.madison.ny.us aaron.lazzara@co.madison.ny.us
Monroe	Andrew Doniger, MD, MPH	PO Box 92832, 111 Westfall Rd, Rochester 14692	John Felson	585-753-2991 M 585-753-5564 D	jfelson@monroecounty.gov
Nassau	Lawrence Eisenstein, MD, Acting Commissioner	106 Charles Lindbergh Blvd, Uniondale 11553	Sue King, RS	516-227-9723	susan.king@hhsnassaucountyny.us
Niagara	Dan Stapleton Public Health Director	5467 Upper Mountain Rd, Suite 100, Lockport 14094-1899	James J Devald, PE	716-439-7444 716-439-7453 D	dan.stapleton@niagaracounty.com james.devald@niagaracounty.com

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County/ Region	Commissioner &/or PH Director	Address	Environmental Health Director/ Responsibility	EH Phone	EH Email
Oneida	Patrice Bogan, MS, FNP Interim Public Health Director	185 Genesee St, 4th Floor, Utica 13501	Daniel W. Gilmore, Director Susan Batson, Supervising San	315-798-5064	pbogan@ocgov.net dgilmore@ocgov.net sbatson@ocgov.net
Onondaga	Cynthia B Morrow, MD, MPH	421 Montgomery St, 12 th Floor Syracuse 13202	Kevin Zimmerman	315-435-6623	kevinzimmerman@ongov.net
Orange	Jean M Hudson, MD, MPH	124 Main St, Goshen 10924-2199	Ed Sims, PE, Director Bureau of Sanitary Engineering	845-291-2331	esims@co.orange.ny.us
Orleans	Paul Pettit Public Health Director	14012 Route 31 West, Albion 14411	Shannyn Sanger, PH Sanitarian	585-589-3250 585-589-2770	ppettit@orleansny.com ssanger@orleansny.com
Oswego	Jiancheng Huang Public Health Director	70 Bunner St, PO Box 3080, Oswego 13126	Natalie J Roy, Associate PHS	315-349-3557	natalie@oswegocounty.com
Putnam	Rebecca Wittenberg, RN, BSN, Public Health Director	1 Geneva Road, Brewster 10509	Michael Budzinski	845-808-1390 x2166	michael.budzinski@putnamcountyny.gov
Rensselaer	Mary Fran Wachunas	Health Bldg, 1600 Seventh Ave, Troy 12180	Richard Elder	518-270-2632	relder@renesco.com
Rockland	Joan Facelle, MD	50 Sanitorium Rd, Building D, Pomona 10970-9990	Judi Hunderfund, PE, Acting Dir. Daniel Miller, Geologist II	845-364-2608 M 845-364-2609 D	hunderfj@co.rockland.ny.us millerd@co.rockland.ny.us
Schenectady	Stephanie Scuderi, RN Interim Commissioner	107 Nott Terrace, Suite 306, Schenectady 12308-3170	Andrew Suflita	518-386-2818	andrew.suflita@schenectadycounty.com
Schoharie	Asante Shipp-Hilts, MPH PH Dir.	PO Box 677, Schoharie 12157-0667	Ian Feinstein Deputy PH Director	518-295-8382	asante.shipp-hilts@co.schoharie.ny.us ian.feinstein@co.schoharie.ny.us
Seneca	Vickie Swinehart, RN	31 Thurber Dr, Waterloo 13165-1660	Vickie Swinehart, Director Tom Scoles, Principal	315-539-1920 M 315-539-1925 D	vswinehart@co.seneca.ny.us tscoles@co.seneca.ny.us

**NEW YORK STATE REGIONAL OFFICES
APPENDIX G – NYS RESOURCES**

County/ Region	Commissioner &/or PH Director	Address	Environmental Health Director/ Responsibility	EH Phone	EH Email
			PHS		
Suffolk	Dr. James Tomarken Commissioner	3500 Sunrise Highway, Building 200, Suite 124 Great River, NY 11739- 3500 <u>Environmental Health</u> 360 Yaphank Ave, Suite 2b, Yaphank 11980 (Sortino & Dawydiak)	Christopher Sortino. Chief, Bureau of PH Protection Walter Dawydiak, Jr, PE, Chief Public Engineer	631-854-0100 (Commissioner) 631-852-5800 631-853-5804	james.tomarken@ suffolkcountyny.gov christopher.sortino@ suffolkcountyny.gov walter.dawydiak@ suffolkcountyny.gov
Tioga	Johannes A Peeters	1062 State Rt. 38, POB 120, Owego 13827-0220	Johannes A. Peeters Scott Freyburger, PH Engineer	607-687-8565	peetersh@co.tioga.ny.us freyburgers@co.tioga.ny.us
Tompkins	Frank Kruppa, PH Dir	55 Brown Rd, Ithaca 14850	Elizabeth Cameron, PE	607-274-6688	fkruppa@tomkins-co.org lcameron@tomkins-co.org
Ulster	Carol Smith, M.D., M.P.H. Commissioner	300 Flatbush Ave, Kingston 12401	Denise Woodvine Acting Director	845-340-3019	csmi@co.ulster.ny.us dwoo@co.ulster.ny.us
Westchester	Sherlita Amler, M.D. Secretary: Bridget Puma	25 Moore Avenue, Mt. Kisco, NY 10549	<u>Public Health Protection</u> Rick Morrisey, Dep Comm EH Peter DeLucia, Asst Comm EH Paul Kutzy, Asst Comm EQ (Secretary: Joan Pazzel)	914-813-5000 M 914-864-7331 M 914-864-7299 D 914-864-7355 D 914-864-7368 D 914-864-7322 M	samler@westchestergov.com fjm1@westchestergov.com ppd4@westchestergov.com pjk3@westchestergov.com
Wyoming	Gregory Collins, DO	5362 Mungers Mill Rd, Silver Springs 14550	Stephen Perkins	585-786-8894	sperkins@wyomingco.net
New York City	Thomas J. Farley, MD, MPH	Gotham Center, 42-09 28 th Street, Long Island City		347-396-4100 (in NYC 311)	tfarley@health.nyc.gov JVanLoo@health.nyc.gov

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County/ Region	Commissioner &/or PH Director	Address	Environmental Health Director/ Responsibility	EH Phone	EH Email
	Secretary: Janessa Vanloo	11101-4132			
		125 Worth Street, 3 rd Floor New York, NY 10007	Dan Kass, Deputy Comm. EH Director Allan H. Goldberg, Asst. Comm	212-788 4646	dkass@health.nyc.gov agoldber@health.nyc.gov
		22 Cortlandt Street, 28 th Floor New York, NY 10007	Elliott Marcus, Assoc. Comm BFS&CS	212-313-5181	emarcus@health.nyc.gov
		253 Broadway, 13th Fl, CN 59A, New York	Robert D. Edman, Asst. Comm BFS&CS	212-676-1654	redman@health.nyc.gov
		22 Cortlandt Street, 28 th Floor New York, NY 10007	Christopher H. Boyd, Asst. Comm, PH Engineering	212-313-6869	cboyd@health.nyc.gov

Notes: D = Direct Line M = Main Line

**NEW YORK STATE DOH – DISTRICT OFFICES
APPENDIX G – NYS RESOURCES**

REGIONAL HEALTH DEPARTMENT OFFICES

Region	Contact	Name	Address	Phone	Additional Numbers
Western	Commissioner's Office	Gregory Young,MD, Acting Assoc. Commissioner	584 Delaware Ave, Buffalo 14202	716-847-4505	[REDACTED]
	Regional Env Health Director Assistant Regional Director	Ralph Van Houten Veleta Muhs, Secretary	Triangle Building, 33 E Main Street, Rochester 14604-2127	585-423-8072 585-423-8042	[REDACTED]
	Env Health Field Coordinators	Dave Rowley, PH Eng III	Rochester	585-423-8064	[REDACTED]
		April Kellerhouse, Sr. San	Buffalo	716-847-4558	
		Anita Bonamici, Prin PH San	Buffalo	716-847-4500	
	Toxics Coordinators	Matt Forcucci, PHS III	Buffalo	716-847-4513	[REDACTED]
		Deborah McNaughton, PHS II	Rochester	585-423-8069	
	Radiation Coordinators	Sara Koch, Assoc RH Spec	Buffalo	716-847-4383	[REDACTED]
		Mai Tran, Assoc RH Spec	Rochester	585-423-8068	

**NEW YORK STATE DOH – DISTRICT OFFICES
APPENDIX G – NYS RESOURCES**

Metropolitan	Director's Office	Celeste M. Johnson, Director Geraldine Neal, Secretary Annette Larke-Griffith, CRm Coord. Patricia Jones, Deputy Director	90 Church Street, New York 10007	212-417-5550	
	Regional Env Health Director	Brian Devine Ellen Salovich, Secretary	50 North Street, Suite 2, Monticello 12701	845-794-2045	
	Env Health Field Coordinators	Seth Schild, Principal San	145 Huguenot St, 5th Floor, New Rochelle 10801	914-654-4319	
		Anna Stamm, PH Eng II	90 Church Street, New York 10007	212-417-4910	
		Christine Westerman, Principal San	Monticello	845-794-2045	
		Carl Obermeyer, PH Eng II	Monticello	845-794-2045	
	Radiation Coordinators	Nelson Warren, Assoc. RH Spec	New Rochelle	914-654-7162	
		Andrew Bass, Assoc. RH Spec	Courthouse Corporate Center, Suite 5000 320 Carleton Avenue, Central Islip 11722	631-851-3083	

**NEW YORK STATE DOH – DISTRICT OFFICES
APPENDIX G – NYS RESOURCES**

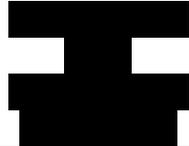
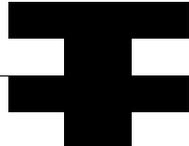
Central	Director's Office	David Brittain, Acting Regional Director Christine Chalupnicki, Acting Deputy Director	217 South Salina St, Syracuse 13202	315-477-8522 315-477-8142	[REDACTED]
	Regional Env Health Director	John Strepelis Julie Lizzio, EH Secretary	Syracuse	315-477-8150 315-477-8481	[REDACTED]
	Env Health Field Coordinators	Maggie Deitrich, Reg San	Syracuse	315-477-8144	[REDACTED]
		Erin Ingles, PH Eng I	Syracuse	315-477-8149	[REDACTED]
		Kevin Kenyon, PH Eng I	Albany	518-402-7740	[REDACTED]
	Lead Program	Kelley St. Clair, PH Rep III	Syracuse	315-477-8548	[REDACTED]
	Toxics Coordinators	Greg Rys, PHS III	5665 State Route 5, Herkimer 13350-9721	315-866-6879	[REDACTED]
		Richard Jones, PHS II	Syracuse	315-477-8148	[REDACTED]
	Radiation Coordinators	Vidya Goyal, Assoc. RH Spec	Syracuse	315-477- 8452	[REDACTED]
		William Kellereher, Assoc. RH Spec	Syracuse	315-477-8451	[REDACTED]

**NEW YORK STATE DOH – DISTRICT OFFICES
APPENDIX G – NYS RESOURCES**

DEPARTMENT OF HEALTH DISTRICT OFFICES

DOH District Office	Counties Served	Address	Director	Phone	Additional Number
Canton (N) B0642	St. Lawrence	58 Gouverneur Street Canton 13617-3200	Bruce Stone, P.E. (bws04) Ann Basmajian, Secretary	315-386-1040	[REDACTED]
Geneva (W) B0637	Ontario, Wayne, Yates	624 Pre-Emption Road Geneva 14456-1334	Nicholas Rich (njr04) Jean Millis/Janice Bastian, Sec.	315-789-3030	[REDACTED]
Glens Falls (N) B0646	Saratoga, Warren, Washington	77 Mohican Street Glens Falls 12801-4429	Anita Gabalski (amg02) Kaye Bromley, Secretary	518-793-3893	[REDACTED]
Herkimer (N) B0640	Fulton, Herkimer, Montgomery	5665 State Route 5 Herkimer 13350-9721	Don VanPatten (ddv01) Dawn Hill, Secretary	315-866-6879	[REDACTED]
Hornell (W) B0638	Schuyler, Steuben	107 Broadway, Room 105 Hornell 14843-0430	Tomas Klaseus (tgk02) Denise Lang, Secretary	607-324-8371	[REDACTED]
Monticello (M) B0649	Sullivan	50 North Street, Suite 2 Monticello 12701-1711	Michael Duffy (mjd02) Vicki Andresen, Secretary	845-794-2045	[REDACTED]

**NEW YORK STATE DOH – DISTRICT OFFICES
APPENDIX G – NYS RESOURCES**

Oneonta (N) B0644	Delaware, Greene, Otsego	28 Hill Street, Suite 201 Oneonta 13820-9804	Audrey Lewis (avl02) Carla Huntington, Secretary	607-432-3911	
Saranac Lake (N) B0647	Essex, Franklin, Hamilton	41 St. Bernard Street Saranac Lake 12983-1839	Jules Callaghan, (jwc03) Vivian Manny, Secretary	518-891-1800	
Watertown (N) B0641	Jefferson, Lewis	Dulles State Office Bldg. 317 Washington Street Watertown 13601-3741	Sheri Palmer (slb07) Lisa Hartle, Secretary	315-785-2277	

**NEW YORK STATE DOH / CEH / BERP EQUIPMENT
APPENDIX G – NYS RESOURCES**

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NEW YORK STATE DOH / CEH / BERP EQUIPMENT
APPENDIX G – NYS RESOURCES

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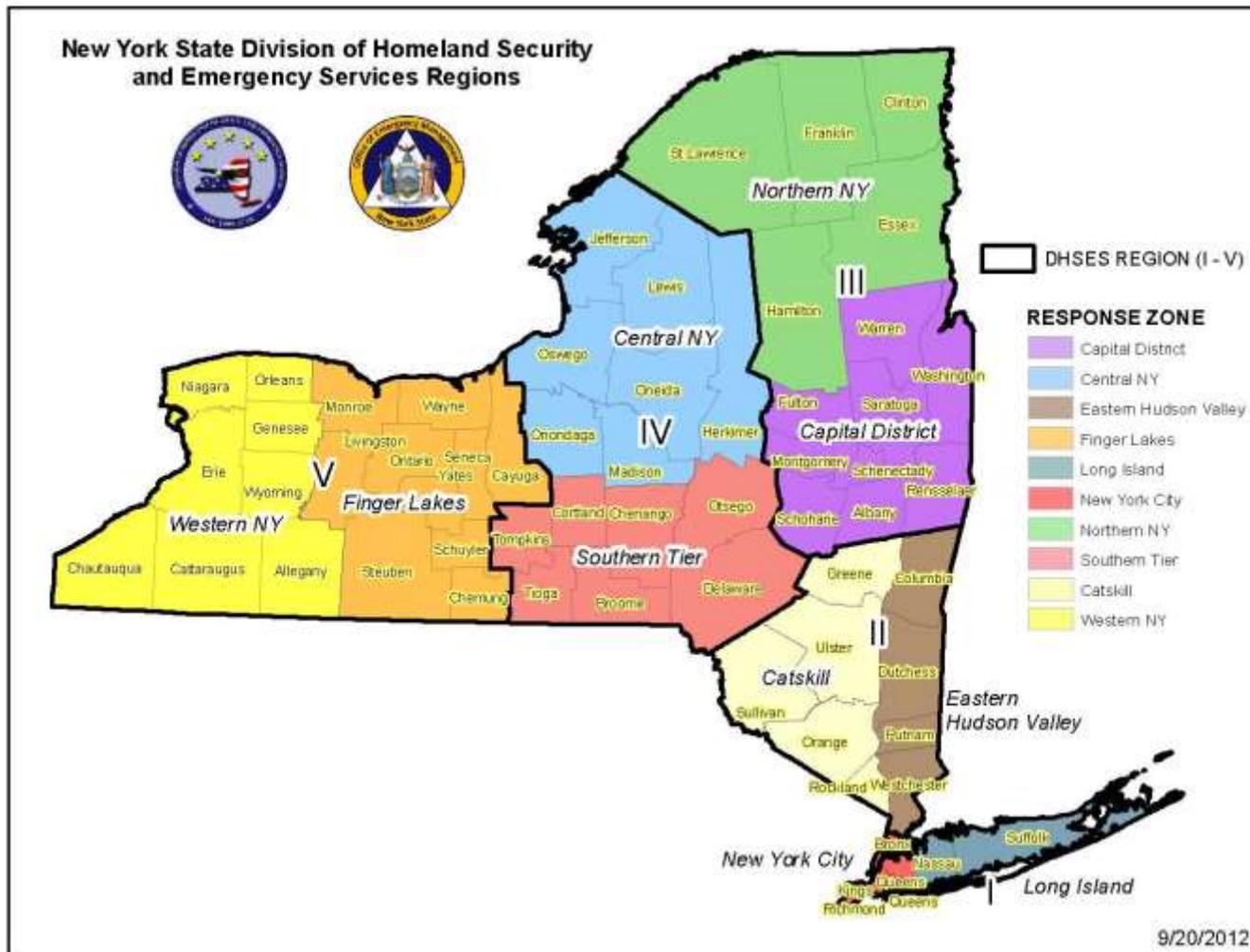
**NEW YORK STATE DOH / CEH / BERP EQUIPMENT
APPENDIX G – NYS RESOURCES**

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**NEW YORK STATE DHSES
APPENDIX G – NYS RESOURCES**



**NEW YORK STATE DHSES
APPENDIX G – NYS RESOURCES**

STATE HEADQUARTERS

NY State Office of Emergency Management
1220 Washington Avenue
Bldg#22, Suite 101
Albany, NY 12226-2251
518-292-2200

Regional Facilities

Region 1
Suffolk State Office Building
250 Veteran's Memorial Highway
Room 4A7
Hauppauge, NY 11788-5506
518-292-2411

Region 2
C/O 392 Creek Rd
Poughkeepsie, NY 12601-1011
518-292-2421

Region 3
5 Fox Farm Road
Queensbury, NY 12804-1107
518-292-2430

Region 4
10 Adler Dr. Suite 103
East Syracuse, NY 13057
518-292-2441

Region 5
1530 Jefferson Rd
Rochester, NY 14
518-242-8230

**NEW YORK STATE DHSES
APPENDIX G – NYS RESOURCES**



NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX G – NYS RESOURCES
New York State Police Troop Locations

Division Headquarters
 Building 22, 1220
 Washington Avenue
 Albany, NY 12226-2252
 518-457-6811

Troop A Headquarters, Batavia
 585-344-6200

Troop B Headquarters, Ray Brook
 518-897-2000

Troop C Headquarters, Sidney
 607-561-7400

Troop D Headquarters, Oneida
 315-366-6000

Troop E Headquarters, Canandaigua
 716-398-4100

Troop F Headquarters, Middletown
 845-344-5300

Troop G Headquarters, Latham
 518-783-3211

Troop K Headquarters, Poughkeepsie
 845-677-7300

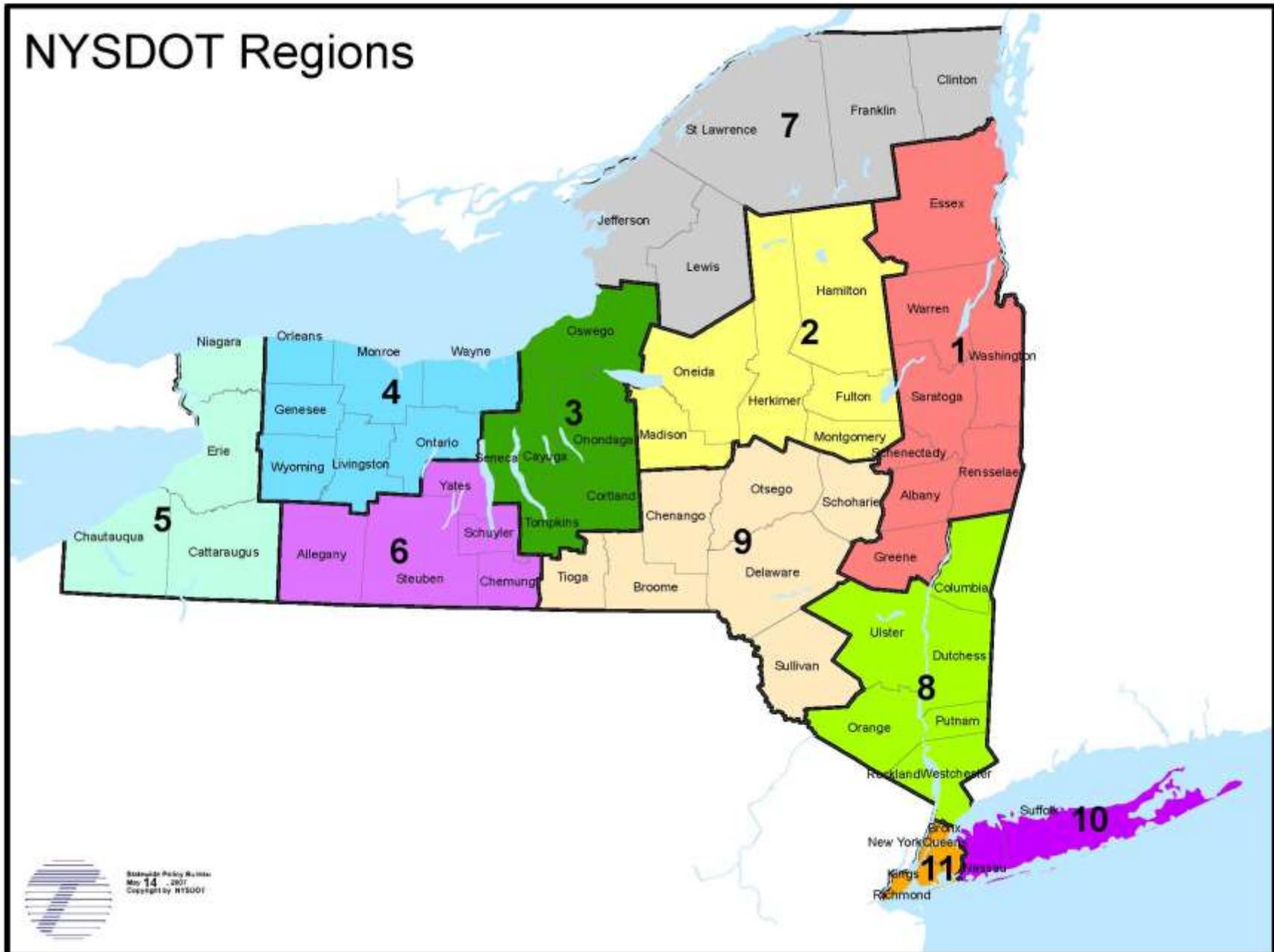
Troop L Headquarters, Farmingdale
 631-756-3300

Troop T Headquarters, Albany
 518-436-2825

Troop NYC Headquarters, NYC
 718-918-0600



NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX G – NYS RESOURCES



**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX G – NYS RESOURCES**

DOT REGIONAL INFORMATION

REGION 1

50 Wolf Road
Albany, NY 12232
(518)457-3522

REGION 2

Utica State Office Bldg.
207 Genesee Street
Utica, NY 13501
(315)793-2447

REGION 3

Sen. Hughes State Office Bldg.
333 E. Washington St., 7th Floor
Syracuse, NY 13202
(315)428-4351

REGION 4

1530 Jefferson Road
Rochester, NY 14623
(585)272-3310

REGION 5

100 Seneca Street
Buffalo, NY 14203
(716)847-3238

REGION 6

107 Broadway
Hornell, NY 14843
(607)324-8404

REGION 7

Watertown State Office Bldg.
317 Washington St.
Watertown, NY 13601
(315)785-2333

REGION 8

4 Burnett Blvd.
Poughkeepsie, NY 12603
(845)431-5750

REGION 9

44 Hawley St., Rm. 1101
Binghamton, NY 13901
(607)721-8116

REGION 10

NY State Office Building
Hauppauge, NY 11787
(631)952-6632

REGION 11

Hunters Point Plaza
47-40 21st Street Rm. 703
Long Island City, NY 11101
(718)482-4533

NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX G – NYS RESOURCES

NYS OFFICE OF PARKS AND RECREATION
MAP

- 1 - Niagara
- 2 - Allegany
- 3 - Genesee
- 4 - Finger Lakes
- 5 - Central
- 6a - Adirondack
- 6b - Catskill
- 7 - Taconic
- 8 - Palisades
- 9 - Long Island
- 10 - Thousand Islands
- 11 - Saratoga/Capital District
- 12 - New York City



NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX G – NYS RESOURCES

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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

**CROSS REFERENCE INDEX TO NUREG-0654, CRITERIA FOR PREPARATION AND
EVALUATION OF RADIOLOGICAL EMERGENCY RESPONSE PLANS AND
PREPAREDNESS IN SUPPORT OF NUCLEAR POWER PLANTS**

NUREG-0654 Planning Standard/ Criterion	Cross-Reference to Updated 2013 NYS Annex Section/Appendix/Procedure
A. Assignment of Responsibility	
A.1.a Identification of Response Organizations	Section III, 1.1; 2.0, Table 1
A.1.b Organization Roles/ Concept of Operations/ Interrelationships	Section III, 1.1; 2.0, Table 1
A.1.c Organizational Interrelationships/ Block Diagram	Section II, Table 1; Section III, Table 1
A.1.d Designation of Organization Director	Section I, 1.0; Section II, 3.1.1; Section III, 1.1.3, 2.2.2, Table 1; Section IV, 2.2.1
A.1.e 24-Hour Response /Communications	Section III, 2.3.2; Procedure B; Procedure D
A.2.a Organization Authorities/ Functions	Section III, 2.0, Table 1;
A.2.b Legal Basis for Organization Authority	Section I, 8.0
A.3 Letters of Agreement (MOU's)	Appendix E
A.4 Designated Authority for Organization Resource Continuity	Section III, 1.1, 2.2
B. Onsite Emergency Organization	
B.1 Onsite ERO for all Shifts and Its Relation to the Responsibilities and Duties of the Normal Staff Complement	Refer to Each NFO's Emergency Plan

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

B.2 <i>Emergency Coordinator/ Authority and Responsibility</i>	Refer to Each NFO's Emergency Plan
B.3 <i>Line of Succession for the Emergency Coordinator</i>	Refer to Each NFO's Emergency Plan
B.4 <i>Functional Responsibilities Assigned to the Emergency Coordinator and Specify Which Responsibilities May Not be Delegated</i>	Refer to Each NFO's Emergency Plan
B.5 <i>Emergency Functions in Table B-1</i>	Refer to Each NFO's Emergency Plan
B.6 <i>Interfaces Between and Among the Onsite Functional Areas Licensee Headquarters Support, Local Service Support, and State and Local Government Response Organizations/ Block Diagram</i>	Procedure O; Refer to Each NFO's Emergency Plan
B.7 <i>Corporate Management, Administrative, and Technical Support Personnel</i>	Refer to Each NFO's Emergency Plan
B.8 <i>Contractor and Private Organizations Who May Be Requested to Provide Technical Assistance and Augmentation of the Emergency Organization</i>	Refer to Each NFO's Emergency Plan
B.9 <i>Services to be Provided by Local Agencies for Handling Emergencies</i>	Refer to Each NFO's Emergency Plan
C. Emergency Support and Resources	
C.1.a <i>Specify Persons Authorized to Request RAP Assistance</i>	Procedure H, 4.2, 4.5, 6.2.2, 9.0
C.1.b <i>Arrangements for Using Resources</i>	Section I, 1.0, 2.0, 3.0, 6.3, 6.4; Section II, 1.0, 2.0, 3.2; Section III, 1.1, 2.2; Section IV, 1.0-5.0, 7.0, Attachment 2; Appendix D; Procedure H, 6.2.2
C.1.c <i>State Resources Available to Support Federal Response</i>	Section IV, 1.0-3.0, 5.0, 7.0; Appendix D

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

C.2.a <i>Representatives at EOF</i>	Procedure H, 3.1, 4.3
C.2.b <i>Licensee Representative</i>	Procedure D, 4.0 Procedure H, 5.3, 5.4
C.3 <i>Identification of Radiological Laboratories</i>	Section III, 2.5.2, 2.12.2, 3.2.1, 3.6.1; Appendix G; Procedure N
C.4 <i>Nuclear and Other Facilities Organizations or Individuals for Support</i>	Procedure H, 6.2, 6.3
C.5 <i>ORO Liaison Personnel</i>	N/A
C.6 <i>ORO Support for Onsite Response for HAB Incidents</i>	Section III, 5.1.6; Procedure O
D. Emergency Classification System	
D.1 <i>Emergency Classification</i>	Section I, 5.1; Section III, 5.1; Refer to Each NFO's Emergency Plan
D.2 <i>Initiating Conditions</i>	Section I, 5.1; Section III, 5.1; Refer to Each NFO's Emergency Plan
D.3 <i>Establish Emergency Classification</i>	Section I, 5.1; Section III, 5.1; Refer to Each NFO's Emergency Plan
D.4 <i>Provisions that Consistent Emergency Actions Will Be Taken</i>	Section III, 5.3, 6.0; Procedure B Procedure D Procedure G Procedure H Procedure K
E. Notification Methods and Procedures	
E.1 <i>Notification/ Verification of Response Organizations</i>	Section III, 5.2, 5.3; Procedure B; Procedure O; Refer to each NFO's Emergency Plan
E.2 <i>Procedures for Alerting, Notifying, and Mobilizing Emergency Response Personnel</i>	Section III, 5.2, 5.3; Procedure B; Procedure O

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

<p>E.3 <i>Contents of Initial Emergency Messages</i></p>	<p>Section III, 5.2; Procedure B, 4.0, 5.0, 6.0, Attachments 1, 6A and 6B; Refer to each NFO's Emergency Plan</p>
<p>E.4 <i>Provisions for Follow-up Messages</i></p>	<p>Section III, 5.2; Procedure B, 4.0, 5.0, 6.0, Attachments 1, 6A and 6B; Refer to each NFO's Emergency Plan</p>
<p>E.5 <i>System for Disseminating to the Public Information Contained in Initial and Follow-up Messages</i></p>	<p>Section III, 2.4; Procedure C; Refer to Site Specific JIC Workplan/ Procedures; Refer to Each Respective County REPP</p>
<p>E.6 <i>Notifying and Providing Prompt Instruction to the Public within the EPZ</i></p>	<p>Section III, 2.4; Procedure C; Refer to Site Specific JIC Workplan/ Procedures; Refer to Each Respective County REPP</p>
<p>E.7 <i>Written Messages For The Public, Consistent With The Licensee's Classification Scheme</i></p>	<p>Procedure C; Refer to Site Specific JIC Workplan/ Procedures; Refer to Each Respective County REPP</p>
<p>F. Emergency Communications</p>	
<p>F.1 <i>Communication Plans Include Organizational Titles and Alternates. Establish Reliable Primary And Backup Means of Communications for Licensees, Local, and State Response Organizations</i></p>	<p>Section III, 2.0 Procedure B Procedure D</p>
<p>F.1.a <i>Provision for 24-Hour Per Day Notification to and Activation of the State/Local Emergency Response Network</i></p>	<p>Section III, 2.3; Procedure B</p>

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

F.1.b <i>Provision For Communication With Contiguous State/Local Governments Within The Emergency Planning Zones</i>	Section III, 2.3; Procedure B, Attachments 9 and 11
F.1.c <i>Provision for Communications, As Needed, With Federal Emergency Response Organizations</i>	Procedure B, Attachment 9
F.1.d <i>Communications Between The Nuclear Facility And The EOF, State And Local EOCs, And Radiological Monitoring Teams</i>	Section II, 3.2; Section III, 2.3, 5.0; Procedure B
F.1.e <i>Provision for alerting or activating emergency personnel in each response Organization</i>	Section III, 5.3; Procedure B, 4.0
F.1.f <i>Communication With NRC Headquarters, NRC Regional Office EOCs, EOF and Radiological Monitoring Team Assembly Area</i>	Refer to Each Respective County REPP
F.2 <i>Coordinated Communication Link for Fixed And Mobile Medical Support Facilities Exists</i>	Appendix F; Refer to Each Respective County REPP
F.3 <i>Periodic Testing of the Entire Emergency Communications System</i>	Procedure B, Attachment 2
G. Public Information and Education	
G.1 <i>Coordinated Annual Dissemination of Information (How and What)</i>	Section II, 2.3, 3.5; Procedure C; Refer to Each Respective County REPP
G.2 <i>Public Information Program for Permanent and Transient Adult Population</i>	Section II, 2.3, 3.5; Procedure C; Procedure E; Refer to Each Respective County REPP
G.3.a <i>Designated Points of Contact and News Media Placement</i>	Section III, 2.3.2, 2.8, 4.3; Procedure C; Refer to Site Specific JIC Workplan/ Procedures

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

G.3.b <i>Media Space at EOF/ Joint Information Center</i>	Procedure C; Refer to Site Specific JIC Workplan/ Procedures
G.4.a <i>Designation of a Spokesperson/ Access to Necessary Information</i>	Procedure C; Refer to Site Specific JIC Workplan/ Procedures
G.4.b <i>Establish Timely Exchange of Information Among Designated Spokespersons</i>	Procedure C; Refer to Site Specific JIC Workplan/ Procedures
G.4.c <i>Public Inquiry / Rumor Control</i>	Procedure C; Refer to Site Specific JIC Workplan/ Procedures
G.5 <i>Annual Program for Media Education</i>	Procedure C; Refer to Site Specific JIC Workplan/ Procedures
H. Emergency Facilities and Equipment	
H.1 <i>Licensee Technical Support Center</i>	Refer to each NFO's Emergency Plan
H.2 <i>Licensee Emergency Operations Facility</i>	Refer to each NFO's Emergency Plan
H.3 <i>Emergency Operations Center for Use in Directing and Controlling Response Functions</i>	Section III, 3.2.2; Procedure D
H.4 <i>Timely Activation and Staffing of the Facilities and Centers Described in the Plan</i>	Section III, 5.0, 5.3.3, Procedure B, Procedure D
H.5 <i>Licensee Onsite Monitoring</i>	Refer to each NFO's Emergency Plan
H.6 <i>Licensee Offsite Monitoring</i>	Refer to each NFO's Emergency Plan
H.7 <i>Offsite Radiological Monitoring Equipment in the Vicinity of the Nuclear Facility</i>	Appendix G; Procedure M; Refer to Each Respective County REPP
H.8 <i>Licensee Meteorological Program</i>	Refer to each NFO's Emergency Plan
H.9 <i>Licensee Onsite Operations Center</i>	Refer to each NFO's Emergency Plan
H.10 <i>Inspect, Inventory and Operationally Check Emergency Equipment</i>	Appendix G; Procedure G; Procedure M

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

H.11 <i>Lists of Inventory</i>	Appendix G; Procedure B; Procedure D
H.12 Central Point for Receipt and Analysis of all Field Monitoring Data	Procedure H, 4.5.1, 5.5, 6.2.2, 6.3, 7.3, Attachment 7 Procedure N
I. Accident Assessment	
I.1 <i>Licensee Plant System and Effluent Parameter Values</i>	Refer to each NFO's Emergency Plan
I.2 <i>Onsite Capability and Resources To Provide Initial Values and Continuing Assessment</i>	Refer to each NFO's Emergency Plan
I.3 <i>Licensee Methods for Determining Source Term and Magnitude of Releases</i>	Procedure H, Attachment 8; Refer to each NFO's Emergency Plan
I.4 <i>Relationship Between Effluent Monitor Readings and Onsite and Offsite Exposures</i>	Refer to each NFO's Emergency Plan
I.5 <i>Meteorological Data Processing Interconnections</i>	Procedure H, 5.2, 6.2
I.6 <i>Methodology for Determining Release Rates</i>	Procedure H, 6.2.1, Attachment 1
I.7 <i>Capabilities for Monitoring Within Plume Exposure EPZ</i>	Procedure H, 4.5.1, 5.5, 6.2.2, 6.3, 7.3, Attachment 7
I.8 <i>Capability for Assessment of Actual/Potential Magnitude of Location of Radiological Hazards</i>	Procedure H, 6.0, 7.0, 8.0, 9.0, Attachment 1; Refer to Each Respective County REPP
I.9 <i>Capability to Detect Airborne Radioiodine Concentration as Low as IE-7 uCi/cc</i>	Procedure M; Refer to Each Respective County REPP
I.10 <i>Means to Estimate Integrated Dose From Projected and Actual Dose Rates</i>	Procedure H, 6.0, 7.0, 8.0, 9.0, Attachment 1

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

I.11 Arrangements to Locate and Track the Airborne Radioactive Plume	Procedure H, 6.0, 7.0,8.0,9.0, Attachment 1
J. Protective Response	
J.1 Means and Time for Warning Individuals Onsite	Refer to each NFO's Emergency Plan
J.2 Provisions for Evacuation Routes and Transportation for Onsite Personnel	Refer to each NFO's Emergency Plan
J.3 Radiological Monitoring of People Evacuated From Site	Procedure O; Refer to each NFO's Emergency Plan
J.4 Evacuation of Non-essential Personnel and Decontamination Capability	Refer to each NFO's Emergency Plan
J.5 Ability to Account for All Individuals Onsite	Refer to each NFO's Emergency Plan
J.6 Protection of Individuals Remaining Onsite	Refer to each NFO's Emergency Plan
J.7 Mechanism for Recommending Protective Actions	Section III Procedure H, 8.0; Refer to each NFO's Emergency Plan
J.8 Plume Exposure EPZ Evacuation Time Estimates	Section I, 6.4, Section II, 2.0, Section III, 5.6.1; Refer to Each Respective County REPP and ETE Manual
J.9 Protective Action Guides	Section III, 2.4, 2.5, 2.6, Table 2; Refer to each NFO's Emergency Plan; Refer to Each Respective County REPP
J.10 Protective Measures for Plume Exposure Pathway	Section III; Procedure H, 2.4, 2.5, 2.6, Table 2
J.10.a Maps: Evacuation Routes, Evacuation Areas, Survey Points, Relocation Centers, etc.	Procedure H, 6.1; Refer to Each Respective County REPP
J.10.b Map for Population Distribution by Evacuation Area	Procedure H, 6.1; Refer to Each Respective County REPP

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

J.10.c <i>Means for Notifying All Segments of Transient and Resident Populations</i>	Section III, 2.4; Procedure E; Refer to Each Respective County REPP
J.10.d <i>Means for Protecting Persons Whose Mobility May Be Impaired (Institutional or Other Confinement)</i>	Section III, 2.9, 5.8.3; Procedure E; Refer to Each Respective County REPP
J.10.e <i>Provisions for Radioactive Drugs – Quantities, Storage and Means of Distribution</i>	Appendix K; Appendix G; Procedure G; Refer to Each Respective County REPP
J.10.f <i>Radioprotective Drug Administration</i>	Appendix K; Procedure G; Refer to Each Respective County REPP
J.10.g <i>Means of Relocation</i>	Section III, 2.0; Refer to Each Respective County REPP
J.10.h <i>Relocation Centers</i>	Section III, 2.10, 3.0; Refer to Each Respective County REPP
J.10.i <i>Projected Traffic Capacities of Evacuation Routes</i>	Refer to Respective Site Evacuation Time Estimates (ETE) and County REPP
J.10.j <i>Control of Access to Evacuated Areas and Organizational Responsibilities</i>	Section III, 3.1.1, 5.8.7; Section IV, 4.3.3, 5.1; Procedure H; Procedure L
J.10.k <i>Identification of and Means Dealing with Potential Impediments</i>	Section III, 2.15, 5.8.2, Attachment 1; Refer to Each Respective County REPP
J.10.l <i>Evacuation Time Estimates</i>	Section I, 6.4, Section II, 2.0, Section III, 5.6.1; Refer to Each Respective County REPP and ETE Manual

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
APPENDIX H – NUREG-0654 CROSS REFERENCE**

J.10.m <i>Bases for Choice of Protective Actions Within the Plume EPZ</i>	Section I, 5.3, Section III, 5.6 Procedure H
J.11 <i>Protective Measures Ingestion Pathway</i>	Section I, 6.6, Section III, 5.2.2, 5.4, 5.6.2, 5.9, Section IV, 4.0 Procedure H, Procedure K
J.12 <i>Means of Registering and Monitoring Evacuees</i>	Section III, 2.10, Refer to Each Respective County REPP
K. Radiological Exposure Control	
K.1 <i>Onsite Exposure Guidelines</i>	Refer to each NFO's Emergency Plan
K.2 <i>Onsite Radiation Protection Program</i>	Refer to each NFO's Emergency Plan
K.3.a <i>24-Hour Capability to Determine Emergency Worker Doses</i>	Section III; Procedure G, 3.1 Attachments 3, 7, 7A,8
K.3.b <i>Dosimeter Reading Frequencies/ Maintenance of Dose Records</i>	Section III; Procedure G, Attachments 1,2, 3, 8
K.4 <i>Decision Chain for Authorizing Emergency Workers Exposure to Exceed EPA PAG's</i>	Section III, 5.10; Procedure G, 3.4.4
K.5.a <i>Specify Action Levels for Determining the Need for Decontamination</i>	Procedure G, 5.3.4; State EW PMC Procedure
K.5.b <i>Means for Radiological Decontamination of Emergency Personnel</i>	Procedure G, 5.4; State EW PMC Procedure
K.6 <i>Onsite Contamination Control</i>	Refer to each NFO's Emergency Plan
K.7 <i>Decontamination of Relocated Onsite Personnel</i>	Procedure O; Refer to each County REPP; Refer to each NFO's Emergency Plan
L. Medical and Public Health Support	
L.1 <i>Local and Back-up Hospital and Medical Services</i>	Section III, 2.5.2, 2.12; Appendix F

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L.2 <i>Onsite First Aid Capability</i>	Refer to each NFO's Emergency Plan
L.3 <i>Other Hospitals and Medical Facilities for Contaminated/Injured</i>	Appendix F
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M.2 <i>Key Positions in Facility Recovery Organization</i>	Section IV, 1.0
M.3 <i>Informing Response Organizations to Initiate Recovery</i>	Section IV, 1.0
M.4 <i>Method for Periodically Estimating Total Population Exposure</i>	Procedure H, 7.0.
N. Exercises and Drills	
N.1.a <i>Exercises Conducted in Accordance with NRC and FEMA Rules and Policy</i>	Section II, 3.7; Procedure F, 2.2
N.1.b <i>Vary Exercise Scenarios Within 8-Yr Exercise Cycle</i>	Section II, 3.7; Procedure F, 4.2
N.1.c <i>Off-Hours and Unannounced Drills or Exercises</i>	Refer to each NFO's Emergency Plan
N.1.d <i>Ingestion Pathway Exercises</i>	Section II, 3.7; Procedure F, 4.2
N.2 <i>Conduct of Drills</i>	Section II, 3.7, 3.7.1; Procedure F
N.2.a <i>Communications Drills</i>	Procedure B, Attachment 2 Procedure F, Attachment I
N.2.b <i>Fire Drills</i>	Refer to Each Respective County REPP; Refer to each NFO's Emergency Plan
N.2.c <i>Medical Emergency Drills</i>	Refer to Each Respective County REPP; Refer to each NFO's Emergency Plan

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N.2.d <i>Radiological Monitoring Drills</i>	Procedure F, 2.3; Refer to each NFO's Emergency Plan
N.2.e(1) <i>Semi-Annual Health Physics Drills</i>	Procedure F, 2.3; Refer to each NFO's Emergency Plan
N.2.e(2) <i>Annual Health Physics Drills</i>	Refer to each NFO's Emergency Plan
N.3 <i>Exercise and Drill Design</i>	Section II, 3.7 Procedure F, 3.2
N.4 <i>Use of HSEEP with Biennial Exercises</i>	Section II, 3.7 Procedure F, 3.2
N.5 <i>Exercise Evaluation and Corrective Actions</i>	Section II, 3.7 Procedure F, 3.2
O. Radiological Emergency Response Training	
O.1 <i>Assure Training of Appropriate Individuals</i>	Section II, 3.7; Procedure F, 2.0, Attachment 1
O.1.a <i>Site-Specific Training for Offsite Emergency Organizations Which Could Provide Assistance</i>	Section II, 3.7.3; Procedure F, 3.2, 4.6, Attachment 5; Refer to Each Respective County REPP; Refer to Each NFO's Emergency Plan
O.1.b <i>Participation in Training Including Mutual Aid Agencies</i>	Section II, 3.7.1; Procedure F, 2.0;
O.2 <i>Training for Onsite Emergency Organizations</i>	Refer to each NFO's Emergency Plan
O.3 <i>Training for Licensee First Aid Teams</i>	Refer to each NFO's Emergency Plan
O.4 <i>Specialized Training</i>	
O.4.a <i>Specialized Training for Directors or Coordinators</i>	Section II, 3.7.1; Procedure F, 2.0, Attachment 1
O.4.b <i>Accident Assessment</i>	Procedure F, 2.0, Attachment 1
O.4.c <i>Radiological Monitoring Teams and Radiological Analysis Personnel</i>	Procedure F, 2.0, Attachment 1

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<i>O.4.d Police, Security and Firefighters</i>	Procedure F, 2.0, 4.2, Attachment 1 NFO's Emergency Plan
<i>O.4.e Repair and Damage Control Teams</i>	Refer to each NFO's Emergency Plan
<i>O.4.f First Aid and Rescue Personnel</i>	Procedure F, Attachment 5;
<i>O.4.g Local Support Services Including Civil Defense/ Emergency Service Personnel</i>	Procedure F, Attachment 5; Refer to Each Respective County REPP; Refer to Each NFO's Emergency Plan
<i>O.4.h Medical Support Personnel</i>	Procedure F, Attachment 5; Refer to Each Respective County REPP; Refer to Each NFO's Emergency Plan
<i>O.4.i Licensee Headquarters Support Personnel</i>	Refer to each NFO's Emergency Plan
<i>O.4.j Transmitters of Information and Instructions</i>	Procedure F, 2.0, 4.2, Attachment 1
<i>O.5 Initial and Annual Retraining</i>	Section II, 3.7, 3.7.1; Procedure F, 2.0, 3.1, Attachment 1
<i>P. Responsibility for the Planning Effort</i>	
<i>P.1 Training of Individuals Responsible for Planning Effort</i>	Section II, 3.7, 3.7.1; Procedure F
<i>P.2 Overall Authority and Responsibility for Planning</i>	Section I, I; Section II, 3.1, 3.1.1; Procedure A, 2.2
<i>P.3 Designation of Emergency Planning Coordinator</i>	Procedure A, 2.2
<i>P.4 Annual Review and Update of Plan</i>	Section I, I; Section II, 3.1 Procedure A, 2.2.3
<i>P.5 Plan Distribution and Promulgation of Plan Revisions</i>	Section I, I; Section II, 3.1, 3.1.1; Procedure A, 2.2.1
<i>P.6 Listing of Support Plans</i>	Section I, 8.2

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<i>P.7 Plan Implementation and Implementing Procedures</i>	Section I, I; Section II, 3.1 Procedure A, 2.2.2; Appendix I
<i>P.8 Cross Reference/Table of Contents</i>	Annex Table of Contents; Appendix H; Appendix I
<i>P.9 Annual Review of Emergency Preparedness Program</i>	Section I, I; Section II, 3.1 Procedure A, 2.2.3
<i>P.10 Quarterly Update of Telephone Numbers</i>	Section III, 2.3.2; Procedure B

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PROCEDURE CROSS-REFERENCE

(This listing reflects the procedures required to implement this plan)

Procedure	Cross-Reference to Updated 2013 NYS Annex Sections/Appendices
A. Plan Maintenance	Section I, I; Section II, 3.1, 3.7, 3.7.1;
B. Communications/Warning	Section II, 3.2; Section III, 2.3, 2.3.2, 4.2, 5.2, 5.3
C. Public Information	Section II, 2.8, Section III, 2.4, 2.8, 4.2, 4.3, 5.16, 5.4, 5.8.2, 5.8.3, Table 1; Section IV, 5.1; Refer to Site Specific JIC Workplan/ Procedures;
D. State and Field Emergency Operations Center	Section III, 3.2.2, 4.1, 5.0, 5.3.3; Appendix G
E. Public Education	Section II, 2.3, 3.5, 3.6.1, 4.2, 5.8.2, 5.8.3, Table 1; Refer to Site Specific JIC Workplan/ Procedures
F. Training, Drills & Exercises	Section I, 1.0, 7.2.1; Section II, 2.1, 3.7, Table 1; Section III, 2.1.2
G. Radiological Exposure Control	Section I, 7.2.2; Section III, 2.7, 5.10, Table 1; Appendix G
H. Assessment/Evaluation	Section III, 2.12.2, 5.2, 5.5, 5.6, 5.8, 6.0; Section IV, 3.1; Appendix D and G
I. Disaster Initiated Review Process	Section I, 7.2.3;
J. NOT USED	

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<p>K. Radiological Ingestion Exposure</p>	<p>Section I, 5.2, 6.6; Section II, 3.2.1; Section III, 2.3.2, 2.16.2, 5.2.2, 5.4, 5.5, 5.6.2, 5.7, 5.8, 5.9; Section IV, 1.0, 4.0, Attachment 2; Appendix D and G</p>
<p>L. Relocation/Return/ Reentry/Ingestion</p>	<p>Section I, 6.4, 6.6; Section III, 5.6.3, 5.7; Section IV, 1.0, 2.2.1, 3.0; Appendix D and G</p>
<p>M. Ingestion Sampling Team Procedures</p>	<p>Section III, 2.16.2; Appendix D and G</p>
<p>N. NYS Department of Health Laboratory Procedures</p>	<p>Section III, 5.5.1, 5.9.1; Section IV, 4.0; Appendix G</p>
<p>O. Hostile Action Based Events</p>	<p>Section I, 1.0; Section III, 2.1, 5.1.6, 5.8.2</p>

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POTASSIUM IODIDE

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APPENDIX K – POTASSIUM IODIDE

ATTACHMENT 1

**New York State Policy on Potassium Iodide as a Thyroid Blocking Agent in
Radiation Emergencies**

November 2002

Introduction

This Policy updates the 1982 New York State Policy on the use of potassium iodide (KI) for the general public to reduce the risk of thyroid cancer in radiation emergencies involving the release of radioactive iodine. The recommendations in this policy address KI dosage and the projected radiation exposure at which the drug should be used.

These recommendations are based on guidance provided by the United States Food and Drug Administration (FDA), “Guidance on Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies”, in December of 2001.

Background

The FDA has provided guidance previously on the use of KI as a thyroid blocking agent. First, in 1978, the FDA announced its conclusion that KI is a safe and effective means by which to block uptake of radioiodines by the thyroid gland in a radiation emergency under certain specified conditions of use. In 1982, FDA announced final recommendation on the administration of KI to the general public in a general emergency. Those recommendations were formulated after reviewing studies relating radiation dose to thyroid disease risk that relied on estimates of external thyroid irradiation after the nuclear detonations at Hiroshima and Nagasaki and analogous studies among children who received therapeutic radiation to the head and neck. The former New York State Policy on KI was based on previous FDA recommendations for administering KI to emergency workers and selected captive populations. This former policy stated: “The FDA recommends that potassium iodide in doses of 130 mg per day per adult and children above one year, and 65 mg per day for children below one year of age, be considered for thyroid blocking in radiation emergencies in those persons who are likely to receive a projected radiation dose of 25 rem or greater to the thyroid gland from radioiodines released to the environment. The decision to administer KI will be made with the concurrence of local and State Health officials.”

The policy that follows revises New York State’s 1982 policy recommendation on the use of KI for thyroid cancer prophylaxis based on the FDA’s recent comprehensive review of the data accumulated in the aftermath of the 1986 Chernobyl reactor accident relating radioiodine exposure to thyroid cancer risk.

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Rationale for Revising the Existing KI Policy

The New York State Department of Health (NYSDOH) has reviewed the new guidance for prophylactic use of KI prepared by the FDA and is hereby recommending that the New York State Policy on KI distribution to the general public be revised. The rationale for the revision is given below.

- Studies conducted after the 1986 accident at Chernobyl have provided the most reliable information available to date on the relationship between exposure to radioiodine and thyroid cancer risk. These studies suggest that the risk of thyroid cancer is inversely related to age, and that, especially in young children, the risk may accrue at very low level of radioiodine exposure. The FDA relied on Chernobyl data to formulate its specific recommendations.
- The effectiveness of KI as a specific blocker of thyroid radioiodine uptake is well established, as are the doses necessary for blocking radioiodine uptake. As such, it is reasonable to conclude that KI will likewise be effective in reducing the risk of thyroid cancer in individuals or populations at risk for inhalation or ingestion of radioiodines.
- Short-term administration of KI at a thyroid blocking dose is safe and, in general, more so in children than adults. The risks of stable iodine administration are detailed in the FDA guidance document (FDA01).

The NYSDOH, in consultation with its Radiological Health Advisory Committee, concluded that there was no medical reason not to make KI available to the general public during a radiological emergency where a large release of radioiodines had taken place. In August 1998, the NYSDOH Commissioner (Dr. DeBuono) made that recommendation to Mr. Edward Jacoby, then Chairman of the Disaster Preparedness Commission (DPC). The subsequent NYSDOH Commissioner, Dr. Novello, reiterated that recommendation when the FDA released its final guidance on the use of KI for the general public in December 2001.

Based on information available to date, New York State has decided to revise its KI policy to reflect current FDA recommendations.

New Policy

The New York State Plan endorses the 2001 FDA recommendation regarding KI. The New York State Policy on KI is revised as follows:

“The New York State Department of Health states that KI is a safe and effective means by which to prevent radioiodine uptake by the thyroid gland, under certain specified conditions of use, and thereby reduce the risk of thyroid cancer in the event of a

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radiation emergency. The Department will follow the FDA’s lower radioactive exposure thresholds for KI prophylaxis as well as lower doses of KI for neonates, infants, and children than those previously recommended in 1982 (see Table below). The recommendation to take KI by the general public will be issued by the Local or State Commissioner of Health, or his/her designee, during a radiological emergency where the potential to exceed the new FDA dose limits may be exceeded by the general public. This recommendation will be based on a projected thyroid dose to one-year old child of 5 Rem.

The NYSDOH continues to recommend that the radiation emergency response plans include:

- Provisions (in the event of a radiation emergency) for informing the public about the magnitude of the radiation hazard;
- The manner of use of KI and its potential benefits and risks; and
- Medical contact, reporting, and assistance systems.

The NYSDOH recognizes FDA recommendations on availability as well as administration of KI in advance of exposure to radioiodine. The NYSDOH stresses that KI provides protection only for the thyroid from radioiodines. It has no impact on the impact on the uptake by the body of other radioactive materials and provides no protection against external irradiation of any kind. The NYSDOH emphasizes that the use of KI should be as an adjunct to recommended protective actions such as evacuation (itself not always feasible), sheltering, and control of foodstuffs.”

Threshold Thyroid Radioactive Exposures and Recommended Doses of KI for Different Risk Groups

	KI dose (mg)	# ml liquid (65 mg/ml)	# of 65 mg tablets	# of 130 mg tablets
Adults over 40 yrs.	130	2	2	1
Adults over 18 through 40 yrs.				
Pregnant or lactating women				
Adolescents over 12 through 18 yrs. who weigh at least 150 pounds	130	2	2	1
Adolescents over 12 through 18 yrs. who weigh less than 150 pounds	65	1	1	1/2
Children over 3 through 12 yrs.	65	1	1	1/2
Over 1 month through 3 yrs.	32	1/2	1/2	1/4
Birth through 1 month	16	1/4	1/4	1/8

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Commercially Available Doses of KI

KI is available in FDA-approved, over-the-counter formulations as in 130-mg tablets, 65-mg tablets and liquid (65 mg per ml).

NYSDOH supports the administration of the 130-mg tablet for children in settings such as schools or childcare centers in the event of emergencies. This is in agreement with FDA statements (reference below). This dose is safe and well within the recommended therapeutic range of KI for other indications. The blocking effect of iodide on the thyroid lasts only a few days (daily dosing is needed as long as the child is exposed to radioiodine) and any suppressive effect of KI on thyroid function has been shown to be minimal, even in young children.

The FDA has noted that absolute precision in dosing is generally not critical to safety or efficacy, and has emphasized in their guidance document that across populations at risk for radioiodine exposure, the overall benefits of KI far exceed the risks of overdosing, especially in children.

Reference

FDA01 Guidance, Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies, US Department of Health and Human Services, Food and Drug Administration, Center for Drug Evaluation and Research. December 2001.

New York State
Nuclear Emergency Preparedness Subcommittee
Technical Issues Task Force

**Implementation of
the Use of Potassium
Iodide (KI) as a
Protective Action for
the Public**

**Revision 2
June 2007**

NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
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ATTACHMENT 2

The following individuals and organizations participated in the development of this position paper, and agree to its purpose and contents. All participants agree to implement the guidance contained herein, to the extent possible.

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Name	Signature	Date

Executive Summary

Licensee and State members of the Potassium Iodide (KI) Task Force (KI Task Force) developed this position paper to detail the decision process by which several recommendations regarding KI distribution will be made. The Task Force agreed that upon declaration of a General Emergency by the licensee, a recommendation to evacuate and take KI would be made simultaneously. It was also agreed that a single trigger level would be used (projected dose of 5 rem to the child thyroid). This paper discusses several approaches to determine doses/iodine concentrations and whether one approach was selected over the others due to effectiveness, timeliness, ease of implementation, etc.

The following six specific recommendations were agreed upon by the KI Task Force:

1. ***“Upon declaration of a General Emergency, the following will be directed to ingest KI:***
 - *members of the public that are directed to evacuate*
 - *captive populations within the evacuated area*
 - *members of the public that would otherwise have been evacuated but are directed to shelter-in-place because evacuation is not feasible.”*
2. ***“If evacuation is recommended at an ECL other than a General Emergency, or for any other reason, a direction to ingest KI as described in recommendation No. 1 will not be made. Ingestion of KI will be recommended only upon declaration of a General Emergency.”***
3. ***“Upon declaration of a General Emergency, members of the public that are directed to shelter-in-place in order to reduce dose shall be directed to ingest KI. Members of the public who are directed to monitor the Emergency Alert System will not be directed to ingest KI.”***
4. ***“Upon declaration of a General Emergency, all emergency workers located within the 10-mile EPZ will be directed to take KI (one 130-mg tablet every 24 hours). This recommendation will be made at the same time as the recommendation to ingest KI is made to the general public.”***
5. ***“Members of the public and captive populations who are directed to take KI shall be directed to ingest KI in the dosage recommended by the US FDA. If a scheme of graded dosing is not possible, one 130-mg tablet per person may be ingested with minimal risk for those over one year of age. Dose to neonates should be limited to 16 mg, if possible.”***
6. ***“As part of a pre-distribution effort, each member of the public should be offered a quantity of KI tablets equivalent to the following:***

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Maximum ETE (in days-rounded up) x 1 age and/or weight dependent dose/day

Alternatively, one bottle of liquid KI may be offered per family.”

The group recognizes that a strong public information campaign and clear messages during the emergency are key to a successful KI implementation program. Some implementation guidance is provided at the end of the document.

1. Purpose

The purpose of this paper is to document a technical assessment of issues associated with the distribution of Potassium Iodide (KI) to the general public, emergency workers and captive populations, and to provide implementation guidance for:

- Usage
 - General Public
 - Emergency Workers
 - Captive Populations
- Dosage and frequency
- Pre-distribution criteria

2. Regulatory Requirements and Guidance

2.1 Applicable regulations

The US Nuclear Regulatory Commission (NRC) amended emergency planning regulations to require that States consider including the prophylactic use of KI as a protective measure for the general public in the plume exposure pathway Emergency Planning Zone (EPZ) in 66 FR 5427 on 19 Jan 2001. (Ref. 1)

The Federal Emergency Management Agency (FEMA) provided notice that the Federal Radiological Preparedness Coordinating Committee (FRPCC) revised its 1985 Federal policy regarding KI use in 67 FR 1355 on 10 Jan 2002. (Ref. 2)

2.2 Current guidance

The US Food and Drug Administration (FDA) issued guidance on the use of KI in radiation emergencies in December 2001 (Ref. 3). This document concludes “Short-term administration of KI at thyroid blocking doses is safe...” (Ref. 3 IV.A.) and indicates KI dosage is dependent on age and “Predicted Thyroid Exposure” (Ref. 3 IV.B.). This document states that “The recommendation should be interpreted with flexibility as necessary to allow optimally effective and safe

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dosing..." Additionally, "...the overall benefits of KI far exceed the risks of overdosing..." (Ref. 3 IV.B.).

2.3 New York State Position

In 2002, New York State, in its consideration of the subject CFR, chose to incorporate KI as an adjunct to the current range of protective actions for the public. The New York State Revised KI Policy was issued in April 2002.

2.4 Upcoming Guidance

This Position Paper will be revised as necessary to accommodate any new Federal guidance and availability of KI in different dosages.

3. Assumptions

- For optimal protection against inhaled radioiodine, KI should be administered before or immediately coincident with passage of the radioactive cloud. Effectiveness drops off rather quickly as time since radioiodine exposure increases. The effectiveness drops to about 50% if KI is taken two hours after exposure, and continues to decrease as time after exposure increases. (Ref. 3. V.).
- The recommended daily dose protects the user from radioiodine uptake for approximately 24 hours.
- KI should be taken until the person is no longer exposed to radioiodine.
- Radioiodine would only be present in the environment in sufficient quantities to exceed 5 rem child thyroid dose (CDE_T), which is the minimum dose at which KI is recommended, if a General Emergency (GE) had been declared at the facility from which the source term originates. This assumption is based on the fact that radioiodine can only be present in quantities capable of producing 5 rem child CDE_T in the presence of significant core damage and loss of primary containment, which are criteria that constitute a General Emergency.
- There will only be one trigger level to recommend KI: 5 rem to the child thyroid (CDE_T). This trigger level applies to the general public, emergency workers and captive populations.

4. Implementation Analysis

This section presents six recommendations as well as the rationale, benefits and risks associated with each. Recommendations are presented for when to issue a KI

recommendation, dosage, and criteria for pre-distribution. These analyses apply to members of the public, emergency workers and captive populations.

4.1 Task Force Recommendation # 1

“Upon declaration of a General Emergency, the following will be directed to ingest KI:

- ***members of the public that are directed to evacuate***
- ***captive populations within the evacuated area***
- ***members of the public that would otherwise have been evacuated but are directed to shelter-in-place because evacuation is not feasible.”***

Analysis:

Three methods were investigated to arrive to this recommendation:

- Use of a dose value,
- Use of deterministic methods, and
- Use of emergency classification.

Each analysis is described separately.

4.1.1 Using Dose Value

This analysis examines a method that utilizes projected dose to the thyroid as an indication of recommendation of KI use by the public [specifically, Committed Dose Equivalent to the child thyroid (CDE_T)]. In accordance with FDA Guidance (Ref. 3), child $CDE_T \geq 5$ rem is the indication at which KI use should be recommended.

To date, none of the New York State nuclear power facilities utilize real-time iodine monitoring. Hence, releases of radioiodine to the environment during an emergency are inferred from either grab samples or back calculated from field data. Both of these methods require several steps that need, at a minimum:

- Allocation and briefing of personnel,
- Assembling equipment and procedures to enter the field to collect and analyze samples,
- Reporting the results to an emergency facility,

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- Performing calculations to determine child CDE_T ,
- Relaying dose assessment information to the state/county,
- Decision-making by the state/county, and
- Dissemination of recommendations to the public.

These steps are routinely performed during emergency drills, and our experience indicates that it may take anywhere from 30-90 minutes to calculate the child CDE_T once a decision has been made to obtain a sample. Additionally, the emergency facilities that implement this analysis may take up to 60 minutes to activate after declaration of an emergency.

Normally, the calculation of the child CDE_T takes place after the completion of protective action recommendations (PARs) based on “plant conditions”. The PARs for a General Emergency are to evacuate people within two-miles around and five miles downwind of the site, and advise all remaining ERPA to monitor the Emergency Alert System.

Given the above:

- Child CDE_T would likely be calculated and provided to the County and the State within 105-165 minutes after the declaration of the GE.
- If the County decides that the use of KI is appropriate, given the time the county takes to make the decision and prepare public information messages, this instruction could be provided to the public in 150-210 minutes after the declaration of the GE.

4.1.2 Use of Deterministic Methods

In this case, methods that determine child CDE_T utilizing parameters such as containment high range monitor status, gross core damage estimate, and/or reactor pressure vessel and containment integrity were considered. Unfortunately, the data needed to make even rough estimations of these parameters would typically be assessed after the GE-related recommendations. Hence, the time-delay risks of such a method still apply.

Benefits of these methods

Administration of KI would occur only in the presence of radioiodine in quantities that meet or exceed the “Predicted thyroid exposure guidance” in Reference 3.

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Risks of these methods

- Administration of KI would occur (up to 3-4 hours) after the release of radioiodine, decreasing the effectiveness of the prophylaxis by more than 75%.
- Administration of KI would likely occur after other protective actions (that is evacuation) have already been recommended to the public. It is unknown if the public would comply with instructions to bring KI with them.
- Members of the public may delay evacuation in order to locate their KI.
- If two separate protective actions are issued to the public (for example, an order to evacuate not accompanied by a recommendation to take KI), compliance with the respective recommendations is unknown. It is possible that the public will not differentiate between the protective actions and, when told to evacuate, may take KI as well. The risk is that the public sees these as two separate protective actions, potentially providing confusion and non-compliance.

4.1.3 Use of Emergency Classification

This analysis examines a method that would use the emergency classification level as the indication for KI use. Specifically, the indication for KI use is a declaration of a General Emergency.

- The General Emergency classification is currently used to determine evacuation PARs.
- If KI use was always implemented concurrently with the “plant condition” protective action recommendations, the public would receive the recommendation to take KI at the same time they received the order to evacuate; that is, within an hour of the declaration of the General Emergency.
- By definition, the declaration of a General Emergency presumes that “Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.” (Ref. 7).
- The EPA Protective Action Guideline (PAG) is to evacuate populations whose actual or projected exposure level equals or exceeds 5 rem Committed Dose Equivalent to the (adult) thyroid (Ref. 8).
-

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- New York State nuclear power plant licensees calculate CDE_T to the child thyroid, and provide this number to the counties and state for comparison against the PAG's (Ref. 9).
- Hence, when the licensee recommends evacuation due to a General Emergency declaration, a child $CDE_T \geq 5$ rem either exists or is anticipated to exist at the site boundary or beyond. Though there are exceptions to this (such as GE's declared due to security issues or electrical problems) all GE's have the potential to exceed the 5 rem child CDE_T level. Calculations performed by New York State on a variety of plant conditions postulated to exist during a GE provide confirmation of this (Ref. 6).
- Given the above, it can be reasonably assumed that the radiological conditions present within the context of a General Emergency will result in meeting or exceeding the child $CDE_T \geq 5$ rem, which is also the thyroid exposure at which the FDA recommends the use of prophylactic KI.

Benefits of this method

- The recommendation to take KI could be issued earlier than the other indication methods, concurrently with the recommendation to evacuate or shelter-in-place. This would likely occur prior to the presence of radioiodine in the environment, thus providing maximum loading dose of stable iodine to the thyroid.
- Compliance with taking KI is more likely since all protective actions are being implemented at once. Also, people would be more likely to have access to pre-distributed KI.

Risks to this method

- KI could be ingested without significant radioiodine ever being present in the environment. For example, the accident may not result in a release of radioiodine to the environment. Hence the public incurs the risk of taking KI without benefit.

Risk Analysis

- The risk of taking KI is minor (Ref. 10).
- A GE condition carries a risk of radioiodine release to the public.
- KI should be taken as soon as possible once the risk of radioiodine exposure is present.
- Using projected child CDE_T as the basis for a recommendation to take KI could significantly delay KI administration.
-
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- Providing the public with a recommendation to take KI concurrent with an order for evacuation or sheltering-in-place provides the earliest and most effective thyroid protection with the greatest likelihood of compliance.

4.4 Task Force Recommendation # 2

"If evacuation is recommended at an ECL other than a General Emergency, or for any other reason, a direction to ingest KI as described in recommendation No. 1 will not be made. Ingestion of KI will be recommended only upon declaration of a General Emergency."

Analysis

- The recommendation to take KI should be given to any persons likely to be exposed to radioiodine in quantities that may exceed the "Predicted thyroid exposure guidance" presented in Reference 3.
- This analysis suggests that persons who are ordered to evacuate due to plant conditions or due to subsequently determined projected dose may exceed the predicted thyroid dose, and should take KI.
- For the population that has been told to evacuate for any reason other than the declaration of a General Emergency the risk of radioiodine exposure is low.
- Populations who took, or were recommended to take KI coincident with the recommendation to evacuate at an emergency classification level (ECL) other than a General Emergency, or for any other reason, are at risk of depleting their pre-distributed KI supply, making it unavailable in the event of radioiodine exposure.

4.5 Task Force Recommendation #3

"Upon declaration of a General Emergency, members of the public that are directed to shelter-in-place in order to reduce dose shall be directed to ingest KI. Members of the public who are directed to monitor the Emergency Alert System will not be directed to ingest KI."

Analysis

- Upon declaration of a General Emergency, the licensee will automatically recommend evacuation for the area two miles around and five miles downwind from the plant.

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- In cases where a General Emergency is the first ECL declared (“fast-breaker”), resources and facilities would not be in place to allow for orderly evacuation. It is therefore likely that the population will not be directed to evacuate, but will be directed to shelter-in-place (in order to reduce dose).
- If it has been determined that an impediment to evacuation exists (i.e., lack of transportation resources, inclement weather, or road impediment) then the county or state may decide to shelter-in-place for the purpose of reducing dose rather than evacuate.
- Given the analysis in section 4.1.3, it can be reasonably assumed that the radiological conditions present within the context of a General Emergency will result in meeting or exceeding the child $CDE_T \geq 5$ rem, which is also the thyroid exposure at which the FDA recommends the use of prophylactic KI.
- For the population that has not been evacuated and has been told to monitor the Emergency Alert System in order to maintain a heightened state of awareness, the risk of radioiodine exposure is low. The reasons for this are:
 - Due to the distance from the reactor, this population is at significantly less risk from radiation exposure from all sources, versus persons closer to the reactor.
 - Monitoring the Emergency Alert System in order to maintain a heightened state of awareness is used for projected doses of < 1 rem TEDE or < 5 rem CDE_T . Hence this population is not at risk of significant exposures to radioiodine.
- Populations that have not been evacuated, who took, or were recommended to take KI coincident with the direction to monitor the Emergency Alert System are at risk of depleting their pre-distributed KI supply, making it unavailable in the event of radioiodine exposure.

4.6 Task Force Recommendation # 4

“Upon declaration of a General Emergency, all emergency workers located within the 10-mile EPZ will be directed to take KI (one 130 mg tablet every 24 hours). This recommendation will be made at the same time as the recommendation to ingest KI is made to the general public.”

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Analysis

- Though current trigger levels for emergency worker KI use vary within New York State, all methods use trigger levels greater than the 5 rem child CDE_T that is associated with the general public.
- The KI Task Force has agreed that there will be one trigger level to recommend KI, and that trigger level will be 5 rem child CDE_T .
- Most emergency workers are members of the public, and many will encounter the evacuating public, who will have been told to take their KI. Additionally, emergency workers have access to the same public information that would be instructing the public to take KI. These emergency workers:
 - May not differentiate themselves from the public in the presence of instructions regarding KI.
 - May not comply with directions that differ from those being broadcast to the public.
- Since emergency workers are likely to move about between evacuated and non-evacuated areas within the EPZ, all emergency workers within the EPZ will be directed to take KI. This includes licensee emergency workers as well as county, state, and local emergency workers.
- Using the same arguments as in section 4.1, if current methods are continued, emergency workers would receive a recommendation to take KI while in the field. This method:
 - Is likely to result in a recommendation to take KI after exposure to radioiodine has already occurred.
 - Has potential delays due to the communications lag present when contacting several hundred emergency workers in the field.
- Directing emergency workers to take KI in the absence of radioiodine has the same risks and benefits detailed in section 4.1.

4.7 Task Force Recommendation # 5

“Members of the public and captive populations who are directed to take KI shall be directed to ingest KI in the dosage recommended by the US FDA. If a scheme of graded dosing is not possible, one 130-mg tablet per person may be ingested with minimal risk for those over one year of age. Dose to neonates should be limited to 16 mg, if possible.”

Analysis

The FDA guidance (Ref. 3) contains a number of age dependent doses. These recommendations are the lowest effective dose. Emergency planners and others should understand that absolute precision in dosing is generally not critical to safety or efficacy. Higher doses (e.g., up to 130 mg) would be equally effective and, particularly among school-age children, extremely safe (Ref. 10).

In addition to 130 mg tablets, KI is now FDA-approved and available in 65 mg tablets and liquid (65 mg/ml).

Threshold Thyroid Radioactive Exposures and Recommended Doses of KI for Different Risk Groups

	KI dose (mg)	# ml liquid (65 mg/ml)	# of 65 mg tablets	# of 130 mg tablets
Adults over 40 yrs.	130	2	2	1
Adults over 18 through 40 yrs.				
Pregnant or lactating women				
Adolescents over 12 through 18 yrs. who weigh at least 150 pounds	130	2	2	1
Adolescents over 12 through 18 yrs. who weigh less than 150 pounds	65	1	1	1/2
Children over 3 through 12 yrs.	65	1	1	1/2
Over 1 month through 3 yrs.	32	1/2	1/2	1/4
Birth through 1 month	16	1/4	1/4	1/8

A scheme of graded dosing may be difficult to implement during a radiological emergency involving large numbers of people. If local emergency planners conclude that graded dosing is logistically impractical, for populations at risk for radioiodine exposure, the overall benefits of taking up to 130 mg of KI instead of the lower doses recommended for certain age groups far exceed the small risks of overdosing. However, where feasible, adherence to FDA guidance should be attempted when dosing infants. Ideally, neonates should receive the lowest dose (16 mg) of KI. Excess

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iodine intake can lead to transient iodine-induced hypothyroidism in neonates, which can impact intellectual development. Individuals who are intolerant of KI at protective doses, as well as neonates, pregnant, and lactating women, should be given priority with regard to other protective measures (i.e., sheltering-in-place, evacuation, and control of the food supply) (Ref. 10).

This analysis recognizes:

- Potential confusion relating these doses to the public.
- Practical issues associated with delivering doses based on fractions of a tablet. This would require sectioning KI tablets in order to achieve a desired delivered dose.
- Likely lack of compliance regarding dose given the above issues.

Benefits to this method

- Instructions to follow the FDA recommendations if possible, but allowing up to 130 mg for persons over one year of age, and limiting neonates to 16 mg are easily related in public information material.
- Simple instructions are more likely to be complied with.

Risks to this method

This recommendation may provide a dose to children significantly in excess of the FDA requirements. In light of potential developmental consequences of even transient hypothyroidism, neonates who receive KI should be medically monitored and thyroid hormone therapy given in cases where hypothyroidism develops. This action should be incorporated into the State and county plans.

Risk Analysis

- The risk associated with excessive KI is less than the risk of exposure to radioiodine (Ref. 3).
- The public is more likely to comply with simple dose instructions.
- The FDA has indicated that the use of a single 130-mg dose for all members of the public is safe, regardless of age (Ref. 10).

4.8 Task Force Recommendation # 6

"As part of a pre-distribution effort, each member of the public should be offered a quantity of KI tablets equivalent to the following:

Maximum ETE (in days-rounded up) x 1 age and/or weight dependent dose/day.

Alternatively, one bottle of liquid KI may be offered per family."

Analysis

- The public should be provided with sufficient KI to assure that thyroid prophylaxis is available to accommodate an expected duration of exposure to radioiodine.
- Given that evacuation of the public is the preferred method of preventing exposure, in an incident that could result in the release of radioiodine, the public could be expected to be exposed for a period of time equal to the greatest Evacuation Time Estimate (ETE) for the facility in question.
- One dose of KI protects the thyroid for approximately 24 hours (one day).

It is possible that impediments to evacuation may prevent the egress of portions of the population that would otherwise be evacuated (examples are road impediments such as heavy snowfall or transportation resource shortfalls), however, those conditions are accommodated in each nuclear facility's ETE.

- Given the above, pre-distribution efforts should provide sufficient KI in accordance with the following:

Maximum ETE (in days-rounded up) x 1 age and/or weight dependent dose/day
= # KI tablet(s) per person that should be pre-distributed

Example: At Nine Mile Point, the maximum amount of time it would take to evacuate any member of the public is 8 hours, 20 minutes, as indicated in that facility's ETE (Ref. 4). Rounded up, that is equivalent to 1 day. Plugging this into the above formula:

*1 day x 1 age and/or weight dependent dose/day
= 1 age and/or weight dependent dose*

In this example, one tablet of the appropriate dosage should be offered per person in a pre-distribution method. If 65 mg tablets are not available, 130 mg tablets may be offered. Alternatively, one bottle of liquid KI per family may be offered.

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5. Implementation Considerations

This section provides suggestions for implementing the recommendations contained above.

5.1 Licensee actions

The Part 1 Notification Fact Sheet item 7.B. should be modified to read, “Evacuate and implement the KI plan for the following ERPA’s”. This action was completed 5 May 2003.

5.2 County and State actions

- Emergency plans should be modified to include:
 - The addition of KI as a protective action for the public.
 - The above protective action may be implemented for the evacuating public and those directed to shelter-in-place upon declaration of a General Emergency.
 - The recommended dose will be in accordance with FDA guidance. If a scheme of graded dosing is not possible, one 130-mg tablet per person may be ingested with minimal risk for those over one year of age. Dose to neonates should be limited to 16 mg, if possible.
 - Dose should be repeated every 24 hours while the person is exposed to radioiodine.
 - All emergency workers located within the 10-mile EPZ will be instructed to take KI upon declaration of a General Emergency (that is, concurrent with the recommendation to the evacuating population).
 - KI distribution policies and procedures, both pre- and post-event.
- Public information plans should be modified to include:
 - KI purpose, dose, distribution methods (pre- and post-event) and precautions (consistent with NYS and FDA guidance) in public education materials.
 - Incorporation of KI protective action details into EAS follow-up messages.

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6. Glossary/Acronyms

CDE_T (Committed Dose Equivalent to the thyroid) -the radiation dose due to radioiodine in the thyroid over the 50-year period following exposure. In this document, *CDE_T* is used to refer to the committed dose equivalent to the child thyroid.

CFR (Code of Federal Regulations) -

Day - 24 hour period

ECL (Emergency Classification Level) - one of four classes used to describe emergencies at nuclear power plants.

EAS (Emergency Alert System) - broadcasting facilities that have been authorized by the Federal Communications Commission to operate in a controlled manner during a war, state of public peril or disaster, or other national emergency.

EPZ (Emergency Planning Zone) - the 10-mile radius around a nuclear power plant used for emergency planning purposes.

Evacuation - the urgent removal of people from an area to avoid or reduce high-level, short-term exposure, usually from the plume or from deposited radioactivity. Evacuation may be a preemptive action taken in response to a facility condition rather than an actual release.

ETE (Evacuation Time Estimate) - the time it is estimated to take to evacuate a certain area taking into consideration population size, road conditions, etc.

FEMA (Federal Emergency Management Agency) - the federal agency responsible for coordinating federal response to an emergency.

FR (Federal Register)

FRPCC (Federal Radiological Preparedness Coordinating Committee)

GE (General Emergency) - the most serious of four NRC emergency classes. Classification as a general emergency indicates that events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential loss of containment integrity. Releases can reasonably be expected to exceed EPA Protective Action Guide exposure levels offsite for more than the immediate site area.

Maintain a heightened state of awareness - go inside and monitor EAS.

Neonate - infant under 1 month of age

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NRC (Nuclear Regulatory Commission) - the federal agency that licenses and regulates nuclear power plants. The NRC would be the lead federal agency for responding to an emergency at a nuclear power plant.

PAG (Protective Action Guide) - the projected dose to reference man, or other defined individual, from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.

Shelter-in-Place - a protective action where people go indoors, close all doors and windows, turn off all sources of outside air, and remain indoors until officially notified that it is safe to go out.

US FDA (United States Food and Drug Administration) - the federal agency, which among other things, is responsible for evaluating and approving drugs.

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7. References

- (Ref. 1) 66 FR 5427 (19 Jan 2001).
- (Ref. 2) 67 FR 1355 on (10 Jan 2002).
- (Ref. 3) Guidance: Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies: USFDA, Dec 2001.
- (Ref. 4) Nine Mile Point / James A. FitzPatrick Nuclear Facility Development of Evacuation Time Estimates, August 2003
- (Ref. 5) EPA 400-R-92-001, Manual or Protective Action Guides and Protective Actions for Nuclear Incidents, USEPA, May 1992.
- (Ref. 6) (NYSDOH RASCAL calculation).
- (Ref. 7) NUREG-0654 FEMA REP 1: Appendix 1.
- (Ref. 8) EPA 400-R-92-001, Manual or Protective Action Guides and Protective Actions for Nuclear Incidents, USEPA, May 1992, Table 2-2 footnote b.
- (Ref. 9) Implementation of the new EPA Protective Action Guides in Existing Emergency Programs for Nuclear Power Plants in New York State, March 1994.
- (Ref. 10) Guidance for Industry: KI in Radiation Emergencies – Questions and Answers, Revision 1, USFDA, December 2002.

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PROCEDURE A – PLAN MAINTENANCE**

PLAN MAINTENANCE

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN *PROCEDURE A – PLAN MAINTENANCE*

1.0 PURPOSE

This procedure provides for the control, distribution, amendment and updating of this Plan to ensure its accuracy and uniformity with local plans, NFO site-plans, the State's overall Comprehensive Emergency Management Plan and contiguous states' and provinces' plans.

2.0 RESPONSIBILITIES

2.1 The appropriate Commissioner, Director, or other designated head of each State agency with a designated responsibility under this Plan, and the Chief Elected Official of each affected county will insure the development and maintenance of plans to carry out such agency's or county's radiological emergency response responsibilities.

2.2 The Director of the NYSOEM under the auspices of the DPC is responsible for the administration of the New York State Radiological Emergency Response Planning.

These responsibilities include:

2.2.1 Providing for and controlling the distribution, amendment, and updating of this Plan.

2.2.2 Coordinating the development by State emergency response agencies of their procedures for implementing this Plan.

2.2.3 Providing for an annual review of this Plan, updating with current information based on the results of periodic drills and annual exercises.

2.2.4 Ensuring that rosters of key personnel's telephone numbers are updated at least quarterly.

3.0 IMPLEMENTATION

3.1 The Director of the NYSOEM will control the distribution of the Plan and its procedure to all officials as required.

3.1.1 An up-to-date plan distribution list will be maintained.

3.1.2 All amendments or updates of this Plan will reflect the date of such change in the lower right hand corner of each page.

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3.2 Oversight of emergency response agencies as recorded in this Plan will be the responsibility of the Director of the NYSOEM.

3.2.1 Each agency will forward their new or revised procedures and updated maps to the NYSOEM, 1220 Washington Ave, Building 22, Suite 101, Albany, NY, 12226-2251.

3.2.2 State agencies and their disaster-related responsibilities will be coordinated by the Director of the NYSOEM in accordance with the Comprehensive Emergency Management Plan.

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PROCEDURE B - COMMUNICATIONS/WARNING**

COMMUNICATIONS/WARNING

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN

PROCEDURE B - COMMUNICATIONS/WARNING

1.0 INTRODUCTION

This section describes responsibilities and procedures to rapidly and effectively notify State and local authorities and the public of declared emergencies at commercial nuclear facilities within New York State.

The NY State Watch Center (NYSWC) will disseminate the appropriate information in conjunction with the county REPP, NYS REPP, and each nuclear facility operator's (NFO's) Emergency Plan and procedures. In New York State, the NFO locations include:

- Indian Point Nuclear Generating Unit 2 (IP-2)
- Indian Point Nuclear Generating Unit 3 (IP-3)
- Nine Mile Point Nuclear Generating Station Unit 1 (NMPNS-1)
- Nine Mile Point Nuclear Generating Station Unit 2 (NMPNS-2)
- James A. FitzPatrick Nuclear Power Plant (JAFNPP)
- Robert E. Ginna Nuclear Power Plant (Ginna).

Communication systems, equipment and personnel are available in response to a radiological emergency at the above facilities and are described in Attachment 12 of this procedure. Periodic testing frequencies and protocols are described in Attachment 2.

2.0 BASIS FOR NOTIFICATION

NUREG-0654/FEMA-REP-1 establishes four emergency classification levels (ECLs) of accidents. Upon declaration of one of the four ECLs, the NFO must notify offsite authorities with 15 minutes.

3.0 METHODS FOR NOTIFICATION

The initial notification of an abnormal plant condition (but no emergency is being declared) will be provided by commercial telephone or e-mail to designated NYSOEM staff.

The initial notification that a declared radiological emergency has occurred at a nuclear power plant will be made by the NFO over the Radiological Emergency Communications System (RECS).

Attachment 1 lists procedures for using RECS.

Attachment 2 lists procedures for testing RECS.

IP-2, IP-3, NMPNS-1, NMPNS-2, JAFNPP, and Ginna NPP will use dedicated 24-hour telephone (RECS) lines from their control rooms to notify the NYSWC, NYSDOH and other appropriate local jurisdictions during duty hours.

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During non-duty hours, NYSOEM and DHSES headquarters staff, State Assessment and Evaluation staff and appropriate NYSOEM field staff will be notified by the NYSWC by NY-Alert (e-mail and commercial telephone) and by Outlook e-mail messages. (Up-to-date notification lists are maintained at the NYSWC).

The NFO will transmit initial information as shown in Part I of Attachment 6A and 6B to the officials identified in Section 4.0 below.

The RECS notification systems described have backup provided by:

- Commercial telephones
- Radios
- Satellite telephones

A designated State official will call back to an NFO representative to verify the notification and receive additional information on plant status and other pertinent details regarding the emergency.

4.0 NOTIFICATIONS AND MOBILIZATION OF EMERGENCY RESPONSE ORGANIZATION

4.1 State Notifications - Abnormal Condition (No Emergency Declared)

For incidents where an abnormal condition is being reported by the NFO, but no emergency is being declared (plant trip, unexpected change in power levels or other condition which may be of potential media interest), the NYSWC or other designated NYSOEM representative will inform the following personnel:

- NYSOEM Duty Officer
- NYSOEM REP Section Chief
- Director
- Deputy Director(s)
- Commissioner, DHSES
- Other NYSOEM REP Staff

A NYSOEM representative will initially verify the plant status with the NFO using the checklist provided in Section 5.0 below, and follow-up information will be provided through commercial phone, e-mail or conference calls. The situation will be monitored until the abnormal condition is resolved. No mobilization of the State emergency response organization will be required.

4.2 State Notifications - Notification of Unusual Event

For incidents classified as a Notification of Unusual Event (NUE), the NFO will notify the NYSWC and county warning points/EOCs through prescribed communication channels

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that an NUE is in progress or has occurred which indicates a potential degradation of the level of safety of the plant or indicates a security threat to facility protection. No release of radioactive material requiring off-site response or monitoring is expected unless further degradation of safety systems occurs. Refer to Attachment 1 for detailed site-specific information regarding notification methods.

The NYSWC or other designated NYSOEM representative will inform the following personnel:

- NYSOEM Duty Officer.
- NYSOEM REP Section Chief
- Director
- Deputy Director(s)
- Commissioner, DHSES
- Other NYSOEM REP Staff
- PIO
- State Police
- NYSDOH (BERP)
- Engineering Technical Specialist

A NYSOEM representative will initially verify the plant status with the NFO provided in Section 5.0 below, and follow-up information will be provided through commercial phone, e-mail or conference calls. The situation will be monitored until the abnormal condition is resolved. No mobilization of the State emergency response organization will be required.

4.3 State Notifications and Mobilization – Alert, Site Area Emergency or General Emergency

The State emergency response organization will be mobilized if the incident is classified as Alert, Site Area Emergency or General Emergency. Refer to Attachment 8 for detailed site-specific information regarding notification methods.

State EOC, other State representatives available for field deployment and other support agencies will be reached directly on a 24-hour basis using automated or manual call-down lists maintained by the NYSWC.

The NYSWC will notify the following personnel/agencies:

- NYSOEM Duty Officer
- NYSOEM REP Section Chief
- Director
- Deputy Director(s)
- Commissioner, DHSES
- Chairman, DPC

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- DOH
- DSP
- PSC/NYSERDA Engineering Technical Specialists
- Appropriate staff liaisons to respond to the SEOC
- NYSOEM regional staff
- Appropriate Federal agencies (FEMA, NRC, US Coast Guard, FAA)
- Contiguous states
- Ingestion EPZ counties (Indian Point, Nine Mile/FitzPatrick, Ginna)
- The Province of Ontario, Canada (Ginna and Nine Mile/FitzPatrick sites only).

A NYSOEM representative will initially verify the plant status with the NFO provided in Section 5.0 below, and follow-up information will be provided through commercial phone, e-mail or conference calls. The State EOC will be activated and other State representatives will be deployed to the NFO EOF, JIC and appropriate County EOCs. The Executive Hotline Line will be activated upon State EOC activation.

5.0 FACILITY STATUS INFORMATION

During the verification call to the NFO representative, the designated State official will obtain the following information if it is known and appropriate:

1. Location of incident and the name and telephone number of the NFO contact person(s)
2. Date/time of incident
3. Emergency classification level
4. Emergency action level number and brief description
5. Any requests for needed onsite support from offsite organizations (e.g., Hostile Action response)
6. Prognosis for the emergency (Are conditions stabilizing or degrading?)
7. Whether release is in progress and point of release
8. Release levels (Curies) of noble gases, radioactive iodine and particulates
9. Weather conditions (wind speed, wind direction, atmospheric stability, precipitation)
10. Projected dose rates or doses downwind
11. Likelihood of offsite surface contamination

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12. Emergency response actions by the NFO in effect
13. Any recommended general public protective actions

6.0 CHANGE IN EMERGENCY CLASSIFICATION

Escalation, de-escalation or termination of the emergency classification will require prompt notification of all emergency response personnel. Upon reclassification of the emergency, NFO emergency personnel will promptly notify the New York State officials at the State EOC and any State representatives who may be present at the NFO's Emergency Operations Facility (EOF) and the Joint Information Center (JIC). NYSOEM will also ensure that the affected local governments are also notified. Notification of termination of the emergency or initiation of recovery operations (including any changes in the organizational structure for recovery activities) will follow the same notification procedures as used for changing emergency classification.

Refer to **Attachment 1** for detailed site-specific information regarding notification methods.

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PROCEDURE B - COMMUNICATIONS/WARNING

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PROCEDURE B - COMMUNICATIONS/WARNING**

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PROCEDURE B - COMMUNICATIONS/WARNING**

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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

ATTACHMENT 3

**RADIOLOGICAL EMERGENCIES
PROCEDURE FOR INITIAL RESPONSE FOR DEPARTMENT OF HEALTH-BERP +-
PERSONNEL**

(Contact Listings Available at NYS Watch Center)

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

ATTACHMENT 4

**EMERGENCY NOTIFICATION ROSTER
NUCLEAR POWER PLANT EMERGENCY
NEW YORK STATE EMERGENCY MANAGEMENT OFFICE**

(Contact Listings Available at NYS Watch Center)

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

ATTACHMENT 5

NYSOEM REGIONAL OFFICES

(Contact Listings Available at NYS Watch Center)

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

ATTACHMENT 7

**HARRIMAN/BEAR MOUNTAIN STATE PARK
RECEPTION CENTER NOTIFICATION PROCEDURE**

1.0 INITIATING EVENTS

The Harriman and Bear Mountain State Parks are located in Rockland and Orange Counties north and west of the Indian Point Nuclear Power Station. It is the policy of the State and local government to close these parks at the Alert Classification of any emergency at Indian Point. In the event of an immediate General Emergency involving the release of radioactive materials, the counties may require supplemental monitoring assistance as a result of park transients arriving at general population reception centers.

To supplement local monitoring efforts, DPC agency personnel may be activated to supplement monitoring and decontamination personnel at the county general population reception centers.

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
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ATTACHMENT 8

STATE NOTIFICATION AND ACTIVATION LIST

Upon receipt of information of an emergency at a nuclear facility, the NYSWC operator will notify agency representatives for stand-by or activation of the State EOC according to the emergency class declared.

I. UNUSUAL EVENT

STAND-BY (Information Only)	REPORT TO EOC (Normally Not Required at Unusual Event)	Notification Completed (Time/Date)
NYSOEM Duty Officer		
NYSOEM REP Section Chief		
Director		
Deputy Director(s)		
Commissioner, DHSES		
Other NYSOEM REP Staff		
PIO		
STATE POLICE		
ENGINEERING TECHNICAL SPECIALIST		
DOH (BERP)		

This list is maintained by NYSOEM. Distribution of names and phone numbers is controlled and is provided on a need-to-know basis.

Changes will be made to master copies of notification lists as changes are received at NYSWC. Lists will be updated and published on a quarterly basis.

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

ATTACHMENT 8

II. ALERT, SITE AREA EMERGENCY OR GENERAL EMERGENCY

STAND-BY (Information Only)	REPORT TO EOC	Notification Completed (Time/Date)
	NYSOEM Duty Officer	
	NYSOEM REP Section Chief	
	Director	
	Deputy Director(s)	
	Commissioner, DHSES	
	Chairman, DPC	
	Other NYSOEM REP Staff	
	PIO	
	State Police	
	Engineering Technical Specialists	
	DOH (BERP)	
	NYS DOT	
	DMNA	
	Parks, Recreation & Historic Preservation	
	NYS Education Department	
	NYSDOH	
	NYSDEC	
	OFP&C	
	Thruway Authority	
	NYS Ag&Mkts	
STAND-BY (Information Only)	REPORT TO EOC	Notification Completed

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

		(Time/Date)
	PSC	
	NYSERDA	
	NYSDHSES CSIC	
	NYSDHSES Office of Counter Terrorism	
	DOL	
	OGS	
	OTDA	
	Office of Mental Health	
	Office of People With Developmental Disabilities	
	DOCCS	
	OCFS	
	Office of Aging	
	American Red Cross	
	Division of Criminal Justice Services	
	Salvation Army	
	SUNY	

This list is maintained by NYSOEM. Distribution of names and phone numbers is controlled and is provided on a need-to-know basis.

Changes will be made to master copies of notification lists as changes are received at NYSWC. Lists will be updated and published on a quarterly basis.

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

ATTACHMENT 9

INFORMATIONAL NOTIFICATION LIST

The Following agencies are notified for informational purposes of all Alerts, Site Area Emergencies and General Emergencies. (FBI contact is added for Hostile Action Based Events)

Agency	Notification Completed (Time/Date)
US Coast Guard	
FEMA Regional II	
US NRC Region I	
Warning Point – New York City OEM	
FAA	
FBI	
Warning Point – Vermont	
Warning Point – New Jersey	
Warning Point – Pennsylvania	
Warning Point – Connecticut	
Warning Point – Massachusetts	
Warning Point – Ontario, Canada	
Dept of Financial Services	
Bridge Authority	
NYS Dept of State	
Metro Transit Authority (Metro North)	
AMTRAK	
CSX	
PANY&NJ	
Housing & Community Renewal	
Empire State Development Corp	

NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
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ATTACHMENT 10

**SPECIALIZED CONTACT LIST
FOR RADIOLOGICAL EMERGENCY INFORMATION OR SUPPORT**

When requested by NYSOEM, NYSWC personnel complete the required notifications:

(Contact Listings Available at NYSOEM)

Agency	Notification Completed (Time/Date)
US Dept. of Homeland Security	
US DOE RAP Team (Brookhaven)	
US EPA Region II	
National Response Center	
US Dept of Transportation	
Food and Drug Administration	
US Department of Agriculture	
State Food & Agricultural Council	
NYC Department of Health & Mental Hygiene	

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING**

ATTACHMENT 11

C. Ginna

Monroe
Wayne
Cayuga
Genesee
Livingston
Onondaga
Ontario
Orleans
Oswego
Seneca
Wyoming
Yates
Canada-Ontario

C. Millstone

Suffolk
Nassau

D. Oyster Creek

Richmond (Staten Island)

E. Vermont Yankee

Rensselaer
Washington

F. Darlington (Canada)

Orleans

G. Pickering (Canada)

Niagara

All notification lists are maintained by the NYSWC. Lists will be updated and published on a quarterly basis.

NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE B - COMMUNICATIONS/WARNING

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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
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PROCEDURE B - COMMUNICATIONS/WARNING**

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**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

PUBLIC INFORMATION

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**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
*PROCEDURE C - PUBLIC INFORMATION***

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**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

1.0 STATEMENT OF PURPOSE

The lead spokesperson for the release of information to the public and the press during a radiological emergency in New York State shall be appointed by the Chair for the New York State Disaster Preparedness Commission (DPC). The NYS Department of Health, as lead agency, has typically filled this spokesperson role. If the emergency involves a security event, the DOH spokesperson will be assisted by a PIO from the Division of State Police (DSP) and the Incident Commander.

The NYSOEM PIO is responsible for ensuring the accurate and timely release of State information to the public and the media concerning decisions for public protective action recommendations and state emergency response activities during radiological emergencies.

2.0 PUBLIC INFORMATION OFFICER DUTIES

The NYSOEM PIO shall be responsible for the following activities:

2.1 Identification, Recruitment and Training of Public Information Staff

The NYSOEM PIO will identify interested and capable individuals from other State agencies to serve as assistant PIOs for radiological emergency preparedness. The NYSOEM PIO will provide training and orientation sessions for the assistant PIOs at least once each year, and will provide them with complete copies of necessary State and local public information and education procedures, related maps, and educational materials on radiological emergency planning.

2.2 Exercises and Drills

The NYSOEM PIO and assistant PIOs shall participate in all preparedness exercises and shall be responsible for ensuring that State public information policies and procedures are carried out appropriately and accurately.

2.3 Liaison with County and Licensee Public Information Officers

The NYSOEM PIO shall be the State contact point for all county and licensee PIOs on matters relating to emergency preparedness information. The NYSOEM PIO will ensure county and licensee PIOs are kept informed of NYSOEM PIO activities, will participate in determination of site and equipment for all near-site information centers, and will seek to ensure consistency and cooperation among the related public information programs.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

2.4 Training

The NYSOEM PIO shall provide to county PIOs, as necessary, training in radiological emergency public information. Training sessions shall include overview of plans, PIO responsibilities during exercises and emergencies, coordination of news releases, Emergency Alert System (EAS) messages, equipment and staffing needs, and ongoing public education responsibilities and projects.

2.5 Public Education

Working with county and licensee PIOs, the NYSOEM PIO shall develop and implement programs to raise public consciousness of radiological emergency preparedness. These activities include, but are not limited to briefings for news editors and reporters; development and dissemination of germane booklets, brochures, and news releases; participation in "town meetings;" development of radio and TV public service announcements.

Information shall be disseminated to the public at least once annually. Such information shall include educational information on radiation, contact number or place for additional information, evacuation routes and corresponding reception and/or congregate care centers, sheltering, use of KI, the special needs of those with disabilities, and a transient emergency information program.

The four counties surrounding the Indian Point Entergy Center (Westchester, Rockland, Orange and Putnam) use a yearly brochure entitled "Are You Ready" to provide educational information on radiation, additional contact information, explanation of protective measures and information for special needs of the handicapped. These brochures are mailed directly to all residence of the 10-mile EPZ. Both Westchester and Rockland counties translate the "Are You Ready" brochure into Spanish and make them available for their non-English language residents.

The two counties surrounding the R.E. Ginna Nuclear Power Station (Monroe and Wayne) use a yearly calendar to provide educational information on radiation, additional contact information, explanation of protective measures use of KI and information for special needs of the handicapped. These calendars are mailed directly to all residents of the 10-mile EPZ.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
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The county surrounding Nine Mile Point and James A. FitzPatrick Nuclear Power Stations (Oswego) uses a yearly calendar to provide educational information on radiation, additional contact information, explanation of protective measures use of KI and information for special needs of the handicapped. These calendars are mailed directly to all residents of the 10-mile EPZ.

2.6 Annual Media Outreach

The NYSOEM PIO, in coordination with county and licensee PIOs, will ensure that a Radiological Emergency Preparedness Plan (REPP) briefing is conducted for the media at least annually. This may be a briefing session at the Joint Information Center (JIC) or through visits to the major media and providing them with updated materials.

2.7 Plan Maintenance

The NYSOEM PIO shall review the public information portions of the State REP Plan at least annually and make any necessary revisions and/or additions.

3.0 EXCHANGE OF PUBLIC INFORMATION

To ensure the prompt dissemination of pertinent, credible and reliable information to the media and the public during a radiological emergency, State, county and licensee spokespersons shall share information and releases.

3.1 Designation of Near-Site Information Centers

To facilitate coordination of information release, each site shall have a designated near-site JIC. The JIC shall be the sole site from which emergency information shall be issued to the media and public by designated spokespersons for the State, the affected county (ies) and the affected licensee.

Each JIC must be capable of performing the following functions:

- Issue EAS messages
- Conduct media briefings
- Conduct Public Inquiry operations

Each near-site JIC shall be equipped with adequate communications equipment and production equipment to allow timely collection of the writing and distribution of informational materials, and regular media briefings.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

3.2 Information Release

The NYSOEM PIO shall release, on behalf of and with the approval of the State Disaster Preparedness Commission (DPC) Chair, the following general types of information during an emergency:

- Announcement of State receipt of emergency notification by the affected licensee;
- Announcement of activities of State Emergency Operations Center (EOC);
- Regular and timely updates of State activities, determinations and policies related to the emergency;
- State assessment of projected doses and/or dose rates related to any release of radiation;
- State determination of any protective action, including the recommendation to ingest KI (Potassium Iodide) and the basis for these determinations; and
- Regular and timely updates of State recovery and re-entry activities.

3.3 Sharing of Information Release

The State PIO shall share information release with county and licensee PIOs. The State PIO shall keep records of information released to the media and public during an exercise or emergency, and shall maintain a record of telephone inquiries related to any exercise or emergency. Exact details of sharing of information are addressed in the specific JIC plan corresponding to the supported county.

3.4 Public Inquiry

The NYSOEM PIO, in conjunction with county and licensee PIOs, shall maintain a Public Inquiry system capable of responding to factual inquiries, and providing input to those subsequent news releases and/or press statements that can be addressed, in order to ensure that misinformation and rumors in a radiological emergency are kept to a minimum. Information that is broadcast over electronic media or printed in the print media shall be monitored to intercept any inaccurate information and provide corrective material. Exact details of Public Inquiry are addressed in the specific JIC plan corresponding to the supported county.

3.5 State Declaration of Emergency

There is no change in the NYSOEM PIO's role following a declaration of a State Disaster Emergency by the Governor.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

ATTACHMENT 1

EMERGENCY ALERT SYSTEM

1.0 Objectives

The Emergency Alert System (EAS) is the vehicle through which public officials from the counties and the State of New York can advise the public directly of:

- The status of emergencies involving any of New York's nuclear power plants
- Any protective actions that the public should take to ensure minimum risk of danger or radiation exposure

2.0 Concept of Operations

Transmission of messages to the public via EAS must be coordinated to ensure the following:

2.1 The EAS message is ready for broadcast when the prompt notification system is first activated

2.2 The EAS message content has been cleared with county officials and the State decision makers prior to release

2.3 EAS messages are concise, cohesive and comprehensible to the public

2.4 The State and counties do not clutter the airwaves with individual messages, but compile them into single messages that meet the requirements stated in 2.3 above

2.5 EAS messages are verifiable and verified before release

3.0 Existing Procedures

The lead county will access EAS in accordance with locally developed plans.

3.1 Immediate Declaration of a General Emergency

In the event that that a General Emergency has been declared (i.e., a fast-breaking incident), the county (ies) will activate their siren system and release a prearranged EAS message to the public prior to coordination with the State. In the case of multiple county involvement, a lead county has been selected to activate the EAS system, as well as authorization and procedures to activate the siren system immediately. Procedures are contained in each county's plan.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

3.2 Routine EAS Message Preparation

Should EAS activation be required due to an emergency at a nuclear power plant site, the affected county (ies) and the State will participate in and coordinate EAS message development in accordance with JIC procedures for the specific site.

4.0 EAS MESSAGE CONTENT

4.1 Required EAS Message Content

- Identification of the ORO responsible and the official with authority for providing the alert signal and instructional message;
- Identification of the commercial NPP and a statement that an emergency exists there;
- Reference to REP-specific emergency information (e.g., brochures, calendars, and/or information in telephone books) for use by the general public during an emergency; and
- A closing statement asking that the affected and potentially affected population stay tuned for additional information, or that the population tune to another station for additional information

5.0 State Declaration of Emergency

There is no change in the above listed procedures following a Declaration of Emergency by the Governor.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

ATTACHMENT 2

JOINT INFORMATION CENTER

1.0 Purpose

The purpose of a Joint Information Center (JIC) is to provide a single location for the dissemination of information to the public and media concerning an emergency at a nuclear power plant, and to enhance coordination and prompt release of accurate information by officials from the State, affected county (ies) and licensee.

2.0 Operation

A JIC will be established near each nuclear power plant site in New York State. This information center will be the single location for the dissemination of information to the media and public concerning all State, local, and licensee emergency response activities and recommended public protective actions.

To ensure coordinated and accurate information release, all information proposed for release, either in the form of EAS messages, press releases or through media briefings, will be shared by all lead PIOs from the State, county(ies) and licensee.

Sufficient equipment and space will be provided for use by the State, county, and licensee public information staff and media representatives to ensure effective operation of the information center.

Specific operational procedures are outlined in each site's specific JIC plans.

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*PROCEDURE C - PUBLIC INFORMATION***

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**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE C - PUBLIC INFORMATION**

ATTACHMENT 3

PUBLIC INQUIRY

1.0 Public Inquiry Procedures

During a radiological emergency at a nuclear power plant, a JIC will be activated to serve as the single, central facility for the coordinated release of information regarding the emergency from the State, county (ies) and licensee. Public Inquiry functions carried out at the JIC consist of the following three elements: Public Inquiry, Media Monitoring and Media Response. Details regarding each of these elements can be located at each site's specific JIC procedures.

Each part of the Public Inquiry System will function as a complement to the rest of the program. Inaccurate information from media coverage may be addressed by the Public Inquiry team members or by the appropriate PIO. Media briefings and/or press releases can be used to address specific rumors that have become apparent through calls to the Public Inquiry team or from off-air monitoring reports.

The minimum staffing requirements for drills and exercises are as follows

- Ginna: 7 (seven)
- Nine Mile Point: 7 (seven)
- Indian Point: The New York State Tax & Finance Call Center will provide as many as telephones as required based on demand.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
*PROCEDURE C - PUBLIC INFORMATION***

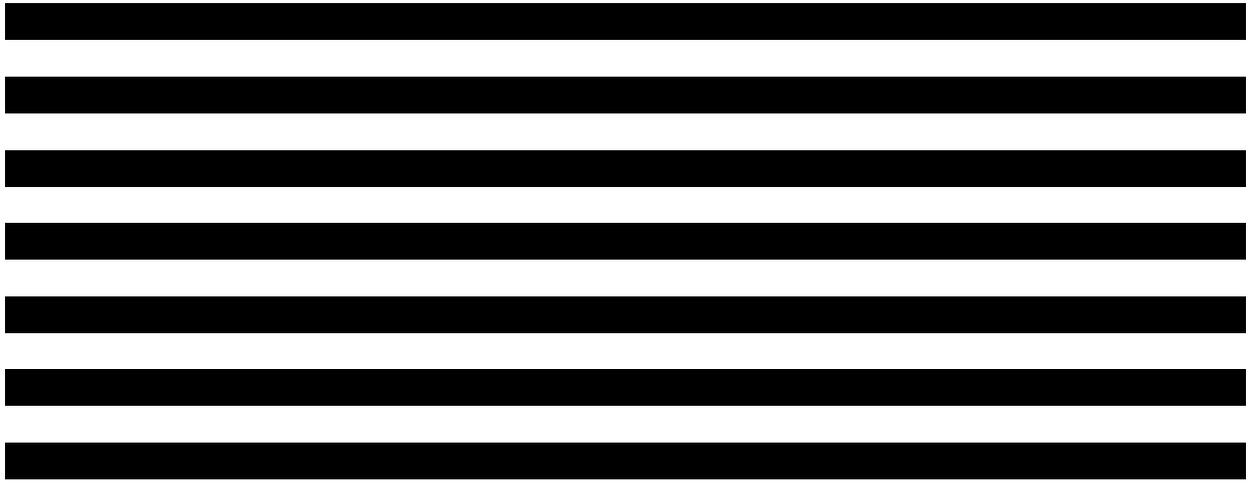
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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE D - STATE EMERGENCY OPERATIONS CENTER**

STATE EMERGENCY OPERATIONS CENTER

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ATTACHMENT 1



NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE D - STATE EMERGENCY OPERATIONS CENTER

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN

PROCEDURE D - STATE EMERGENCY OPERATIONS CENTER

1.0 PURPOSE

State operations in response to a radiological emergency will be directed from the New York State Emergency Operations Center (SEOC). This procedure is to provide instruction to the pre-assigned emergency staff concerning their movement to the EOC and the initial actions to be taken upon arrival.

2.0 LOCATION

The State EOC is located in the substructure of the Public Security Building, 1220 Washington Avenue, Bldg 22, Suite 101, Albany, New York 12226-2251.

3.0 NOTIFICATION

Notification will be conducted in accordance with SOPs established for the SEOC (see Communication/Warning Procedure – B) and will be based upon the four emergency classification levels (ECLs) adopted for use by nuclear power plants by the NRC and FEMA. Should initial notification occur at an Alert ECL or higher, activities of all lower levels will also be accomplished as required. These levels, and the basic activity taken for each, are:

3.1 Notification of Unusual Event

Events are in process or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs. Notification procedures are described in **Procedure B**.

3.2 Alert

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels. (**See Procedure B**).

3.3 Site Area Emergency

Events are in process or have occurred that involve actual or likely major failures in the plant functions needed for protecting the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or (2) prevents effective access to equipment needed for the protection of the public. Releases are not expected to exceed EPA PAG exposure levels, except near the site boundary. (**See Procedure B**).

**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE D - STATE EMERGENCY OPERATIONS CENTER**

3.4 General Emergency

Events are in process or have occurred that involve actual or imminent substantial core degradation or melting, with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can reasonably be expected to exceed EPA PAG exposure levels offsite, beyond the immediate site area. **(See Procedure B).**

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PROCEDURE D - STATE EMERGENCY OPERATIONS CENTER

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**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
*PROCEDURE E – PUBLIC EDUCATION***

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RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
*PROCEDURE E – PUBLIC EDUCATION***

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**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE E – PUBLIC EDUCATION**

1.0 PURPOSE

To ensure that a coordinated educational program is developed and implemented to familiarize the public – particularly those living within an 10-mile radius of commercial nuclear power plants – with relevant information pertaining to radiation, preparedness plans, how the public will be notified in an emergency, and what their actions should be in an emergency.

2.0 RESPONSIBILITIES

2.1 The NYSOEM PIO, in coordination with county and licensee PIOs, has primary responsibility to develop and oversee the public education program to include, but not be limited to the following:

- Educational information on Radiation.
- Potential hazards associated with improper handling or transportation of radiological materials.
- Governmental and private sector mitigation measures to minimize public risk.
- Prompt public notification system and other methods to keep the public informed during an emergency.
- Public protective measures that might be recommended.
- Specific public emergency response information, i.e., evacuation routes, reception centers, EAS stations, etc.
- Importance of prompt and consistent public response.
- Contact for additional information.
- Special needs of the handicapped.
- Ingestion Pathway

2.2 The NYSOEM PIO has overall responsibility for development and dissemination of all state educational materials and for coordination of state educational activities with those of the federal and local governments and the nuclear facility operators.

2.3 All information will be written in “plain language” and clear, accurate, consistent, and complete to ensure it is easily understood by members of the public.

3.0 IMPLEMENTATION

3.1 The NYSOEM PIO will direct a statewide public education task force to assist in the development of radiological emergency preparedness public education materials, to coordinate public education efforts of all interested groups, to identify needs and the means to meet them, and to limit unnecessary duplication of efforts by the various involved governmental jurisdictions and nuclear facility operators.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE E – PUBLIC EDUCATION**

3.2 The specific, expert capabilities and resources of all appropriate State agencies will be utilized in the development and implementation of the State's public education plan.

3.3 Educational activities within the statewide program will include, but not be limited to, the following:

- Public service announcements;
- Brochures, pamphlets, posters and other printed materials as necessary;
- Public appearances by subject matter experts in various areas of radiological emergency planning;
- Exhibits at public events;
- Participation, as requested, on radio talk shows and other radio, television and print media informational presentations;
- Informational video presentations on radiological emergency preparedness; and
- Press conferences and media briefings.

3.4 Brochures and calendars have been developed cooperatively by the State, involved counties and nuclear facility operators for dissemination to the public residing in the 10-mile Emergency Planning Zones (EPZs) surrounding nuclear power plant sites. These brochures include information on radiation, public protective measures, evacuation routes, reception and congregate care centers, special provisions for mobility-impaired persons, and points of contact for additional information.

3.5 The four counties surrounding the Indian Point Entergy Center (Westchester, Rockland, Orange and Putnam) use a yearly brochure entitled "Are You Ready" to provide educational information on radiation, additional contact information, explanation of protective measures and information for special needs of the handicapped. These brochures are mailed directly to all residence of the 10-mile EPZ. Both Westchester and Rockland counties translate the "Are You Ready" brochure into Spanish and make them available for their non-English language residence.

3.6 The two counties surrounding the R.E. Ginna Nuclear Power Station (Monroe and Wayne) use a yearly calendar to provide educational information on radiation, additional contact information, explanation of protective measures and information for special needs of the handicapped. These calendars are mailed directly to all residence of the 10-mile EPZ.

3.7 The county surrounding Nine Mile Point and James A. FitzPatrick Nuclear Power Stations (Oswego) use a yearly calendar to provide educational information on radiation, additional contact information, explanation of protective measures and information for special needs of the handicapped. These calendars are mailed directly to all residents of the 10-mile EPZ.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
*PROCEDURE E – PUBLIC EDUCATION***

3.8 The NYSOEM PIO with coordination of the New York State Department of Agriculture and Markets will develop an annual public information fact sheet addressing information on ingestion pathway. The fact sheet will summarize the recommended protective actions for applicable agricultural industries including milk, livestock, and crops produced for human consumption. The fact sheet will be distributed by the state to all the NYS ingestion pathway counties.

**NEW YORK STATE
RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
*PROCEDURE E – PUBLIC EDUCATION***

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE F - TRAINING, DRILLS, EXERCISES

TRAINING, DRILLS, EXERCISES

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN

PROCEDURE F - TRAINING, DRILLS, EXERCISES

1.0 PURPOSE

The purpose of this procedure is to provide the vehicle by which personnel with Radiological Emergency Preparedness (REP) responsibilities will be trained initially, periodically retrained, and evaluated by means of drills and exercises in the performance of the functions that may be required of them in the implementation of this Plan.

2.0 SCOPE

Radiological emergency preparedness plans require trained personnel to implement them. The State Emergency Management Office will coordinate this training for New York State radiological emergency response personnel. Initial training and retraining of State and local officials is provided through a variety of programs, such as formal courses, seminars, conferences, and experience gained in response to drills and exercises as well as actual emergencies.

State and local agencies with emergency response functions will designate individuals within these organizations who are to be trained in functions that are unique to a radiological emergency. State Agencies will maintain training records/rosters of their personnel training history in the Statewide Learning Management System (SLMS). Routine or ordinary functions for an agency's usual role, i.e., teaching a police officer to direct traffic, are not considered here. The personnel identified or designated for radiological preparedness training include the following target groups which is further defined in Attachment 1:

- New York State EOC Command and Control personnel
- Key New York State agency liaison personnel assigned to State, or County Emergency Operations Center (EOC) staffs and Licensee Emergency Operations Facilities (EOFs)
- New York State Exercise Controllers/Evaluators
- New York State radiological monitoring teams and radiological assessment personnel
- New York State Emergency Worker Personnel Monitoring Center (PMC) monitoring and decontamination personnel
- New York State Police, security
- New York State fire-fighting/Hazmat personnel
- New York State Communications personnel

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- New York State Public Information Personnel
- Public Officials

2.1 Exercises will be scheduled to provide that all major elements of the respective State and county organizations are tested in accordance with NRC and FEMA Rules and Policy contained in 10CFR50 and 44CFR350, and specifically with Planning Standards N and O, and associated standards and criteria identified in NUREG-0654 and the FEMA REP Program Manual (see 4.2).

2.2 In addition to the scheduled exercise, drills shall be conducted as follows:

- Communication between State EOC, and local government EOCs within the Plume Exposure pathway EPZ will be tested at least monthly.
- Communications between State EOC and Connecticut, New Jersey, Vermont, Pennsylvania and Canada radiological emergency response organization, all within the ingestion pathway for Nuclear facilities located in New York, will be tested at least quarterly.
- Communications between NFOs, State EOC, local EOCs and field assessment teams will be exercised annually.
- Radiological Health staff and local organizations will conduct annual radiological monitoring drills. The drills may include the collection and analysis of water, vegetation, soil and air samples; the communications used for reporting sample results, and the means for keeping records of these sample results. These drills will be included as part of annual exercises.
- The State Radiological Health staff may conduct semi-annual Health Physics drills involving one of the nuclear generating facilities. These drills will involve both the State's and local organizations' analysis of, and response to, conditions arising from simulated elevated airborne and liquid samples and direct radiation measurements in the environment. To the extent possible these drills will be included as part of the required scheduled NFO exercises. New York State, as an NRC agreement State, maintains an offsite environmental sampling program which includes the above activities.
- All or any portion of the State and/or county plans may be drilled as necessary.

3.0 RESPONSIBILITIES

3.1 The New York State Office of Emergency Management (NYSOEM) coordinates the planning and conduct of emergency response training for personnel who will implement radiological emergency preparedness plans. NYSOEM will:

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- Incorporate NIMS/ICS and HSEEP principles to the design, implementation, and evaluation/corrective actions associated with training and drill activities.
- Receive technical guidance from the State Health Department and FEMA on the appropriate application of radiological resources to peacetime radiological emergency response.
- Factor the above guidance into the development of appropriate initial training and retraining modules and activities.
- Conduct formal courses for Emergency Operations Center staff and Personnel Monitor Center staff at the State and local level.
- Manage the Independent Study course, “Radiological Emergency Management” (IS-3) as the basic introduction to radiation and radiation detection. Distribution of course material is through a single contact point with each appropriate State agency, local jurisdiction or other large emergency response organization.
- Provide to State agencies and localities technical assistance in the development of their own training capability including training their instructors.
- Provide technical assistance on the planning, conducting, and evaluation of exercises and drills.
- Receive and provide for staff and other agencies as appropriate, training on the use of new instrumentation and equipment procured for radiological emergency responses.
- Assist in identifying and recruiting appropriate State and local Emergency Preparedness applicants for federally-conducted or other appropriate emergency response training activities and courses. These training activities include planning, operations, and response courses sponsored by the Federal Emergency Management Agency which are geared specifically for State and local emergency response personnel. These courses include topics such as radiological accident assessment, analysis, monitoring and response operations.

3.2 The NYSOEM coordinates with the representatives of the Nuclear Facilities, appropriate counties, Federal and State agencies in exercising of the New York State emergency response organizations. These responsibilities include:

- The designation of elements of the Plan that are to be exercised, to ensure that all elements are exercised in accordance with the federal regulations (see 4.2) under various conditions and times.
- The establishment of the exercise's basic objectives, extent of play,

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evaluation criteria, exercise design and evaluation guidance provided by HSEEP methodology.

- The date and time of the exercise.
- The agencies, officials and organizations that are expected to participate.
- The scenario to be used to include a schedule of real and simulated events.
- The designation and training of exercise observers.
- Arrangements for materials to be provided to the FEMA Regional Assistance Committee (RAC) and other observers.
- Arrangements for a critique of each exercise.

3.3 Each agency or organization having a designated emergency responsibility will insure that appropriate training is made available to their emergency response personnel, including annual refresher training. Training of appropriate personnel for accident assessment and evaluation will be the responsibility of the Department of Health, BERP. State agencies are responsible for the continuance and implementation of training programs relating to their respective agency's operating procedures and coordinate their training efforts related to radiological emergencies with NYSOEM.

In addition, these agencies and organizations will conduct drills to develop, test and maintain their capabilities. These responsibilities include:

- Communications drills to insure the ability to understand and transmit the unique terminology associated with a radiological emergency.
- Radiological monitoring drills.
- As appropriate, medical emergency drills at the local level and health physics drills at the State level.
- Other drills as may be required to improve the capabilities of emergency response personnel.

3.4 Local Emergency Management/Preparedness Offices are responsible for, and coordinate with NYSOEM for the following:

- Identification of local training needs and requirements.
- Request of appropriate training courses, which includes designation of times and locations.

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- Recruitment of trainees to include Directors and Coordinators of response organizations, radiological monitors, emergency service personnel (fire, police, first-aid, medical support, and rescue), and other appropriate personnel.
- Development of local training capability as required.
- Assist, as applicable, in the conduct of training. This includes the use of local instructor capabilities such as for the training of radiological monitors, etc.
- Conduct and participate in drills and exercises to improve the capabilities of their emergency response personnel.

4.0 IMPLEMENTATION

4.1 In addition to agencies' existing training programs, specialized emergency response training courses are offered to key personnel of those agencies with emergency response responsibilities. The types of training courses to be offered, and the titles and assignments of those who should participate are described in Attachment 1:

4.2 Exercises will utilize HSEEP design, conduct and evaluation methodology, and will be conducted to test the integrated capability of a major portion of the State's and appropriate County's radiological emergency preparedness plan and organization. An exercise will include mobilization of State and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. The State and appropriate local governments will conduct an exercise jointly with a nuclear power facility in accordance with the federal regulation set forth in IOCFR50, "Domestic Licensing of Production and Utilization Facilities", Appendix E, and 44CFR350, "Review and Approval of State and Local Radiological Emergency Plans and Preparedness". Further detailed Planning Standards and associated planning and exercise evaluation criteria are identified in NUREG-0654 and the FEMA REP Program Manual. The FEMA REP Program Manual includes requirements for the scheduling of exercises and associated out-of-sequence activities that must be demonstrated and federally-evaluated during an 8-year cycle. In addition, a State-evaluated annual exercise will be conducted which will include emergency response agencies from the State and local level in conjunction with the Nuclear Facility Operators. Provisions are made for a critique of training drills and each exercise by qualified observers. The results of the critiques will be the basis for improving the New York State Radiological Emergency Preparedness Plan, in accordance with HSEEP methodology.

The State will choose, on a rotational basis, the site(s) at which the required exercise(s) is to be conducted. The scenario should be designed to exercise such that all major elements of the plans and preparedness organizations are tested. Each full-scale exercise will include as many actual (hands on) activities as practicable within the resources available for the exercise. Exercise scenarios will be suitably varied to test elements of radiological emergencies, including Hostile Action-Based conditions and Ingestion Pathway/Recovery response during the 8-year cycle.

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Exercising will include the decision-making process (assessment and evaluation), deployment of monitoring personnel and making recommendations of protective action response options to responsible officials. Law enforcement and fire personnel will be exercised on access and traffic control and security. Exercises will include emergency notifications/communications for transmission of critical information to emergency organizations, and public information activities to demonstrate coordinated efforts by the State, local officials and the licensee in keeping the public informed.

Qualified observers from Federal, State or local governments will critique the exercises. State and local observers will be provided appropriate pre-exercise briefings and, if required, additional training.

A critique will be scheduled as soon as practicable after each exercise to evaluate the ability of organizations to respond to the plan.

Each organization establishes the means for evaluating observer and participant comments on areas needing improvement, including emergency plan procedural changes, and for assigning responsibility for implementing corrective actions. Each organization establishes management control to ensure that corrective actions are implemented.

4.3 Drills involving varying number of personnel and organizations are used to provide practical training. When conducting such a drill, emphasis is on the effectiveness of procedures and use of actual emergency equipment. Observers will be assigned to evaluate the performance of the participants. Drills to test smaller segments of the plan will be held more frequently than exercises. Although a drill is often a component of an exercise, drills will be conducted, in addition to the scheduled exercise, all the frequencies specified in Paragraph 2.3 above. Drills will be supervised and evaluated by qualified instructors. Communication drills are conducted for both radio and hard line modes (RECS) and include the testing of operators' understanding and ability to understand the content of messages transmitted/received. Radiological monitoring drills teach and test procedures for the collection, analysis, recording and reporting of radiation readings. Drills of other emergency functions will be conducted to enhance the capabilities of those persons performing such functions.

4.4 Upon completion of an exercise or drill, the evaluator and observer comments will be collected and evaluated. Plan revisions, arising from the lessons learned, will be incorporated in plans and procedures as appropriate.

4.5 State and local training will be given as described in (Attachment 3). Training documentation will be retained by the entity providing the training.

4.6 Training for individuals responsible for the planning effort may include the following:

- Participation in drills and exercises (Player/Controller/Evaluator/Observer)
- Annual Licensee EAL Training
- National REP conference

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- Annual NRC/FEMA Scheduling Conference
- Updates on NIMS and ICS training and planning
- State EOC Operations training including updates on new disaster management software.
- Lessons learned from emergency activations of the State EOC
- Review of new federal guidance on radiological monitoring and assessment
- Review new planning guidance as it becomes available
- Nuclear Safety Sub-Committee meetings
- REP Working Group Meetings

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ATTACHMENT 2

State Emergency Operations Center Course

Target Audience:

1. Executive Management
2. Supervisory
3. Support/Assistance Personnel
4. Agency Liaisons
5. Agency Representatives

Course Objectives:

1. Explain the purpose and scope of EOC operations
2. Define the roles and responsibilities of the State EOC
3. Review primary structure and tools of State EOC operations
4. Identify Agency Liaison roles and responsibilities

This course includes:

1. Introduction to the NYS Emergency Operations Center
2. Orientation to Emergency Management in NYS.
3. Incident Command System (ICS) and Emergency Support Function (ESF) Structure
4. Agency Resources
5. DisasterLan functions and operation
6. Situation reports and the Incident Action Plan

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ATTACHMENT 3

New York State Radiological Training Courses

I. RADIOLOGICAL EMERGENCY PREPAREDNESS PROGRAM

The following is a listing of the various types of courses specifically given for the REP training of emergency workers. Course content may draw upon combinations of pre-developed modules and instructor guides, and may be tailored according to the class knowledge and experience.

1. REP Basic Radiation Worker Course - This course is designed for New York State responders whose emergency duties may entail radiological exposure and contamination. The course includes the key requirements of Procedure G involving radiation concepts, dosimetry, potassium iodide, exposure control and contamination control (1.5 Hr.).
2. REP Personnel Monitoring Center (PMC) Course - This course deals with the specific aspects of PMC operations for radiological monitors. Variations of this course also allows for personnel from numerous State, county, and volunteer agencies to receive this training for their responsibility with respect to PMC operations. This course is taken following the REP Basic Radiation Worker Course (4 Hr.)
3. REP Management Course - This course is intended for REP emergency managers, coordinators and supervisors, i.e., County EMO Directors, State Agency personnel, and local elected officials who have decision making responsibilities. (3 Hr.)
4. State EOC Training Course - This course is intended for Executive Management, Supervisory positions, Support/Assistance Personnel, Agency Liaisons and Agency Representatives. The course covers the purpose and scope of EOC operations, EOC roles and responsibilities, primary structure and tools of State EOC operations and Agency Liaison roles and responsibilities. (8-16 Hr.)
5. REP PIO/JIC Operations Course – This course is intended for public information support personnel involved with key functions at the JIC and EOCs. Key functional areas covered include: staffing, activation, development and coordination of new releases and Emergency Alert System (EAS) messages, Public Inquiry, Media Monitoring and the conduct of media briefings. Course venue is typically in a JIC facility. (4 hr)

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II. INSTRUCTOR GUIDES

The following training modules are available from NYSOEM to assist in course instruction at the agency level.

Module 1 – REP Planning Overview

Module 2 – Intermediate and Late Phase (Ingestion) Issues

Module 3 – Radiation Basics

Module 4 – Radiation Detection Instruments

Module 5 - Basic Radiation Worker/Radiological Exposure Control

Module 6 – Exercise Controller/Evaluator

Module 7 – Basic Nuclear Power Plant Operations

Module 8 – Emergency Operations Center

Module 9 – Command and Control

Module 10 – Dose Assessment

Module 11 – Field Monitoring Operations

Module 12 – PIO/JIC Operations

- Basic Public Information Officer
- EOC Public Information Roles
- JIC Operations
- Joint Information Center Spokesperson
- EAS Message Preparation and Release
- News Release Writing
- Public Inquiry and Media Monitoring

Module 13 – Personnel Monitoring Center (PMC) Operations

Module 14 – Reception Center Operations

Module 15 – Emergency Operations Facility (EOF) Operations

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ATTACHMENT 3

Module 17 – Fire Service Operations

Module 18 – MS-1 Treatment and Transportation of the Radiologically Contaminated/
Injured/ Exposed Patient

Module 19 – Bus Company and Bus Driver Operations

Module 21 – School Officials Operations

Module 20 – Public Works Operations

II. RADIOLOGICAL MONITORING AND ASSESSMENT COURSES

The following courses are administered and conducted by local instructors using materials provided by the State. State agencies will also use these courses to train their own personnel. These courses are for radiological monitors from emergency services or other organizations or industries which have a response role for peacetime radiological incidents. The primary purpose of this training as related to nuclear accidents is to provide a capability for exposure control of emergency workers and the public through detection and removal of surface contamination. Emphasis will also be placed on personnel external dosimetry and exposure records:

a. Emergency Management, Independent Study (IS-3)

An 8-hour programmed independent study course, which serves as an introduction to the nature of radiation and radiation detection instruments.

b. Fundamentals Course for Radiological Response (G320)

An 8-hour follow-up course to the Independent Home Study IS-3 course, which uses a number of exercises in the use of radiation detection instrumentation and sampling instrumentation.

c. Radiological Monitoring and Health Physics Drills

Radiological Health staff and local organizations will conduct annual radiological monitoring drills. The drills may include the collection and analysis of water, vegetation, soil and air samples; the communications used for reporting sample results, and the means for keeping records of these sample results. These drills will be included as part of annual exercises. In addition, New York State, as an NRC agreement State, maintains an offsite environmental sampling program which includes the above activities.

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The State Radiological Health staff will conduct at least one semi-annual Health Physics drill involving one of the nuclear generating facilities. These drills will involve both the State's and local organizations' analysis of, and response to, conditions arising from simulated elevated airborne and liquid samples and direct radiation measurements in the environment. To the extent possible these drills will be included as part of the required scheduled NFO exercises.

Other Courses:

The New York State Office of Emergency Management routinely conducts POCs for State, County and City level government officials and is designated to acquaint them with their emergency responsibilities, need for planning, training, and coordinated effort.

This course includes:

1. Review of FEMA's emergency role.
2. Discussion of the New York State Executive and Disaster laws outlining local emergency responsibilities, including a description of the State, District and local command and control structure and responsibilities.
3. Stressing the need for Local Executive Orders assigning specific emergency response functions to local officials.
4. The concept of an emergency operations center.
5. Advising of training that is available and the sequence in which it is given.
6. Emphasis on the benefits of a well-organized and coordinated government that is able to act in time of emergency.
7. The importance of a local resource inventory.
8. The methods for recognizing and identifying hazardous materials.

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ATTACHMENT 4

Federally-Sponsored Training Courses

Courses dealing with the evaluation of and response to radiation emergencies are sponsored by the Federal Government. DOH coordinates the student selection with NYSOEM. Courses listed in the latest edition of the NFA/EMI Training Catalog:

- ICS Course (100, 200)
- NIMS/NRF Courses (700, 800)
- Radiological Emergency Preparedness Planning Course
- Radiological Accident Assessment Concepts Course
- Radiological Emergency Response Operations Course
- Advanced Radiological Incident Operations Course
- Radiological Emergency Preparedness Exercise Evaluation
- Exercise Design Course

The Emergency Management Institute (EMI) offers a variety of additional emergency management courses designed to improve overall management and response capabilities for the emergency management community.

Homeland Security Exercise & Evaluation Process (HSEEP) mobile courses are provided periodically in various locations in proximity to student locations.

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PROCEDURE G – RADIOLOGICAL EXPOSURE CONTROL PROCEDURES**

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PROCEDURE G – RADIOLOGICAL EXPOSURE CONTROL PROCEDURES

1.0 PURPOSE

The objectives of these radiological exposure control procedures are:

- To provide State/County agencies with guidance to protect their emergency response personnel from excessive or unnecessary exposure to radiation;
- To describe the requirements for and availability of instruments and equipment;
- To describe certain technical aspects including: proper use of instruments and equipment, requirements for record keeping, use of exposure protective action guides, personnel monitoring and decontamination.

2.0 SCOPE

This procedure describes the necessary actions by State/County agencies and their personnel when involved in emergency response activities performed in connection with an accident or incident at a fixed nuclear facility large enough to require activation of the State/County Radiological Emergency Preparedness Plan. It also describes some of the support activities available from those State agencies with specific radiological resources.

3.0 PERSONNEL EXPOSURE GUIDANCE

3.1 It will be the responsibility of each Disaster Preparedness Commission (DPC) agency representative to insure that appropriate agency personnel are trained in exposure control guidelines, procedures, and techniques and that 24-hour capability is maintained to determine and control worker doses. Training assistance is available for State Agencies and counties through the New York State Office of Emergency Management (NYSOEM). Just in time training may be conducted as warranted.

3.2 Supervisors who will have workers in the plume Emergency Planning Zone (EPZ) must also be familiar enough with exposure limits to provide guidance to their subordinates regarding actual or planned unusual exposures. They should also know enough about radiation to answer basic questions from their workers and know when to seek additional guidance on exposures in excess of the United States Environmental Protection Agency (US EPA) Protective Action Guides (PAGs).

3.3 Supervisors will make every attempt to insure that exposure to emergency workers is kept As Low As Reasonably Achievable (ALARA). Staff rotation or reassignment should be used as methods for reducing individual dose to the workers.

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3.4 The following guidelines apply:

3.4.1 Only required emergency workers (State/County/Federal or Licensee) will be permitted access into the 10-mile plume exposure pathway or any State/County/Federal or Licensee Emergency Operations Center (EOC) or other facility which is being utilized to conduct emergency operations. Appropriate identification will be required and will be shown on request of law enforcement officers or appropriate State/County representatives.

3.4.1.1 In the post plume phase, exposure limits for those individuals who are permitted to reenter restricted zones will be established by the New York State Department of Health, Bureau of Environmental Radiation Protection (NYSDOH BERP).

3.4.2 Supervisors of State emergency teams or personnel will coordinate with the State and the County EOCs prior to entry into the 10-mile EPZ.

3.4.3 Rescue personnel for lifesaving activities will be selected using the following criteria:

- Should be volunteers or professional rescue personnel who are familiar with the consequences of exposure.
- Whenever possible, volunteers over 45 years of age should be selected.
- Pregnant women or women capable of bearing children should not be selected for lifesaving activities where they could be exposed to radiation exceeding 0.5 rem maximum permissible dose equivalent to the fetus. (Reference: U.S. NRC Regulatory Guide 8.13, Instruction Concerning Prenatal Radiation Exposure, Attachment 10).

3.4.4 Emergency Workers' planned dose exposure will not be permitted to exceed the following limits except by express authorization of the Commissioner, NY State Health Department (DOH):

- For emergency operations not involving lifesaving activities: 5 rem Total Effective Dose Equivalent (TEDE).
- For protecting valuable property: 10 rem TEDE, if lower dose is not practicable.
- For life saving or protection of large populations: 25 rem TEDE, if lower dose is not practicable. This limit may be exceeded upon approval by the

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Commissioner of Health, only on a voluntary basis and by persons fully aware of the risks involved.

- Exposures in excess of the above guidelines will be approved by the Commissioner of Health upon:
- notification by the appropriate supervisor of the need to perform actions which will result in excess exposure;
- estimation of total exposure to be received;
- exhaustion of alternatives.

3.5 Exposure control procedures should be prescribed by supervisors that will ensure rapid notification and relief and/or rotation of personnel whose exposure rate indicates that the worker is approaching the maximum limits of 10 rem TEDE (protection of property) or 25 rem TEDE (lifesaving or protection of large populations) or > 25 rem TEDE lifesaving (voluntary basis).

3.6 Each supervisor will maintain exposure records for personnel on the Group Radiation Exposure Record (see Attachment 2) on the basis of reports to be provided by the emergency workers who are under his/her supervision. A copy of the completed record will be furnished to the State EOC Exposure Control Coordinator, within the Planning Section, Assessment and Evaluation (A &E) Branch, by State personnel and to the County Exposure Control Coordinator by County personnel (see 5.5 below).

3.7 Each emergency worker will maintain an individual Emergency Worker Radiation Exposure Record Card (Attachment I) for each period of duty (or each shift). Basic identification information and the serial numbers of all issued dosimeters (direct-reading and permanent) as well as the individual's total previous exposure (if known) will be recorded at the beginning of each shift. (See 5.5 below and Attachments 1 and 3.)

3.8 Dose Correction Factor: A conversion factor may be applied to the dosimeter reading to correct for TEDE measurements. This factor will be calculated by DOH staff at the State EOC when information on plume composition becomes available. In the absence of this information, a correction factor of 1 should be used. In all cases, the actual dosimeter reading should be recorded on the Emergency Worker Radiation Exposure Record Card. The State/County Exposure Control Coordinator will apply correction factors when completing the employee dose record.

4.0 RADIATION DETECTION INSTRUMENTS/ASSOCIATED EQUIPMENT AND SUPPLIES

4.1 Each emergency worker who is to perform duty within the 10-mile plume exposure pathway EPZ or at any other location where exposure to radiation is possible, including

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the 50-mile Ingestion Pathway EPZ will be furnished an emergency worker kit or packet which will include:

- Emergency Worker Radiation Exposure Record Card
- One electronic direct-reading dosimeter (DOSE-GARD)
- One radiation badge/permanent record dosimeter (InLight)
- One packet of potassium iodide (KI) tablets (14 tablets)
- One exposure control information card
- Form letter for declaring pregnancy
- Lanyard

4.1.1 Other equipment and supplies to provide protection:

Monitoring equipment (as required) for workers who will perform monitoring duties (field, personnel, vehicle, equipment, area or taking samples) may include:

- Ludlum Model 14C survey meter 0-2R/hr or 0-4,000,000 counts per minute (cpm) or equivalent (NOTE: high (X1000) range may be for internal probe only)
- Air sampler (field monitoring)
- Sample bags/bottle (field monitoring and taking samples)
- Anti-contamination clothing/hoods/gloves/boots
- Dust masks
- Other items for specific function or task

4.2 Radiation Badge/Permanent Record Dosimeters

4.2.1 Radiation Badge/Permanent Record Dosimeters may be film, TLD, OSLD, etc. Direct-reading dosimeters are not permanent record dosimeters.

4.2.2 Each State Agency or county is responsible for obtaining sufficient quantities of permanent record dosimeters to provide one for each worker anticipated to be entering the plume EPZ.

4.2.3 Purchase, quarterly inventory/equipment checks, distribution, periodic replacement or processing, reading and proper record keeping and reporting shall also be the responsibility of the State or County Agency's representative. All such distributions shall be under the control of the State Office of Emergency Management (OEM) to State Agencies and the County Emergency Management Offices and the County Radiological Officer to County Agencies.

4.2.4 Radiation Badge/Permanent Record Dosimeters must be located by the agency so they will be immediately available to those workers who will need them in case of emergency.

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4.2.5 Radiation Badge/Permanent Record Dosimeters must be stored to prevent exposure to radiation (other than normal background). At least one badge/dosimeter should be designated and recorded as a "control" to allow for subtraction of accumulated background radiation. All radiation badge/permanent record dosimeters will be exchanged in accordance with vendor's recommendations. The State Health Department will advise State Agencies on the frequency of exchange during an emergency.

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4.4 Instrument Inventory and Maintenance

4.4.1 Each state agency anticipated to have emergency workers in the 10-mile plume EPZ will obtain a sufficient number of electronic direct-reading dosimeters to issue to each emergency worker while located in the Plume EPZ.

4.4.2 State DPC agencies may request and receive dosimeters from NYS OEM according to available supplies.

4.4.3 One individual in each such DPC agency will be accountable for these instruments and responsible for subsequent distribution within the agency and quarterly inventory/checks to insure availability and readiness of the instrument at all times.

4.4.4 Dosimeters will be rechecked by the agency in this fashion quarterly.

4.4.5 Defective dosimeters will be returned to NYS OEM for replacement as necessary and according to available supplies.

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Emergency Worker Radiation Exposure Record Card

Name: _____
 Agency: _____
 Business Address: _____

 Telephone # (B) _____ (H) _____
 Social Security - Last Four Digits _____
 Date of Birth: _____
 Emergency Worker Assignment: _____
 Electronic Dosimeter (ED)
 Serial #: (provided to you at PMC) _____
 Radiation Badge
 Serial #: _____
 Date: _____ Work Hours: _____



**DISASTER
PREPAREDNESS
COMMISSION**

Rev. 7/10

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ATTACHMENT 10

U.S. NRC REGULATORY GUIDE 8.13



Office of Nuclear Regulatory Research

REGULATORY GUIDE 8.13 (Draft was issued as DG-8014)

INSTRUCTION CONCERNING PRENATAL RADIATION EXPOSURE

A. INTRODUCTION

The Code of Federal Regulations in 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspection and Investigations," in Section 19.12, "Instructions to Workers," requires instruction in "the health protection problems associated with exposure to radiation and/or radioactive material, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed. " The instructions must be "commensurate with potential radiological health protection problems present in the work place."

The Nuclear Regulatory Commission's (NRC's) regulations on radiation protection are specified in 10 CFR Part :20, "Standards for Protection Against Radiation"; and 10 CFR 20.1208, "Dose to an Embryo/Fetus," requires licensees to "ensure that the dose to an embryo/fetus during the entire pregnancy, due to occupational exposure of a declared pregnant woman, does not exceed 0.5 rem (5 mSv)." Section 20.1208 also requires licensees to "make efforts to avoid substantial variation above a union monthly exposure rate to a declared pregnant woman." A declared pregnant woman is defined in 10 CFR 20.1003 as a woman who has voluntarily informed her employer; in writing, of her pregnancy and the estimated date of conception.

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This regulatory guide is intended to provide information to pregnant women, and other personnel, to help them make decisions regarding radiation exposure during pregnancy. This Regulatory Guide 8.13 supplements Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure" (Ref 1), which contains a broad discussion of the risks from exposure to ionizing radiation.

Other sections of the NRC's regulations also specify requirements for monitoring external and internal occupational dose to a declared pregnant woman. In 10 CFR 20.1502, "Conditions Requiring Individual Monitoring of External and Internal Occupational Dose," licensees are required to monitor the occupational dose to a declared pregnant woman, using an individual monitoring device, if it is likely that the declared pregnant woman will receive, from external sources, a deep dose equivalent in excess of 0.1 rem (1 mSv). According to Paragraph (e) of 10 CFR 20.2106, "Records of Individual Monitoring Results," the licensee must maintain records of dose to an embryo/fetus if monitoring was required, and the records of dose to the embryo/fetus must be kept with the records of dose to the declared pregnant woman. The declaration of pregnancy must be kept on file, but may be maintained separately from the dose records. The licensee must retain the required form or record until the Commission terminates each pertinent license requiring the record.

The information collections in this regulatory guide are covered by the requirements of 10 CFR Parts 19 or 20, which were approved by the Office of Management and Budget, approval numbers 3150-0044 and 3150-0014, respectively. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

B. DISCUSSION

As discussed in Regulatory Guide 8.29 (Ref. 1), exposure to any level of radiation is assumed to carry with it a certain amount of risk. In the absence of scientific certainty regarding the relationship between low dose exposure and health effects, and as a conservative assumption for radiation protection purposes, the scientific community generally assumes that any exposure to ionizing radiation may cause undesirable biological effects and that the likelihood of these effects increases as the dose increases. At the occupational dose limit for the whole body of 5 rem (50 mSv) per year, the risk is believed to be very low.

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The magnitude of risk of childhood cancer following in utero exposure is 1.U1certain in that both negative and positive studies have been reported. The data from these studies "are consistent with a lifetime cancer risk resulting from exposure during gestation which is two to three times that for the adult" (NCRP Report No.116, Ref. 2). The NRC has reviewed the available scientific literature and has concluded that the 0.5 rem (5 mSv) limit specified in 10 CFR 20.1208 provides an adequate margin of protection for the embryo/fetus. This dose limit reflects the desire to limit the total lifetime risk of leukemia and other cancers associated with radiation exposure during pregnancy.

In order for a pregnant worker to take advantage of the lower exposure limit and dose monitoring provisions specified in 10 CFR Part 20, the woman must declare her pregnancy in writing to the licensee. A form letter for declaring pregnancy is provided in this guide or the licensee may use its own form letter for declaring pregnancy. A separate written declaration should be submitted for each pregnancy.

C. REGULATORY POSITION

1. Who Should Receive Instruction

Female workers who require training under 10 CFR 19.12 should be provided with the information contained in this guide. In addition to the information contained in Regulatory Guide 8.29 (Ref: 1), this information may be included as part of the training required under 10 CFR 19.12.

2. Providing Instruction

The occupational worker may be given a copy of this guide with its Appendix, an explanation of the contents of the guide, and an opportunity to ask questions and request additional information. The information in this guide and Appendix should also be provided to any worker or supervisor who may be affected by a declaration of pregnancy or who may have to take some action in response to such a declaration.

Classroom instruction may supplement the written information. If the licensee provides classroom instruction, the instructor should have some knowledge of the biological effects of radiation to be able to answer questions that may go beyond the information provided in this guide. Videotaped presentations may be used for classroom instruction. Regardless of whether the licensee provides classroom training, the licensee should give workers the opportunity to ask questions about information contained in this

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Regulatory Guide 8.13. The licensee may take credit for instruction that the worker has received within the past year at other licensed facilities or in other courses or training.

3. Licensee's Policy on Declared Pregnant Women

The instruction provided should describe the licensee's specific policy on declared pregnant women, including how those policies may affect a woman's work situation. In particular, the instruction should include a description of the licensee's policies, if any, that may affect the declared pregnant woman's work situation after she has filed a written declaration of pregnancy consistent with 10 CFR 20.1208.

The instruction should also identify who to contact for additional information as well as identify who should receive the written declaration of pregnancy. The recipient of the woman's declaration may be identified by name (e.g., John Smith), position (e.g., immediate supervisor, the radiation safety officer), or department (e.g., the personnel department).

4. Duration of Lower Dose Limits for the Embryo/Fetus

The lower dose limit for the embryo/fetus should remain in effect until the woman withdraws the declaration in writing or the woman is no longer pregnant. If a declaration of pregnancy is withdrawn, the dose limit for the embryo/fetus would apply only to the time from the estimated date of conception until the time the declaration is withdrawn. If the declaration is not withdrawn, the written declaration may be considered expired one year after submission.

5. Substantial Variations Above a Uniform Monthly Dose Rate

According to 10 CFR 20.1208(b), "The licensee shall make efforts to avoid substantial variation above a uniform monthly exposure rate to a declared pregnant woman so as to satisfy the limit in paragraph (a) of this section," that is, 0.5 rem (5 mSv) to the embryo/fetus. The National Council on Radiation Protection and Measurements (NCRP) recommends a monthly equivalent dose limit of 0.05 rem (0.5 mSv) to the embryo/fetus once the pregnancy is known (Ref: 2). In view of the NCRP recommendation, any monthly dose of less than 0.1 rem (1 mSv) may be considered as not a substantial variation above a uniform monthly dose rate and as such will not require licensee justification. However, a monthly dose greater than 0.1 rem (1 mSv) should be justified by the licensee.

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D. IMPLEMENTATION

The purpose of this section is to provide information to licensees and applicants regarding the NRC staffs plans for using this regulatory guide.

Unless a licensee or an applicant proposes an acceptable alternative method for complying with the specified portions of the NRC's regulations, the methods described in this guide will be used by the NRC staff in the evaluation of instructions to workers on the radiation exposure of pregnant women.

REFERENCES

1. USNRC, "Instruction Concerning Risks from Occupational Radiation Exposure," Regulatory Guide 8.29, Revision 1, February 1996.
2. National Council on Radiation Protection and Measurements, *Limitation of Exposure to Ionizing Radiation*, NCRP Report No.116, Bethesda, MD, 1993.

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APPENDIX

QUESTIONS AND ANSWERS CONCERNING PRENATAL RADIATION EXPOSURE

1. Why am I receiving this information?

The NRC's regulations (in 10 CFR 19.12, "Instructions to Workers") require that licensees instruct individuals working with licensed radioactive materials in radiation protection as appropriate for the situation. The instruction below describes information that occupational workers and their supervisors should know about the radiation exposure of the embryo/fetus of pregnant women.

The regulations allow a pregnant woman to decide whether she wants to formally declare her pregnancy to take advantage of lower dose limits for the embryo/fetus. This instruction provides information to help women make an information decision whether to declare a pregnancy.

2. If I become pregnant, am I required to declare my pregnancy?

No. The choice whether to declare your pregnancy is completely voluntary. If you choose to declare your pregnancy, you must do so in writing and a lower radiation dose limit will apply to your embryo/fetus. If you choose not to declare your pregnancy, you and your embryo/fetus will continue to be subject to the same radiation dose limits that apply to other occupational workers.

3. If declare my pregnancy in writing, what happens?

If you choose to declare your pregnancy in writing, the licensee must take measures to limit the dose to your embryo/fetus to 0.5 rem (5 millisievert) during the entire pregnancy. This is one-tenth of the dose that an occupational worker may receive in a year. If you have already received a dose exceeding 0.5 rem (5 mSv) in the period between conception and the declaration of your pregnancy, an additional dose of 0.05 rem (0.5 mSv) is allowed during the remainder of the pregnancy. In addition, 10 CFR 20.1208, "Dose to an Embryo/Fetus," requires licensees to make efforts to avoid substantial variation above a uniform monthly dose rate so that all the 0.5 rem (5 mSv) allowed dose does not occur in a short period during the pregnancy.

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This may mean that, if you declare your pregnancy, the licensee may not permit you to do some of your normal job functions if those functions would have allowed you to receive more than 0.5 rem, and you may not be able to have some emergency response responsibilities.

4. Why do the regulations have a lower dose limit for the embryo/fetus of a declared pregnant woman than for a pregnant worker who has not declared?

A lower dose limit for the embryo/fetus of a declared pregnant woman is based on a consideration of greater sensitivity to radiation of the embryo/fetus and the involuntary nature of the exposure. Several scientific advisory groups have recommended (References 1 and 2) that the dose to the embryo/fetus be limited to a fraction of the occupational dose limit.

5. What are the potentially harmful effects of radiation exposure to my embryo/fetus?

The occurrence and severity of health effects caused by ionizing radiation are dependent upon the type and total dose of radiation received, as well as the time period over which the exposure was received. See Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Exposure" (Ref. 3), for more information. The main concern is embryo/fetal susceptibility to the harmful effects of radiation such as cancer.

6. Are there any risks of genetic defects?

Although radiation injury has been induced experimentally in rodents and insects, and in the experiments was transmitted and became manifest as hereditary disorders in their offspring, radiation has not been identified as a cause of such effect in humans. Therefore, the risk of genetic effects attributable to radiation exposure is speculative. For example, no genetic effects have been documented in any of the Japanese atomic bomb survivors, their children, or their grandchildren.

7. What if I decide that I do not want any radiation exposure at all during my pregnancy?

You may ask your employer for a job that does not involve any exposure at all to occupational radiation dose, but your employer is not obligated to provide you with a job

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involving no radiation exposure. Even if you receive no occupational exposure at all, your embryo/fetus will receive some radiation dose (on average 75 mrem (0.75 mSv)) during your pregnancy from natural background radiation.

The NRC has reviewed the available scientific literature and concluded that the 0.5 rem (5 mSv) limit provides an adequate margin of protection for the embryo/fetus. This dose limit reflects the desire to limit the total lifetime risk of leukemia and other cancers. If this dose limit is exceeded, the total lifetime risk of cancer to the embryo/fetus may increase incrementally. However, the decision on what level of risk to accept is yours. More detailed information on potential risk to the embryo/fetus from radiation exposure can be found in References 2-10.

8. What effect will formally declaring my pregnancy have on my job status?

Only the licensee can tell you what effect a written declaration of pregnancy will have on your job status. As part of your radiation safety training, the licensee should tell you the company's policies with respect to the job status of declared pregnant women. In addition, before you declare your pregnancy, you may want to talk to your supervisor or your radiation safety officer and ask what a declaration of pregnancy would mean specifically for you and your job status.

In many cases you can continue in your present job with no change and still meet the dose limit for the embryo/fetus. For example, most commercial power reactor workers (approximately 93%) receive, in 12 months, occupational radiation doses that are less than 0.5 rem (5 mSv) (Ref. 11). The licensee may also consider the likelihood of increased radiation exposures from accidents and abnormal events before making a decision to allow you to continue in your present job.

If your current work might cause the dose to your embryo/fetus to exceed 0.5 rem (5 mSv), the licensee has various options. It is possible that the licensee can and will make a reasonable accommodation that will allow you to continue performing your current job, for example, by having another qualified employee do a small part of the job that accounts for some of your radiation exposure.

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9. What information must I provide in my written declaration of pregnancy?

You should provide, in writing, your name, a declaration that you are pregnant, the estimated date of conception (only the month and year need be given), and the date that you give the letter to the licensee. A form letter that you can use is included at the end of these questions and answers. You may use that letter, use a form letter the licensee has provided to you, or write your own letter.

10. To declare my pregnancy, do I have to have documented medical proof that I am pregnant?

NRC regulations do not require that you provide medical proof of your pregnancy. However, NRC regulations do not preclude the licensee from requesting medical documentation of your pregnancy, especially if a change in your duties is necessary in order to comply with the 0.5 rem (5 mSv) dose limit.

11. Can I tell the licensee orally rather than in writing that I am pregnant?

No. The regulations require that the declaration must be in writing.

12. If I have not declared my pregnancy in writing, but the licensee suspects that I am pregnant, do the lower dose limits apply?

No. The lower dose limits for pregnant women apply only if you have declared your pregnancy in writing. The United States Supreme Court has ruled (in *United Automobile Workers International Union v. Johnson Controls, Inc.*, 1991) that "Decisions about the welfare of future children must be left to the parents who conceive, bear, support, and raise them rather than to the employers who hire those parents" (Reference 7). The Supreme Court also ruled that your employer may not restrict you from a Specific job "because of concerns about the next generation." Thus, the lower limits apply only if you choose to declare your pregnancy in writing.

13. If I am planning to become pregnant but am not yet pregnant and I inform the licensee of that in writing, do the lower dose limits apply?

No. The requirement for lower limits applies only if you state in writing that you are already pregnant.

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14. What if I have a miscarriage or find out that I am not pregnant?

If you have declared your pregnancy in writing, you should promptly inform the licensee in writing that you are no longer pregnant. However, if you have not formally declared your pregnancy in writing, you need not inform the licensee of your non-pregnant status.

15. How long is the lower dose limit in effect?

The dose to the embryo/fetus must be limited until you withdraw your declaration in writing or you inform the licensee in writing that you are no longer pregnant. If the declaration is not withdrawn, the written declaration may be considered expired one year after submission. I

16. If I have declared my pregnancy in writing, can I revoke my declaration of pregnancy even if I am still pregnant?

Yes, you may. The choice is entirely yours. If you revoke your declaration of pregnancy, the lower dose limit for the embryo/fetus no longer applies.

17. What if I work under contract at a licensed facility?

The regulations state that you should formally declare your pregnancy to the licensee in writing. The licensee has the responsibility to limit the dose to the embryo/fetus.

18. Where can I get additional information?

The references to this Appendix contain helpful information, especially Reference 3, NRC's Regulatory Guide 8.29, "Instruction Concerning Risks from Occupational Radiation Exposure," for general information on radiation risks. The licensee should be able to give this document to you.

For information on legal aspects, see Reference 7, "The Rock and the Hard Place: Employer Liability to Fertile or Pregnant Employees and Their Unborn Children-What Can the Employer Do?" which is an article in the journal *Radiation Protection Management*.

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You may telephone the NRC Headquarters at (301) 415-7000. Legal questions should be directed to the Office of the General Counsel, and technical questions should be directed to the Division of Industrial and Medical Nuclear Safety.

You may also telephone the NRC Regional Offices at the following numbers: Region I, (610) 337-5000; Region II, (404) 562-4400; Region III, (630) 829-9500; and Region IV, (817) 860-8100. Legal questions should be directed to the Regional Counsel, and technical questions should be directed to the Division of Nuclear Materials Safety.

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REFERENCES FOR APPENDIX

1. National Council on Radiation Protection and Measurements, *Limitation of Exposure to Ionizing Radiation*, NCRP Report No.116, Bethesda, MD, 1993.
2. International Commission on Radiological Protection, 1990 *Recommendations of the International Commission on Radiological Protection*, ICRP Publication 60, Ann. ICRP 21: No.1-3, Pergamon Press, Oxford, UK, 1991.
3. USNRC, "Instruction Concerning Risks from Occupational Radiation Exposure," Regulatory Guide 8.29, Revision 1, February 1996.11 (Electronically available at www.nrc.gov/NRC/RG/index.htm#1)
4. Committee on the Biological Effects of Ionizing Radiations, National Research Council, *Health Effects of Exposure to Low Levels of Ionizing Radiation (BEIR V)*, National Academy Press, Washington, DC, 1990.
5. United Nations Scientific Committee on the Effects of Atomic Radiation, *Sources and Effects of Ionizing Radiation*, United Nations, New York, 1993.
6. R. Doll and R. Wakeford, "Risk of Childhood Cancer from Fetal Irradiation," ***The British Journal of Radiology***,70, 130-139,1997.
7. David Wiedis, Donald E. Jose, and Timm O. Phoebe, "The Rock and the Hard Place: Employer Liability to Fertile or Pregnant Employees and Their Unborn Children-What Can the Employer Do?" *Radiation Protection Management*, 11, 41-49, January/February 1994.
8. National Council on Radiation Protection and Measurements, *Considerations Regarding the Unintended Radiation Exposure of the Embryo, Fetus, or Nursing Child*, NCRP Commentary No.9, Bethesda, MD, 1994.
9. National Council on Radiation Protection and Measurements, *Risk Estimates for Radiation Protection*, NCRP Report No.115, Bethesda, MD, 1993.

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10 Single copies of regulatory guides, both active and draft, and draft NUREG documents may be obtained free of charge by writing the Reproduction and Distribution Services Section, OCIO, USNRC, Washington, DC 20555-0001, or by fax to (301)415-2289, or by email to <DISTRIBUTION@NRC.GOV>. Active guides may also be purchased from the National Technical Information Service on a standing order basis. Details on this service may be obtained by writing NTIS, 5285 Port Royal Road, Springfield, VA 22161. Copies of active and draft guides are available for inspection or copying for a fee from the NRC Public Document Room at 2120 L Street NW., Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; telephone (202)634-3273; fax (202)634-3343.

11. National Radiological Protection Board, *Advice on Exposure to Ionising Radiation During Pregnancy*, National Radiological Protection Board, Chilton, Didcot, UK. 1998.

12. M.L. Thomas and D. Hagerneyer, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, 1996," Twenty-Ninth Annual Report, NUREG-O713, Vol. 18, USNRC, 1998.22

13. Copies are available at current rates from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20402-9328 (telephone (202)512-1800); or from the National Technical Information Service by writing NTIS at 5285 Port Royal Road, Springfield, VA 22161. Copies are available for inspection or copying for a fee from the NRC Public Document Room at 2120 L Street NW., Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; telephone (202)634-3273; fax (202)634-3343.

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FORM LETTER FOR DECLARING PREGNANCY

This form letter is provided for your convenience. To make your written declaration of pregnancy, you may fill in the blanks in this form letter, you may use a form letter the licensee has provided to you, or you may write your own letter.

DECLARATION OF PREGNANCY

To: _____

In accordance with the NRC's regulations at 10 CFR 20.1208, "Dose to an Embryo/Fetus," I am declaring that I am pregnant. I believe I became pregnant in _____ (only the month and year need be provided).

I understand the radiation dose to my embryo/fetus during my entire pregnancy will not be allowed to exceed 0.5 rem (5 millisievert) (unless that dose has already been exceeded between the time of conception and submitting this letter). I also understand that meeting the lower dose limit may require a change in job or job responsibilities during my pregnancy.

(Your signature)

(Your name printed)

(DATE)

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REGULATORY ANALYSIS

A separate regulatory analysis was not prepared for this regulatory guide. A regulatory analysis prepared for 10 CFR Part 20, "Standards for Protection Against Radiation" (56 FR 23360), provides the regulatory basis for this guide and examines the costs and benefits of the rule as implemented by the guide. A copy of the "Regulatory Analysis for the Revision of 10 CFR Part 20" (PNL-6712, November 1988) is available for inspection and copying for a fee at the NRC Public Document Room, 2120 L Street NW , Washington, DC, as an enclosure to Part 20 (56 FR 23360).

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ATTACHMENT 11

Federal Emergency Management Agency
Washington, D.C. 20472

December 1988

**POLICY STATEMENT ON DISPOSAL OF WASTE WATER AND
CONTAMINATED PRODUCTS FROM DECONTAMINATION
ACTIVITIES**

The Federal Emergency Management Agency (FEMA) was requested to provide guidance on: ". . . monitoring and disposal of contaminated waste water resulting from decontaminating, when necessary, members of the general public, emergency workers, automobiles and equipment in the event of an accident. . ." at a commercial nuclear power plant. This guidance was requested by the Pennsylvania Emergency Management Agency (PEMA) for the annual update of their State and local emergency response plans. The following information is provided in response to that request and has been developed in consultation with members of the Federal Radiological Preparedness Coordinating Committee, Subcommittee on Offsite Emergency Instrumentation, and the E-6 Subcommittee of the Conference of Radiation Control Program Directors.

Guidance

The applicable guidance for this issue is contained in NUREG-0654/FEMA-REP-1, Rev. 1; and Supp. 1, evaluation criterion K.5.b: "The offsite response organization, as appropriate, shall establish the means for radiological decontamination of emergency personnel wounds, supplies, instruments and equipment, and for waste disposal."

Background

Additional Federal guidance on this issue is general. However, the three following documents can be used to clarify and interpret evaluation criterion K.5.b.

1. Environmental Protection Agency (EPA) Manual of Protective Action Guides and Protective Actions For Nuclear Incidents, Chapter 7, Implementing the Protective Action Guides for the Intermediate Phase, draft dated August 12, 1988.
2. FEMA Prefiled Testimony dated April 10, 1987, before the Atomic Safety and Licensing Board (ASLB) in the Matter of Long Island Lighting Company, Shoreham Nuclear Power Station, Unit 1, Docket No. 50-322-0L-3, Remand Issue D.

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3. Chapter 16, Decontamination, TID-21919, Radiological Emergency Operations, Student Manual, USAEC Division of Technical Information. Attached to this policy statement is a copy of item numbers 1 and 3 and selected portions of item number 2.

Discussion

The Nuclear Regulatory Commission issues licenses for the operation of commercial nuclear power plants and for the use of other byproduct materials. Any constraints that are imposed on the licensee through 10 CFR regulations apply to radioactive material under the licensee's control during normal operations.

The situation involves radioactive material that is not controlled by NRC rules and regulations. The concern is with an accident, i.e., an uncontrolled event. There are no Federal limits for contamination that apply in such emergency situations. Obviously, sound health physics principles and practices should be followed to protect the health and safety of the public under anticipated emergency conditions.

The fact that decontamination is necessary is the result of a radioactive release which contaminates personnel, equipment, and/or vehicles. There are two principal ways in which contamination can occur. First, evacuees and emergency workers and/or their vehicles could initially intercept a portion of the airborne plume which would have otherwise deposited on the fixed surfaces in the plume path. Second, contamination deposited on the ground could subsequently be picked up by evacuees and emergency workers and/or their vehicles from an area previously contaminated by plume passage. The act of bringing evacuees and emergency workers together at a single location for monitoring and, if necessary, decontamination, does not create contamination, i.e., radioactive material; it merely facilitates the movement and relocation of a portion of the radioactive material which was initially released into the environment.

The decontamination of personnel, equipment, and vehicles and the discharge of the waste liquids directly into a water supply source, such as an underground aquifer, pond, lake, stream, or river, may significantly increase the level of radioactive contamination in the water supply source; but this will not significantly increase the potential threat of that body of water to the general public. This assumes that the decontamination is accomplished at a location not too distant from the area that was initially contaminated by deposition from the plume and that all run-off from the decontamination will be deposited in the same watershed contaminated by the plume. If a threat exists, precipitation (i.e., rain or snow, falling on the surface of the land mass) which would also have been contaminated by the plume passage, would have a much greater potential for contaminating the water supply. The problem, if any, created by the disposal of decontamination waste liquids is trivial when compared to potential problems resulting from the leaching or runoff of radioactive material deposited on the ground surfaces in the plume path.

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In the August 12, 1988, draft of EPA 400 Chapter 7, "Implementing the Protective Action Guides for the Intermediate Phase," this statement is made on page 7-29: "Do not waste effort trying to contain contaminated wash water" when discussing the control of surface contamination on persons and equipment. Also, on the same page, "Establish monitoring and personnel decontamination (bathing) facilities at evacuation centers. Encourage evacuated persons who did not go to an evacuation center but who were in specified areas at specified times (based on the location of the airborne plume) to bathe, change clothes, wash clothes, and wash other exposed surfaces such as cars, and trucks and their contents and then report to these evacuation centers for monitoring."

Personnel contamination will most likely involve spot contamination on an individual's soles of the feet; fingers and palms of the hands; any place that the individual would touch with his hands (even unsuspectingly), especially the face in the area of the head; the hair (especially if outside and not wearing any head covering); the seat of the pants, etc. The most likely personnel decontamination would require spot cleaning of an individual's body that was not covered with clothing. This can usually be accomplished with a good cleansing soap and water at a wash basin, sink, etc. If the hair is contaminated, then a good shampoo would be helpful. In extreme cases of significant personnel contamination, a thorough shower using a liberal amount of a good shampoo and cleansing soap, or if necessary, a stronger detergent would be recommended. If an individual's clothing is contaminated it would be preferable to remove it and replace it with clean clothing until it can be decontaminated. If an individual's shoes are contaminated, it will likely be only the soles. A stiff brushing with detergent and water should remove enough of the contamination so that the individual can retain the shoes. All waste water can be run down the drain as is normally done. Thus, holding tanks for collecting the contaminated waste water are not needed. Also, waste liquid from decontamination of the general public does not need to be monitored for radioactive contaminants.

If individuals are contaminated to levels that require decontamination of the person, then the individual's clothing will undoubtedly require storage for decay or decontamination/cleaning. Contaminated clothing should be collected in plastic bags and stored until it can be cleaned. Replacement clothing of some type must be provided. The utility may be able to provide a laundry facility on-site. After the clothing is washed and dried, it should be checked for contamination by utility personnel prior to being returned to the person. If contamination over a large area is involved, then it may be necessary for the utility to secure an off-site laundry facility near each decontamination station or reception and care center. A commercial dry cleaning facility may also be needed. The water used for washing clothes can be run down the drain as is normally done. The used dry cleaning fluid should be disposed of by the utility as they consider appropriate.

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Small pieces of equipment that are contaminated offsite should likewise be wiped down with a concentrated detergent solution, or if it can be immersed in water, it can be soaked in the detergent solution. The used solution can also be disposed of down any drain that can be used for waste water. If water could be harmful to the equipment, then any non-aqueous solvent could be used (e.g., alcohol or mineral spirits). Likewise, these solvents should be disposed of by the utility as they consider appropriate.

Decontamination of vehicles and other large pieces of equipment would normally be by washing down with a water spray, either (1) manually through the use of a garden hose or preferably a fire hose that delivers a larger quantity of water, or (2) through the use of fixed spray nozzles mounted on vertical and horizontal pipes. The area selected for the vehicle decontamination must have a surface that will avoid becoming a large mud puddle. A concrete or blacktopped area which drains well could be used. The waste water could be drained directly into a storm sewer or other sewerage system, preferably one that results in the waste water going through a treatment process before returning to a body of water which is used for a drinking water supply. Certainly, any drinking water supply intake should not be immediately below the discharge point for a storm sewer if the water is not treated prior to discharge. If a concrete or blacktopped area of sufficient size is not generally available, an area covered with several inches of crushed rock over a layer of sand or other porous material could be easily constructed in advance. This approach could also allow for the waste water to be naturally filtered so that the majority of the contaminants could be retained in the porous material. A regular commercial car wash could be used for vehicle decontamination if located in the general vicinity where a vehicle decontamination station is required. If the wash water is recycled, then the filter medium should be checked for contamination and properly disposed of, if necessary.

Clothing, tools, equipment, and other usable materials, which are contaminated, should be considered as contaminated waste when the time and effort spent in decontamination efforts would exceed the value of these materials. Contaminated equipment damaged beyond repair and other solid contaminated debris, such as automobile air filter elements, should be considered waste material and should be bagged in plastic and provided to the utility for appropriate disposal. For selected items contaminated by short-lived radio nuclides, storage which would allow decay to effect the decontamination might be feasible, in lieu of disposal.

APPROVED

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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE H – ASSESSMENT AND EVALUATION**

ASSESSMENT AND EVALUATION

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1.0 RADIOLOGICAL ASSESSMENT PURPOSE

The objective of radiological assessment is to determine potential or actual off-site consequences of a radiological emergency. The purpose of this procedure is to identify how such an assessment is to be performed and how it will influence the selection and initiation of appropriate protective measures.

2.0 SCOPE

This procedure will define the State staff involved in the assessment and evaluation process, their roles, and their interaction with the Nuclear Facility Operator (NFO) and local and Federal agencies.

3.0 RADIOLOGICAL ASSESSMENT STAFF

3.1 Assessment & Evaluation

Assessment at the initial stages of an accident will be performed by the Nuclear Facility Operator (NFO). The NFO will use available information on plant status and releases and on-site and off-site monitoring data to project off-site doses and determine the accident classification. Once an emergency classification has been determined, the NFO will promptly notify the State and local authorities. In cases where radioactive materials are released as a result of the emergency, the NFO will promptly provide information on the magnitude and composition of the release, and will provide on-site and off-site monitoring data as it becomes available. State Assessment & Evaluation (A&E) staff will perform an independent assessment of the public health effects of the emergency. If the accident is classified as an Alert, Site Area Emergency or General Emergency, accident assessment activities will be conducted at the State Emergency Operation Center (SEOC) in Albany. State representatives will be also dispatched to the NFO's Emergency Operations Facility (EOF) to participate in accident assessment activities. Typically, State representatives will be dispatched to the EOF at an Alert or higher level emergency classification.

3.2 Lead Role

The State Health Department has the lead role in assessing the off-site health impacts resulting from radioactive releases. The Bureau of Environmental Radiation Protection (BERP) within the Health Department is responsible for carrying out this role. The State Emergency Management Office supports the Bureau of Environmental Radiation Protection in performing this assessment. Specific responsibilities of BERP staff are provided in Section 4.0.

Additional technical support is provided as follows:

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The NYS Department of Health Laboratory of Inorganic and Nuclear Chemistry (Wadsworth Center) will perform laboratory analysis of samples collected.

The NYS Department of Environmental Conservation (DEC) will provide staff to support in meteorology, dose assessment, and environmental monitoring and sampling.

The NYS Department of Agriculture and Markets (A&M) will provide staff to support sampling of milk and evaluation of the need for protective actions relating to the milk and food supply.

The NYS Office of Emergency Management (NYSOEM), Department of Public Service (DPS), NYS Energy Research and Development Authority (NYSERDA) and DOH will provide staff to assist in assessment and evaluation of the status of the reactor systems.

4.0 BUREAU OF ENVIRONMENTAL RADIATION PROTECTION ACTIVITIES

The Bureau of Environmental Radiation Protection (BERP) is responsible for overall accident assessment and for providing radiological health expertise to other state and local agencies as required. BERP staff is comprised of Radiological Health Specialists and Research Scientists.

BERP staff conducts their activities during a radiological emergency from a variety of locations. These are:

4.1 Bureau Office in the Health Department:

Initial notification (during working hours) will be received at the BERP office. Initial contacts with the NFO and key State and local staff will be conducted from this office.

In case of an Unusual Event, the State EOC will not be activated and all activities relating to the situation will be conducted from the BERP offices. BERP staff will:

- maintain periodic contact with the NFO
- maintain periodic contact with the NRC
- maintain periodic contact with the state EOC
- keep key Health Department staff, the NRC, other State agencies and local officials informed of all significant developments relating to the situation.

During non-business hours, the above activities will be completed from the homes of appropriate BERP staff.

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4.2 State EOC

- If the emergency classification is Alert or higher, the State EOC will be either partially or fully activated. In both cases the A & E Branch as defined in Item 3.1 will proceed to the State EOC. Following initial contact with the NFO and notification of key Health Department staff, a minimum of two Radiological Health Specialists and a Specialist in Reactor Systems and Operations (Nuclear Specialist) will proceed to the SEOC. The Planning Section, A&E Branch staff controls and directs the state radiological emergency response effort and has the following responsibilities:
- establishing initial contact with the NFO using the call back number on RECS Part 1 Form (Procedure B, attachment 7A or 7B);
- maintaining contact with the NFO and NRC and obtaining updated information periodically;
- evaluating information on plant status, assessing potential for releases to the environment and estimating magnitude of likely release;
- projecting off-site doses and comparing them to the Protective Action Guides (PAGs);
- recommending protective actions to prevent or reduce potential exposures to the off-site population;
- determining the need for and issuing the recommendation to ingest potassium iodide (KI);
- preparing a sampling program as needed, and initiating sampling activities as appropriate;
- determining the need for off-site monitoring, and taking action to initiate the monitoring program as appropriate;
- determining the need for, and/or requesting through NYSOEM, Federal radiological assistance through the USDOE's Brookhaven Area Office Radiological Assistance Program (RAP) and the Federal Radiological Monitoring and Assessment Center (FRMAC);
- maintaining flow of current information and data between the SEOC and EOF;
- calculating the ratio of the Total Effective Dose Equivalent (TEDE) to the radiation dosimeter reading when sufficient information on radionuclide mixture in

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the release has been obtained, and providing dosimeter correction factor to State and local staff as appropriate;

- advising the Commissioner of Health in situations when it may be necessary for personnel to exceed emergency worker;
- recommending relaxation of protective actions as the emergency conditions ease; and
- conducting briefings for the Chairman of the Disaster Preparedness Commission, the SEOC Command staff, the Commissioner of Health, and other officials as appropriate.

4.3 EOF

- When activated, the EOF becomes the center where data from the NFO and affected counties is shared. Accident assessment is performed at the affected county's EOC, SEOC, and the EOF. The State will typically send two representatives to the EOF. These will include a Radiological Health Specialist and a Specialist in Reactor Systems and Operations.
- The State EOF liaison staff will have the following responsibilities:
 - participate in the accident assessment process at the EOF;
 - interface with county liaisons;
 - maintain flow of current information and data between the EOF and the SEOC; and
 - represent the State at briefings conducted in the EOF.

4.4 Local EOC

In general, local radiological officers are responsible for the radiological aspects of the emergency response at the county level.

If requested by the affected county, a State Radiological Health Specialist will proceed to the county EOC and will act as a radiological consultant to the county.

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4.5 Monitoring Teams

During the plume exposure pathway phase of an emergency, the NFO and county field monitoring teams have the primary responsibility for evaluating the magnitude of off-site radiation exposure levels and concentrations of radioactive releases.

The State may also request assistance for aerial and ground monitoring from federal resources through the Brookhaven Area Office, USDOE. This assistance may be internal USDOE departmental Radiological Assistance Program (RAP teams) or federal interagency support through the National Response Framework (NRF) and the Federal Radiation Monitoring and Assessment Center (FRMAC)

4.5.1 Collection and Dissemination of Field Data

Prior to activation of the NFO EOF:

- Data collected by county or NFO field monitoring teams will be transmitted to the county EOC and NFO Technical Services Center (TSC), respectively, according to existing procedures.
- NFO staff receiving field data from NFO's field monitoring teams reviews, tabulates and promptly transmits data to the A&E Branch of the SEOC.

Radiological assessment and evaluation staff in the SEOC promptly transmits field data received from state field teams to TSC and counties as appropriate.

After activation of the NFO EOF:

- Field monitoring data collected by NFO's monitoring teams will be transmitted to the EOF according to NFO's existing procedures.
- NFO radiological assessment staff tabulate and review field data.
- Data collected by county teams will be transmitted to their respective county EOCs.
- County radiological assessment staff tabulate and review field data.
- County EOC promptly transmits all field data to the EOF and Planning Section, A&E Branch at the SEOC.
- EOF staff makes copies of field data (both generated by NFO or received from counties) and distributes it to State, County and Federal liaison persons in the EOF.

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Each liaison person is responsible for assuring that copies of all appropriate data are transmitted from the EOF to their respective EOCs.

- If a county liaison officer has not arrived at the EOF, the State representative will assure that appropriate field monitoring data are transmitted to that county's EOC from the EOF.
- Should a county who does not have a representative at the EOF have any questions concerning the data, they should address them to the State liaison at the EOF or to the SEOC.

5.0 OTHER AGENCIES' ACTIVITIES

Assessment and Evaluation (A&E) in New York State is an interagency team effort which brings together, in the State Emergency Operations Center, technical experts from various state agencies.

The following is a list of functional areas with information on the resources employed and tasks assigned.

5.1 Assessment and Evaluation (A&E) Area Facilities and Readiness

The State Emergency Management Office (NYSOEM) Planning Section designs and develops the appropriate workspace and systems needed, in consultation with the A&E participants. NYSOEM staff make sure that the A&E area is maintained and that the reference documents, plans, maps, forms, computers, software and other items needed for A&E are appropriately maintained, stored and retrieved when needed.

In the early stages of an event, NYSOEM staff will make final preparations for activation of A&E, and will carry out those initial tasks necessary to insure continuity of the operation. These efforts will gradually evolve into an integrated A&E operation as the various A&E staff members arrive.

To support the activities of the A&E Branch, NYSOEM provides a variety of administrative and support personnel. These include the following:

- Planning Section personnel assist the A&E Team Leader in managing and coordinating A&E activities.
- SEOC staff manages the information flow in the A&E Area.
- The Information/Administrative Assistant (message center staff) distributes and records information, delivers messages, and provides essential support services.

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- Meteorologist provides support to the A&E team leader.

5.2 Weather Information

Meteorological assessment, as part of the State A&E process, obtains, processes, displays and disseminates meteorological information.

In an emergency, meteorologists from the NYS Department of Environmental Conservation (DEC) are activated to the SEOC to assume its operation. In a nuclear emergency, the Weather Center obtains and analyzes all meteorological data relevant to plume transport, dispersion and deposition, dose assessment, and the operational needs of the response. Data are obtained, as needed, from the NFO, the National Weather Service, NYS DEC, Weather Services International (WSI) and other sources.

Meteorological information is provided to the A&E room, the command room and the operations room, and is posted in the areas provided. Weather forecasts are prepared and distributed for future dose projections for any potential releases of radioactive material and to inform responders of the conditions under which they will have to operate.

5.3 Nuclear Engineering

Specialists in reactor systems and operations (nuclear specialists) are part of the A&E Branch and act under the direction of the A&E Team Leader at the SEOC. Nuclear specialists gather, assess and relay plant systems information to A&E staff, DOH and other state decision-makers. A minimum of two nuclear specialists are normally needed during emergency operations. The State Department of Health, NYS Department of Public Service, NYSOEM, and the State Energy Research and Development Authority have staff trained to act as nuclear specialists.

The nuclear specialists obtain information from the NFO on the plant status, sequence of events, operating and safety systems and problems, critical parameters and time frames, corrective actions taken or planned, and the prognosis for improvement or worsening of the situation. They determine the effect of engineering matters on plant operations and public safety; keep the A&E Branch advised of plant status as it relates to potential releases of radioactive material; and provide briefings to the command room staff, operations personnel and, when required, the public information officer.

Their analysis includes use of the NFO's Emergency Plans and Procedures and the Final Safety Analysis Reports, the NRC's Emergency Response Data System (ERDS) and other information relating to the plant, and its operating and safety systems. When possible, they work side-by-side with technical representatives from the Nuclear Regulatory Commission and the NFO who are dispatched to the SEOC.

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5.4 Dose Assessment

As circumstances warrant, other agencies may assist the DOH Radiological Health Specialists in performing dose assessment. Trained individuals who may provide such assistance come from NYSOEM, NYS DEC, USDOE, USNRC, and the affected NFO. The use of such assistance depends on the requirements of the operation and availability of trained personnel.

5.5 Ingestion Pathway

Decisions regarding the sampling requirements and procedures for ingestion pathway analysis involve a number of agencies. These include Health, Environmental Conservation, Agriculture and Markets, Transportation and State Police. When appropriate, representatives from these agencies will be called upon to discuss sampling issues and related food and water protective actions. A list of the involved agencies and types of samples they are responsible for is found in Attachment 7. Additional information is found in the special procedures for ingestion pathway response located in Procedures K, L, M, and N of this plan.

6.0 ASSESSMENT INPUT INFORMATION REQUIRED

The assessment process utilizes four sources of information:

- Previously developed data
- Relayed real-time radiological and meteorological data
- NFO supplied information
- Monitoring and assessment information from federal government resources

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6.1 Previously Developed Data

Previously developed data includes information that is independent of the nature of the accident which is used for a determination of the impact on public health resulting from the accident. These data include the following:

1. Site map showing facility layout
2. Site map showing plume EPZ
3. Site map showing ingestion EPZ
4. Maps, or overlays for the appropriate maps showing
 - a. population distribution
 - b. special facilities
 - c. milk and food processing plants
 - d. open reservoirs
 - e. ERPAs/Protective Action Areas and evacuation routes
 - f. relocation centers
 - g. local and State EOCs and EOF
 - h. locations of fixed monitoring stations and assigned mobile monitoring points (if pre-designated)
 - i. watersheds
 - h. farms
5. Pre-calculated off-site projected doses for design basis accidents
6. Site specific emergency procedures

6.2 Relayed real-time Radiological and Meteorological Data

The protective action recommendations in a fast developing emergency are made by the NFO, who is the only entity in a position to identify the emergency and evaluate its on-site and off-site consequences within a short period of time. Any supplementary radiological release information from State or Federal agencies will be delayed by a number of hours, and thus is not usable for preliminary assessment of the accident. Available information is to be provided promptly to the Bureau of Environmental Radiation Protection staff at Health Department offices or at home if the SEOC has not been activated. Updates should be supplied periodically to A&E staff at the SEOC, once activated.

Primary responsibility for offsite monitoring for radiation exposure rates and radioiodine concentration in the plume EPZ will be conducted by the NFO staff and field monitoring teams from the at-risk counties. Pre-selected monitoring and sampling locations for the various teams have been identified. These locations are shown in the county REP Plans and NFO field monitoring procedures.

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Radiation monitoring support for extended periods of time will be supplied by the other NFOs. Agreements are established by which mutual radiological assistance will be made available to any facility suffering an accident. For example, support to Ginna may be supplied by staff from Nine Mile Point and Fitzpatrick, as these two sites are only 50 miles apart. Ginna staff can also support Nine Mile Point and Fitzpatrick.

6.2.1 NFO Supplied Information

Source term information:

- a. shutdown time
- b. physical form of release (liquid or gas)
- c. radionuclides released and inventory available for potential release
- d. iodine/noble gas ratio
- e. release rate and possible change in rate
- f. time offsite release started, or projected time of start of offsite release
- g. projected duration of release
- h. effective height of release point

Meteorological information (current and forecast)

- a. on and off-site low level wind speed and direction
- b. upper-air wind speed and direction for on and off-site
- c. atmospheric stability class
- d. precipitation data
- e. temperature, pressure, humidity

Off-site radiological information - measured

- a. exposure rates at various monitoring points and time of measurement
- b. cumulative dose at fixed monitoring points (where available)
- c. airborne radionuclide concentrations and time and location of measurement
- d. location and radionuclide composition of ground deposition

Reactor status information

- a. the reactor operational status
- b. status of engineered safeguards
- c. projected effect on release rate and/or duration
- d. length of operating cycle
- e. time delay of release after shutdown

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Off-site dose information

The NFO will provide the following information and will identify whether it is measured or projected:

- a. sectors affected
- b. dose rate at various distances downwind and time of measurement (or projection) for whole body and thyroid doses (TEDE and CDE Thyroid)
- c. projected dose at site boundary and at various distances downwind (2, 5 and 10 miles)
- d. projected dose for special facilities downwind

Protective actions information

- a. on-site NFO's protective measures involving off-site emergency response teams
- b. NFO's recommendation for off-site protective actions

6.2.2 Monitoring and Assessment Information from Federal Government Resources

The Federal Emergency Management Agency (FEMA) has the responsibility for coordinating Federal response to nuclear incidents. NYSOEM will request all federal radiological assistance through FEMA. The coordination of the logistical support necessary for this operation will be the responsibility of NYSOEM and FEMA.

The National Response Framework (NRF) sets forth the federal government's operational concept of radiological emergency response. It primarily addresses the off-site federal response in support of the state and local authorities having jurisdiction over the emergency site. When the NRF is implemented, the agency responsible for the overall federal response is referred to as the Coordinating Agency. However, because of the complexity of collecting, analyzing, evaluating, assessing, and interpreting off-site radiological data, the NRF specifies that a technical operations center must be established where these activities will be conducted. This center is the Federal Radiological Monitoring and Assessment Center (FRMAC).

The FRMAC is implemented as soon as possible after the radiological emergency commences and continues operations until the Coordinating Agency and the state agree that the FRMAC is no longer needed. The FRMAC becomes a coalition of all federal offsite monitoring and assessment efforts to assist the Coordinating Agency, state and local authorities in a timely manner. The Department of Energy (DOE) is assigned initial management of the FRMAC.

- The FRMAC field organization will accomplish the following specific tasks:

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- Provide, in cooperation with other federal components, the personnel and equipment to coordinate and perform environmental monitoring and assessment activities.
- Request supplemental assistance and technical support from other federal agencies when needed and when considered necessary to maintain the credibility of the off-site assessment.
- Manage the responding FRMAC resources in the most time-effective and efficient manner possible to support the needs of the Coordinating Agency and New York State.
- Manage and direct the federal, off-site, environmental, radiological monitoring, assessment, and evaluation activities and maintain a FRMAC liaison with state and local authorities that have similar responsibilities.
- Maintain a common set of off-site, environmental, radiological monitoring data in an accountable and retrievable form and ensure the technical integrity of the data.
- Provide data and interpretations as well as exposure-rate contours, dose projections (including future radiation levels and potential dose commitments), and other requested radiological assessments to the Coordinating Agency, state, or other designated agencies or jurisdictions as quickly as possible.
- Support the Coordinating Agency in providing off-site monitoring, analysis, and assessment. Provide data to the Coordinating Agency to be used for developing Protective Action Recommendations (PARs) and promote the involvement of other federal agencies in this process.
- Provide technical and medical advice for handling radiological contamination.
- Assist in planning for the recovery of the off-site area. This recovery may involve planning for decontamination, reentry, relocation, and return.
- The Coordinating Agency is the federal agency that owns, authorizes, and regulates the facility or is otherwise deemed responsible for the facility or radiological activity causing the emergency and has authority to take onsite action. When it is necessary for the Coordinating Agency to deploy to the site, it will manage federal actions on-site; assist in developing, evaluating, or recommending off-site protective actions to be taken by the state based on federal Protective Action Guides (PAGs); provide advice on issues such as reentry; and help implement those actions if requested by the state.

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Major DOE Resources

Radiological Assistance Program (RAP)

The Radiological Assistance Program is implemented on a regional basis, with regional coordination between states and DOE emergency response elements. The purpose is to provide assistance in all types of radiological incidents occurring in the region. This assistance may include response to support DOE or its contractors, other federal agencies, and/or state, local, and tribal authorities. In keeping with DOE's concept of operations for RAP, the RAP Region 1 is designed so that the response to a small incident can be scaled up to support a major radiological emergency.

RAP provides resources (trained personnel and equipment), and monitoring and assessment capabilities to evaluate, advise, and assist in the mitigation of immediate radiological hazards and risks to workers, the public, and the environment resulting from radiological emergencies and incidents. Such assistance does not in any way preempt state, local, or other governmental authority or responsibility.

RAP teams stationed at Brookhaven National Laboratory can respond to any site in the State within 4 to 6 hours if air transport is used and immediately initiate communications and begin to assist with data analyses, requesting additional DOE support if needed and provided data products while en-route.

U.S. DOE Radiological Assistance Program (RAP) teams will be requested for emergencies classified as Site Area or General Emergencies. Requests for Region 1 RAP assistance may be directed to the DOE RRC or to a DOE Team Leader by the DOE HQ Emergency Operations Office (ERO), or directed to the Region 1 on-call Team Captain through the 24-hour BNL Central Alarm Station Duty Officer [REDACTED]. Requests for DOE radiological assistance may also be directed to the DOE Headquarters (HQ) ERO at [REDACTED]. DOE HQ will connect the individual with the appropriate RAP Region for assistance. Each RAP Region maintains a 24-hour emergency telephone number to receive requests for DOE radiological assistance

OTHER NNSA EMERGENCY RESPONSE ASSETS:

There are many specialized capabilities, which are located throughout the DOE complex and may be available in emergency situations. The members of DOE RAP Teams are knowledgeable of these capabilities and, if required, are prepared to arrange for additional special equipment, to arrange transportation, and to support the equipment. Major specialized emergency response resources include the National Atmospheric Release Advisory Capability (NARAC), the Federal Radiological Monitoring and Assessment Center (FRMAC), the Aerial Measuring System (AMS) and the Radiological TRIAGE providing scientific expertise to partner first responder agencies.

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Data from the DOE teams will be coordinated with other data in the EOF and transmitted from there to the State EOC and the FRMAC. The DOE teams will be the primary source of information on aerial monitoring of the plume. Aircraft of the Aerial Measuring System (AMS) are maintained ready to supply state-of-the-art remote sensing equipment to map large areas that may have been affected by an accidental release. Aerial monitoring capabilities are expected to arrive from Andrews AFB, Maryland. Pending weather and availability (authorization) of aircraft, this capability is expected to be functional 4 hours after take-off.

A computer based system, the National Atmospheric Release Advisory Capability (NARAC) uses actual weather and terrain data to predict on a regional scale the transport, diffusion, and deposition of any radioactivity released to the environment.

The information supplied by this monitoring mode provides products derived from modeling, aerial, and field monitoring and sampling measurements to create products to aid in determining the protective actions for the general population, and includes:

- exposure rates and radionuclide concentrations in the plume
- isotopic identification of radionuclide releases
- delineation of plume extent
- extent of ground deposition

Environmental Protection Agency (EPA) Monitoring Network (RadNet)

RadNet is a national network of more than 200 monitoring stations distributed across all 50 states and the American Territories. These stations regularly sample the nation's air, precipitation, drinking water, or pasteurized milk for a variety of radionuclides (e.g., iodine-131) and radiation types (e.g., gross beta (β)). During its operation beginning in 1973, RadNet's predecessor, the Environmental Radiation Ambient Monitoring System (ERAMS), collected over a half million high quality environmental samples. The current database primarily provides data that was collected between 1978 and present. These data can be accessed and studied to provide information about releases of radioactivity to the environment at <http://www.epa.gov/radnet/>

RadNet normally operates in a "routine" mode, sampling radiation in all media on a regularly defined schedule.

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- Take control of the FRMAC and assume primary responsibility for monitoring in the recovery phase.

Food and Drug Administration (FDA) Analytical Capabilities

FDA manages a program whereby representative samples of foods in a typical diet are taken from various locations throughout the country. These foods, including dairy products are then examined for their radionuclide content, commonly tritium, Sr-90 Cs-137 and K-40. Under emergency conditions, FDA facilities can be used to analyze milk samples taken by FDA regional field staff.

Food Emergency Response Network (FERN)

The Food Emergency Response Network (FERN) integrates the nation's food-testing laboratories at the local, state, and federal levels into a network that is able to respond to emergencies involving biological, chemical, or radiological contamination of food. The FERN structure is organized to ensure federal and state inter-agency participation and cooperation in the formation, development, and operation of the network.

The FERN plays a number of critical roles related to food security and food defense. These include:

1. Prevention: FERN provides a national surveillance program that will offer early means of detecting threat agents in the American food supply;
2. Preparedness: FERN prepares the nation's laboratories to be able to respond to food-related emergencies;
3. Response: FERN offers significant surge capacity that will strengthen the nation's response towards widespread complex emergencies, intentional or inadvertent related to agents in food; and
4. Recovery: The FERN network of laboratories enhances the ability of the country to restore confidence in the food supply following a threat or an actual emergency targeting the nation's food supply.

Department of Health and Human Services

- Guidance to State and local officials on the use of radio-protective substances, including dosage, and on projected doses that warrant such measures.
- Guidance to State on protective action guides for food and animal feeds.

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Department of Agriculture

- Provide the State with advice on the minimization of losses to agricultural resources from radiation effects.
- Provide information on the location of crop farms
- Procurement of food
- Inform and assist farmers and others in returning to pre-emergency conditions.
- Assist in the implementation of protective measures to minimize contamination through food ingestion.
- Assist in the collection of samples within the 50 mile EPZ.

6.3 Sampling Data

Data from laboratory analysis of air, soil, water, milk and vegetation samples collected in the area surrounding the plant are important for defining the magnitude and extent of contamination resulting from the release. These data are not available during the initial phases of the accident and may be delayed up to several days depending upon the radionuclides present, contamination levels and sampling media involved. This data is not used in the decision process in the preliminary stages of the accident where the dose from inhalation and whole body exposure determines the protective action options recommended.

However, laboratory data will be used for:

- modification of protective actions taken already
- prescribing protective actions for the ingestion pathway
- determining the need for decontamination

Sampling will be conducted by the NFO and State agencies. Additional sampling by the Federal agencies (EPA, FDA, NRC, DOE) may be requested through USDOE if needed.

Samples collected by or for the State are analyzed by the radiological laboratory in the State Department of Health. The laboratory's equipment and staff capabilities are listed in Appendix G and their analysis procedures are described in Procedure N. The director of the radiological laboratory will coordinate the laboratory analysis activities of

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the various agencies. Additional sample analysis capability is provided through Federal support coordinated by USDOE.

The State sampling program involves collecting and analyzing samples of the following types:

6.3.1 Air Samples

The Bureau of Environmental Radiation Protection maintains sampling points around the nuclear power plant sites that include sampling for particulate and radioiodine releases from the plant. The frequency of sampling and the number of the samples will be increased in an emergency. The state also has portable air samplers and 5 Mobile Vehicle-based Emergency Radiation System (MOVERS) vans that can be deployed as necessary.

6.3.2 Water Samples

Water samples will be collected initially from open reservoirs downwind within the plume EPZ and the tap water from water supplies using these reservoirs. Sampling locations can be extended beyond the plume EPZ as necessary. The Bureau of Water Supply in the Division of Environmental Health Protection, State Department of Health, will be responsible for the collection of water samples and delivering them to the radiological laboratory for analysis.

In the event of a significant release to a river or lake, water samples from the river or the lake will be collected from locations near the point of release as well as down-stream from the release point by the NFO and the state health department. Water samples near public water supply intake points that may be affected by the release will also be collected.

6.3.3 Milk Samples

The milk sampling locations will be coordinated with the State Department of Agriculture and Markets, who will be responsible for sample collection.

Milk samples will be collected from a representative sample of farms in the ingestion EPZ concentrating on farms located in the down-wind direction. Samples will also be collected from milk processing plants that draw milk from farmers in the ingestion EPZ. NYS Department of Agriculture and Markets has identified potential monitoring locations in each EPZ. Radiological assessment information will be used by State DOH BERP and Agriculture and Markets to determine the most efficient means of collecting the necessary dairy samples, e.g., at transfer/processing plants or at each dairy farm. Equipment and resources for this response action are listed in Procedure M.

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6.3.4 Vegetation Samples

Vegetation samples are collected in order to determine the contamination level of edible vegetables (in season) and to determine the need for reducing the potential of radionuclide intake through that route.

Samples are also collected from vegetation that constitutes farm animal feed in order to determine potential intake of radionuclides by milk producing animals or those that are used for human consumption. State Departments of Agriculture and Markets and Health will be responsible for the collection of these samples.

6.3.5 Soil Samples

While aerial monitoring may outline the extent of land contamination resulting from deposition of airborne activity, analysis of soil samples collected within the area of contamination determines the radionuclides present and their concentrations. BERP and DPC agencies will be responsible for obtaining these samples.

6.3.6 Fish and Biota Samples

These will be collected when appropriate, to assess potential doses to fishermen and hunters and their family members. DEC will be responsible for obtaining the samples.

7.0 USE OF INFORMATION

The Assessment and Evaluation Branch (A&E) at the State EOC will use available information to perform the following:

7.1 Dose Projection

The staff performing the accident assessment at the State EOC will take all the available information described in Item 6 above into consideration when calculating actual or projected doses to the public.

7.1.1 Exposure to the Plume

The purpose of the assessment calculation in the plume EPZ is to estimate the projected dose resulting from airborne radionuclides, as a function of time and distance from the facility, to an individual if no protective measures are taken, and the projected dose for different combinations of protective actions. These are:

- unprotected exposure followed by sheltering in place
- unprotected exposure followed by evacuation

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- unprotected exposure followed by sheltering in place, then evacuation

Total Effective Dose Equivalent (TEDE) resulting from exposure from the plume as well as estimates of projected Committed Dose Equivalent (CDE) to the child thyroid due to inhalation of radioiodines in the plume will be calculated.

Preliminary dose estimates for the plume EPZ will be based on the output from RASCAL, licensee specific dose assessment programs, and/or on methods used in the EPA Protective Action Guide Manual and NRC Response Technical Manual. Attachment 1 describes the procedures that will be used to make preliminary dose estimates using available information.

7.1.2 Deposition

There are three different pathways that lead to radiation exposure resulting from deposited radionuclides. These are ingestion of contaminated food or water, external exposure due to surface contamination, and exposure to and inhalation of resuspended radionuclides. The dose resulting from these pathways depends upon a number of factors including the physical properties and chemical form of the radionuclides, their concentrations and the nature of the contaminated surfaces.

In general, the dose due to ingestion of contaminated food (particularly milk), will be the most significant in the early stages after deposition. Concentrations of ^{131}I , ^{134}Cs , ^{137}Cs , ^{90}Sr and ^{89}Sr (the most significant radionuclides for this pathway) will be obtained through laboratory analysis of collected milk and food samples. The measured concentrations of these radionuclides in food or water can be related to dose commitments from uncontrolled ingestion using the methods used in FDA's *Accidental Radioactive Concentration of Human Food and Animal Feeds: Recommendations for State and Local Agencies*, Issued August 13, 1998 (FDA's PAGs). The dose commitment resulting from ingestion of food or water contaminated with other radionuclides will be estimated using the method used by FDA or tables given in EPA's *Manual of Protective Action Guides and Protective Actions for Nuclear Accidents*, EPA 400-R-92-001, May 1992 (EPA PAG Manual), or the FRMAC Assessment Manual. The dose commitment due to external exposure to contaminated grounds can be estimated from an analysis of the contaminants using the procedures and tables in the EPA PAG Manual, Chapter 7, or the FRMAC Assessment Manual.

The dose commitment due to resuspension can be calculated for a standard man from knowledge of the air concentrations of airborne radionuclides, using procedures and tables in the EPA PAG Manual, Chapter 7, or the FRMAC Assessment Manual. Attachment 1 outlines the procedure that will be used to obtain projected dose commitments for the various pathways for certain key nuclides.

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7.2 Recommendation of Protective Action Options

Based upon the projected doses, and the applicable PAGs, A&E Branch will make protective action recommendations to the State Commissioner of Health. These, if implemented, will institute, alter or rescind previously ordered protective action measures. The criteria used in arriving at these recommendations are described below in Sec. 8, Evaluation and Protective Action Options.

7.3 Deployment of Monitoring and Sampling Resources

The incoming information on the nature of the release and the prevailing conditions will be used by the A&E Branch when determining the need for additional monitoring and sampling. The nature and duration of the release, wind direction and speed and the demographic and topographic characteristics of the areas downwind from the point of release will be taken into consideration when determining the monitoring and sampling needs. Due to the limited monitoring and sampling resources available at the early stages of a developing emergency, sampling priorities will be established. These priorities will be incident-specific and determined by the Field Team Coordinator in consultation with the A&E Team Leader.

7.4 Preparation of Briefing Material

The data received in the EOC and the results of the analyses performed will be reduced by the A&E Branch into concise and understandable information that will give a clear view of the situation. Briefing material will be presented to the State EOC staff and the Public Information Officer. The A&E Branch will also assist the PIO in preparing public information messages.

The information prepared should use graphic displays and include the following:

- Identification of the facility experiencing the emergency and the time the incident began;
- Identification of the communities or geographic areas affected by the emergency;
- Brief description of the type of emergency;
- The hazard, particularly in terms of potential risk or absence thereof, to the affected populace;
- Instructions with regard to specific protective measures to be taken by residents of the affected areas and their effectiveness relative to no action and other options;

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- Type and extent of participation of involved emergency response organizations;

8.0 EVALUATION AND PROTECTIVE ACTION OPTIONS

Projected doses will be used to determine whether protective actions should be taken to reduce the population exposure. This decision is based upon whether the projected dose exceeds predetermined trigger levels recommended by the EPA Protective Action Guides (PAGs) for plume exposure, FDA PAGs for ingestion of contaminated milk and other foodstuffs, and EPA Protective Action Guides (PAGs) for exposure to deposited radioactivity during the intermediate phase of an accident. FDA and EPA PAGs are listed in Attachments 2, 3, and 5, respectively.

8.1 Plume Protective Actions

The protective action(s) that will result in the maximum dose reduction will depend upon the nature and duration of the release, the time delay prior to initiation of the protective action, the time needed to complete the protective action and the time delay until the plume arrival to the area under consideration. These times are dependent upon the release characteristics, the meteorological and climatic conditions and logistic and demographic distribution constraints. Protective action decisions may also be based on the Emergency Classification Level (ECL) or plant conditions. In general there are four options that can reduce the exposure of an individual to the plume. These are evacuation, shelter-in-place, ingestion of KI, or a combination of the above.

The selection of the optimum protective action involves an evaluation of the dose to the individual that will be averted by taking that protective action. The doses already received will not be considered when comparing the various options in order to evaluate their relative effectiveness.

Protective actions are recommended prior to detailed analysis in the case of a declaration of a General Emergency. In this situation, evacuation for the 2-mile radius around the plant and 5-mile downwind area will be considered, along with implementation of the NYS KI Plan (See Appendix K). As more information becomes available, these initial protective actions will be modified as needed.

8.2 Ingestion Protective Actions

Population exposure can result from intake of radioactive material due to consumption of food and water which have been contaminated by the radionuclides released in the accident. The primary exposure pathways to be considered are the milk, food & water pathways. (See Appendix G for Department of Agriculture & Markets radiological control resources listings.)

In 1998, the FDA set the ingestion pathway PAG at 0.5 rem (5 mSv) committed effective dose equivalent (CEDE) or 5 rem (50 mSv) committed dose equivalent (CDE) to an

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individual tissue or organ, whichever is more limiting. FDA further defined Derived Intervention Levels (DIL) which corresponds to the concentrations in food which, if eaten, could lead to an individual receiving a radiation dose equal to the PAG. Food products with concentrations equal to or greater than these DILs will not be allowed to be distributed for public consumption.

The relationship between PAG and DIL is given in Attachment 2. DIL values derived by FDA for a number of radionuclides are also given in Attachment 2.

Implementation of protective measures for food and milk will be carried out by the Department of Agriculture and Markets in coordination with the Department of Health according to their specific operating procedures.

8.2.1 Milk

In the early stages of an emergency, the milk pathway is the most significant route of exposure. Thus, early protective actions for preventing contamination of milk in the affected area are recommended prior to obtaining confirmatory data.

If a Site Area Emergency classification is declared, an immediate recommendation will be made to place milk animals located within a 10-mile radius of the plant on stored feed and water. As more information becomes available, this recommendation may be modified as required. In the case of an immediate General Emergency declaration, a secondary consideration will be to place milk animals within 50 miles on stored feed and water. Primary consideration will be to reduce exposure to the population from the radioactive plume by evacuation or sheltering in place.

8.2.2 Food

Consumable agricultural products such as fruits, vegetables, meat and meat products will be embargoed if the contamination level exceeds the PAGs.

Farmers will be advised not to use contaminated animal feed for livestock used for meat production if the projected dose to the meat consumer exceeds the PAG.

8.2.3 Water

Maps showing water supplies in the ingestion EPZ are available at the State Department of Health and the State EOC. Due to dilution, water treatment, and time lag between contamination of surface water and drinking water at the tap, immediate protective actions prior to confirmatory measurements may not be warranted. However, if measurements show contamination of the drinking water supply in excess of the applicable drinking water standards, (10 NYCRR SubPart 5-1.51, Table 7), one or more of the following options will be recommended:

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.use alternative uncontaminated source for drinking, limiting the use of the contaminated water source for sanitary and fire-fighting purposes

- initiate special treatment procedures for water to remove contaminants
- limit water supply sources to uncontaminated water

8.3 Deposition

While the primary source of population dose resulting from ground deposition of radionuclides in the ingestion EPZ is expected to be that resulting from ingestion of contaminated milk and other food products, external exposure due to contaminated surfaces might also be significant.

The Effective Dose Equivalent (EDE) due to the surface contamination and CEDE from inhalation of resuspended materials can be calculated from knowledge of the various radionuclides that make up the surface contamination and the projected time of exposure. Should the TEDE exceed the EPA's intermediate phase PAGs, protective actions will be recommended.

The nature of the protective action recommended will depend upon the half-life of the contaminant, the nature of the contaminated surface, weather conditions, magnitude and extent of the contamination. The protective actions could range from simple decontamination to relocation, depending upon the severity of the problem.

9.0 ASSESSMENT AND EVALUATION PROCEDURE

9.1 Notification of Unusual Event (NUE)

The Bureau of Environmental Radiation Protection, State Health Department:

1. Receives notice of an NUE from NFO or SEOC.
2. Contacts NFO and obtains more detailed information.
3. Notifies DOH PIO, DOH Public Health Preparedness staff, and Director of the Center for Environmental Health (CEH) by telephone or e-mail.
4. Notifies DOH Regional/Area office (during working hours), the DOH Duty Officer and Regional Administrator on Duty (after hours) and DEC.
5. Completes and distributes Problem Alert form to DOH staff (Attachment 6).
6. Continues contact with NFO until emergency is terminated or is escalated to a more severe class.
7. If emergency is terminated, prepares and distributes an update to the Problem Alert form.

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8. If emergency is escalated, takes appropriate action as indicated in the following sections.

9.2 Alert

The Bureau of Environmental Radiation Protection, State Health Department:

1. Receives notice of an Alert from NFO or SEOC.
2. Takes steps 2-5 under Unusual Event.
3. Notify Staff responsible for radiological assessment that EOC is partially activated and recommends deployment as necessary.
4. Proceeds to EOC.
5. Once at the EOC establishes contact with the NFO, to advise that the EOC has been activated.
6. Keeps State Commissioner of Health, CEH Director, Regional Environmental Health Director and PIO advised of all significant changes.
7. Prepares briefing material.
8. Maintains Alert status until emergency is terminated, or escalates to a more severe class emergency.

9.3 Site Area Emergency

The Bureau of Environmental Radiation Protection, State Health Department:

1. Receives notice of a Site Area Emergency from NFO or SEOC.
2. Contacts NFO for confirmation and obtains a brief information update.
3. Notifies CEH Director, Director of Radiological Sciences Laboratory and PIO and advises that the following will be recommended:
 - placing all emergency workers on standby
 - placing milk animals within 10 miles on stored feed.
4. Proceeds to the EOC.

(The following actions will be taken by the assessment staff at the EOC).

5. Establishes contact with the NFO and the State liaison staff in the EOC, and Local Government EOCs.
6. Requests notification of the USDOE RAP Team at Brookhaven Area Office and requests radiological monitoring and sampling support.
7. Obtains more detailed information of the plant status and possibility of a release.

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8. Performs preliminary (“what-if”) dose projections at various distances downwind (2, 5, and 10 miles), based on plant conditions and possible release pathways.
9. Recommends protective actions based on preliminary dose estimates, taking into consideration the NFO's projected plant status and recommendations.
10. Continues to update preliminary dose projections according to data received.
11. Revises recommended protective actions as indicated by updated data.
12. Advises EOC staff of all significant changes and revisions in projected doses and recommended protective actions.
13. Prepares briefing material, including graphical representation of data and projections for use by PIO and others.
14. Manages emergency worker's exposure.
15. Maintains Site Area Emergency status until closeout or escalation to General Emergency class.

9.4 General Emergency

The Bureau of Environmental Radiation Protection, State Health Department:

1. Receives notice of a General Emergency from NFO or SEOC.
2. Contacts NFO for confirmation and obtains a brief information update.
3. Notifies CEH Director, Director of Radiological Sciences Laboratory and PIO and advises that the following will be recommended:
 - Evacuation for 2 mile radius and 5 miles downwind;
 - Dispatching of emergency workers to duty stations within 5 miles radius and alerting all others to standby;
 - Placing milk animals within 10 miles on stored feed (consider expanding to 50 miles based on plant conditions).
 - Implementation of the NYS KI Plan (See Appendix K).
4. Proceeds to the EOC.

(The following actions will be taken by the assessment staff at the EOC).

5. Establishes contact with the NFO and the State liaison Staff in the EOC, and Local Government EOCs.
6. Notifies USDOE at Brookhaven Area Office and requests radiological monitoring and sampling support.
7. Obtains more detailed information on the plant status and on the release if it has occurred.
8. Performs dose projections at various distances downwind (2, 5 and 10 miles).

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9. Recommends protective action based on preliminary dose estimates taking into consideration the NFO's projected plant status and recommendations.
10. Calculates TEDE to dosimeter reading ratio, and provides correction factor to appropriate state and local organizations (see Attachment 9).
11. Determines the need for additional monitoring and sampling and initiates programs by contacting appropriate contact persons listed in Attachment 7.
12. Continues to update dose projections according to data received.
13. Revises recommended protective actions as indicated by updated data.
14. Advises EOC staff of all significant changes and revisions in projected doses and recommended protective actions.
15. Provides State monitoring and sampling data to the EOF and county EOCs as these become available.
16. Prepares briefing material, including graphical representation of data and projections for use by PIO and others.
17. Manages emergency worker's exposure.
18. Maintains General Emergency status until closeout.

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ATTACHMENT 1

DOSE ESTIMATION PROCEDURES

Dose estimates will be made for a number of downwind locations including the site perimeter, 2, 5, and 10 miles from the site. They will be based upon data developed by the NFO and others. State dose assessment staff will use RASCAL as the primary dose assessment tool. The applicable licensee dose assessment methodology (computerized and/or manual, see Attachment 8) will be run in parallel with RASCAL, and will provide verification of dose projections. Additional verification of dose projections may be derived using methodologies from the NRC Response Technical Manual () or FRMAC Assessment Manual.

In the absence of computer-based methodologies, hand calculations may be used. The dose estimating procedures that are available to project Total Effective Dose Equivalent (TEDE), Committed Dose Equivalent (CDE) to the thyroid, Committed Effective Dose Equivalent (CEDE) from inhalation, external and internal doses resulting from deposition and skin beta dose from inhalation are outlined below. Methods to be used to extrapolate doses and concentrations from the point of measurement to other locations are also included.

The assessment procedure will consist of calculating the TEDE, and the CDE to the child thyroid using any of the methods discussed. Once the TEDE and CDE are calculated, they will be compared to the PAGs to determine the need for Protective Action Recommendations (PARs). Terms and definitions used throughout this attachment are as follows:

Terms and Definitions

H _T :	Dose, (rem)
E:	Gamma exposure rate, (mR/hr)
POI:	Point of interest
POM:	Point of measurement
Q:	Release rate, (Ci/sec)
t _a :	Cloud travel time, (hrs) = (x/u)/3600
t _e :	Estimated exposure time, (hrs)
t _r :	Time between shutdown and release, (hrs)
t _s :	Time since shutdown, (hrs)
u:	Average wind speed, (m/sec)
O:	Concentration, (Ci/m ³)
x:	Downwind distance to POI or POM, (m)

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Definitions

Deep Dose Equivalent, (H_d) which applies to external whole body exposure, means the dose equivalent at a tissue depth of 1 cm (1000 mg/cm²).

Committed Dose Equivalent (H_{T,50}) means the dose equivalent to organs or tissues of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year following intake.

Weighting Factor (W_T) for an organ or tissue (T) means the proportion of the risk of stochastic effects resulting from irradiation of that organ or tissue to the total risk of stochastic effects when the whole body is irradiated uniformly. For calculating the effective dose equivalent, the values of W_T are:

Organ Dose Weighting Factors

Organ or Tissue	W _T
Gonads	0.25
Breast	0.15
Red Bone Marrow	0.12
Lung	0.12
Thyroid	0.03
Bone Surfaces	0.03
Remainder	0.30
Whole Body	1.00

Effective Dose Equivalent (H_E) means the sum of the products of the dose equivalent to each organ or tissue (H_T) and the weighting factor (W_T) applicable to each of the body organs or tissues that are irradiated.

$$H_E = \sum W_T H_T$$

Committed Effective Dose Equivalent, (H_{E,50}) is the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to each of these organs or tissues.

$$H_{E,50} = \sum W_T H_{T,50}$$

Total Effective Dose Equivalent means the sum of the deep dose equivalent for external exposures and the committed effective dose equivalent for internal exposures.

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$$TEDE = H_d + H_{E, 50}$$

1.0 EARLY PHASE DOSES

There are several approaches that can be used to estimate offsite doses during the early phase. The selected approach will depend primarily on the type of information available at the time. This attachment describes the various approaches that may be used.

1.1 Using RASCAL

Radiological Assessment System for Consequence Analysis (RASCAL) will be the primary tool used for estimating offsite doses. The RASCAL program contains tools to estimate source term, atmospheric transport, and dose from a radiological accident; to estimate dose from field measurements of radionuclide concentrations; and to compute decay of radionuclides. It provides dose estimates out to 50 miles in affected directional sectors. This model is designed to provide a rough comparison with EPA PAGs and thresholds for acute health effects. RASCAL was developed by the NRC as a tool to conduct independent assessments of dose projections during nuclear power plant accidents. The RASCAL Version 3 and Version 4 Workbooks are available in the State EOC, and RASCAL is loaded on all computers in the A&E room.

RASCAL can be used in any of the three following modes depending on the data available at the time:

- ST-DOSE Model (source term to dose) – Used to calculate TEDE and CDE to the thyroid based on release rates, radiation monitor readings, and/or plant conditions.
- FM-DOSE Model (field measurement to dose) – Used to calculate dose at the point of measurement and compare it to the appropriate PAG
- Decay model – Used to calculate radiological decay and daughter ingrowth
- Meteorological Data Processor – used to input additional weather information from surrounding locations

1.2 Final Safety Analysis Report (FSAR) Evaluated Incident

Early in the event, prior to a release of radioactive material or availability of data from effluent monitors and the offsite monitoring program, it is possible to estimate offsite doses using information such as the type of reactor, type of accident, plant conditions and the status of engineered safeguards as provided by the Control Room or TSC.

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1.2.1 Data Required

- a. Type of accident, status of safeguards.
- b. FSAR Accidents Analysis and Estimated Dose Projections.
- c. Meteorological data - atmospheric stability class, wind direction, and speed.
- d. Diffusion overlays and base map (Indian Point only).

1.2.2 Procedure

External dose estimates at a specific distance from the reactor are determined from the FSAR Accidents Analysis and Estimated Dose Projections when the type of accident and status of the safeguards is known. Although this method is crude and does not take into account decay as the cloud travels, it may be the only method available during the early stages of an accident. Results are to be refined as source term information or monitoring data comes in.

1.3 Source Term Known

The first “hard data” likely to be available to the A&E staff that can be used to estimate the external dose component is the release rate obtained from effluent monitors or other direct measurements.

1.3.1 Data Required

- a. Release rate, Q , Ci/sec
- b. Meteorological data - atmospheric stability class, wind speed and direction.
- c. Diffusion overlays and base map (Indian Point only).
- d. Atmospheric dilution factors $(X_u)/(Q)$ from RTM-96, Table F-10 (or from plant specific dose assessment procedures)
- e. Duration of exposure, t_e , hrs.
- f. Time after reactor shutdown, t_s , hrs.
- g. Dose Factors from FRMAC Assessment Manual, Volume I Tables 4-1 or 4-2a, or from tables H-1 and H-2 below for gross noble gas or gross iodine releases, or from plant-specific dose assessment procedures.

1.3.2 Procedure

Meteorological data is used to select and align the appropriate diffusion overlay on the base map (Indian Point only). Atmospheric dilution factors $(X_u)/(Q)$ are obtained from the overlay at the points of interest (Indian Point only) or from RTM-96, Table F-10 (or plant-specific dose assessment procedures), and concentration at the point of interest is obtained by multiplying $(X_u)/(Q)$ by the source term Q and dividing by the average wind speed u .

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$$\chi_{POI} = \left(\frac{\chi u}{Q} \right)_{POI} \left(\frac{Q}{u} \right)$$

This gives the concentration in units of Ci/m³. The dose at the point of interest can then be calculated by multiplying the concentration in units of μCi/cm³ by a dose factor. (μCi/cm³ is equal to Ci/m³).

$$TEDE = X (\mu\text{Ci}/\text{cm}^3) \times \text{DF}$$

$$\text{CDE}_{\text{thyroid}} = X (\mu\text{Ci}/\text{cm}^3) \times \text{DF}$$

This will give you the dose for a 1 hour exposure at the point of interest. For longer exposure times, multiply by the number of hours exposed.

1.3.2.1 Isotope Mix Unknown

If the isotope mix is not known, use the Dose Factors for mixes of Noble Gases and Iodines from Tables H-1 and H-2 below.

Table H-1 DFs for Mixtures of Noble Gases (rem per μCi-cm⁻³-hour) as a function of time after shutdown and expected exposure time					
Time between shutdown and start of release (hours)	Estimated Exposure Time (hours)				
	1.0	2.0	3.0	5.0	10.0
1	2.6 E+2	2.4 E+2	2.2 E+2	1.9 E+2	1.5 E+2
2	2.2 E+2	2.0 E+2	1.9 E+2	1.6 E+2	1.2 E+2
3	1.8 E+2	1.7 E+2	1.6 E+2	1.4 E+2	1.1 E+2
5	1.3 E+2	1.2 E+2	1.1 E+2	1.0 E+2	7.7 E+1
10	6.3 E+1	5.9 E+1	5.6 E+1	5.1 E+1	4.2 E+1

DF for Kr-87 is 5.1 E+2. Use of Kr-87 DF is conservative.

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Table H-2 Thyroid DFs for Mixtures of Iodines (rem per $\mu\text{Ci}\cdot\text{cm}^{-3}\cdot\text{hour}$) as a function of time after shutdown and expected exposure time					
Time between shutdown and start of release (hours)	Estimated Exposure Time (hours)				
	1.0	2.0	3.0	5.0	10.0
1	3.2 E+5	3.3 E+5	3.5 E+5	3.8 E+5	4.3 E+5
2	3.5 E+5	3.7 E+5	3.8 E+5	4.1 E+5	4.5 E+5
3	3.9 E+5	4.0 E+5	4.1 E+5	4.3 E+5	4.7 E+5
5	4.4 E+5	4.5 E+5	4.6 E+5	4.8 E+5	5.1 E+5
10	5.3 E+5	5.4 E+5	5.5 E+5	5.6 E+5	6.0 E+5
DF for I-131 is 1.3 E+6. Use of I-131 DF is conservative.					
As time after shutdown increases, DF approaches I-131 DF.					
Only I-133 ($T_{1/2} = 21$ hours) has much influence on dose calculations as compared to I-131.					

1.3.2.2 Isotopic Mix Known

If the nuclide mix is known, use the Dose Factors from the FRMAC Assessment Manual, Tables 4-1 and 4-2a. Sum doses over all nuclides present.

1.3.2.3 Iodine-131 Source Term Known

The procedure here is the same as in the previous section except that the I-131 concentration must be converted to total iodine concentration. Based upon the equilibrium core inventory of radioiodines and noble gases present in a typical light water reactor (NUREG/BR-150, Vol. 1, Rev. 5) and analysis of the decay of each iodine species present, the ratio of total radioiodine to I-131 can be determined. I-131 concentrations are multiplied by the factors listed in Table H-3 to get total radioiodine concentration. CDE_{thyroid} is then determined by multiplying the concentration by the appropriate dose factor from Table H-2, above.

Table H-3 Multiplication Factors to calculate total radioiodines when I-131 concentration is known	
Time After Shutdown	Multiplication Factor
0	9
1 Hour	6
2 Hours	5
3 - 5 Hours	4
6 - 12 Hours	3
13 - 24 Hours	2
After 2 Days	1

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1.3.2.4 Doses from Immersion, Inhalation, and Deposition

For doses specifically from either immersion in the radioactive plume, inhalation of the radioactive plume, or exposure to deposited radioactive materials, use the Dose Factors from the FRMAC Assessment Manual, Tables 4-1 and 4-2a. Sum doses for all radionuclides present.

2.0 Offsite Monitoring

2.1 External Dose

The external dose component of TEDE may also be obtained from offsite monitoring data. Since the external dose rate is measured directly in the field, this method should yield the most accurate results. It is likely however, that the required data will not be available until sometime after other dose estimating procedures have been used. This method will therefore be used to refine dose estimates and protective action recommendations. This method does not take into account decay as the cloud travels downwind.

2.1.1 Data Required

- a. Gamma exposure rate, dE/dt, mR/hr.
- b. Meteorological data - atmospheric stability class, wind direction.
- c. Diffusion overlays and base map (Indian Point only).
- d. Exposure time, t_e , hrs.

2.1.2 Procedure

The external dose equivalent at the point of measurement is calculated by multiplying the gamma exposure rate by the time of exposure.

$$H_{\text{TPOM}} = (dE/dt) (t_e)$$

The methods of Attachment 1, Section 3 are used to obtain the dose at other POI.

If the exposure rate is known, the noble gas concentration can be approximated by dividing the exposure rate by the appropriate 1 hour exposure DF from Table H-1, above.

2.2 Internal Dose

2.2.1 Data Required

- a. Total Iodine or I-131 concentration from air sample

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b. Dose Factors from the FRMAC Assessment Manual, Tables 4-1 and 4-2a, or Table H-2 above.

Note: Ci/m³ is equal to μCi/cm³

2.2.1 Procedure

CDE_{thyroid} at a specific location can be calculated from air sampling data. Multiply the radionuclide concentration by the appropriate dose factor from the FRMAC Assessment Manual, Tables 4-1 and 4-2a, or Table H-2 above.

3.0 EXTRAPOLATION OF DOSES AND CONCENTRATION TO SELECTED LOCATIONS

Two methods may be used to project exposure rates, doses or concentration from the point of measurement to other locations that might be of interest. The first uses diffusion overlays and the second is the direct computation method.

3.1 Diffusion Overlays (Indian Point only)

Atmospheric stability class is used to select the appropriate diffusion overlay and it is aligned over the base map according to the prevailing wind direction. The atmospheric dilution factor for any point of interest and for the point of measurement are obtained from the overlay and their ratio is multiplied by either the exposure rate, dose or concentration, as appropriate to obtain the value at the point of interest.

$$\left(H_T, E, \chi \right)_{POI} = \frac{\left(\frac{\chi u}{Q} \right)_{POI}}{\left(\frac{\chi u}{Q} \right)_{POM}} \left(H_T, E, \chi \right)_{POM}$$

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3.2 Direct Computation Method

Use the relationship:

$$\frac{E_1}{E_2} \text{ or } \frac{H_{T1}}{H_{T2}} \text{ or } \frac{\chi_1}{\chi_2} = \left(\frac{x_2}{x_1} \right)^n$$

n = exponent as a function of stability class as listed in Table H-4:

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Table H-4 Exponent as a Function of Stability Class	
Stability Class	n
A	2.5 (good only for 0.25-1.5 miles)
B	2.0
C	1.8
D	1.5
E	1.4
F	1.3

4.0 INTERMEDIATE PHASE

4.1 External Pathway (EDE)

4.1.1 Data Required

- a. Surface concentration of each radionuclide contributing significantly to exposure (pCi/m²)
- b. Tables of gamma exposure rate and effective dose equivalent due to an initial uniform concentration from the FRMAC Assessment Manual Tables 4.3a, 4.4a, and 4.5a.

4.1.2 Procedure

Determine surface concentration of each radionuclide contributing significantly to exposure. Determine the relative contribution to the gamma exposure rate at 1 meter by multiplying each activity by the corresponding value in Table 4.3a (1st year), 4.4a (2nd year), and 4.5a (50 year).. Sum for all radionuclides present.

$$EDE = \sum \{ \text{Activity} \times \text{Dose Factor}_{(1, 2, \text{ or } 50 \text{ years})} \}$$

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4.2 Inhalation (CEDE)

4.2.1 Data Required

- a. Air concentration of each radionuclide contributing significantly to exposure (pCi/m^3)
- b. Tables of dose factors for inhalation of resuspended material due to an initial uniform concentration from the FRMAC Assessment Manual Table 4.3a (1st year), 4.4a (2nd year), and 4.5a (50 year)

4.2.2 Procedure

Determine concentration of each radionuclide contributing significantly to exposure. Determine the relative contribution to committed effective dose equivalent by multiplying each activity by the corresponding value in Table 4.3a (1st year), 4.4a (2nd year), and 4.5a (50 year). Sum for all radionuclides present. .

$$\text{CEDE} = \sum \{ \text{Activity} \times \text{Dose Parameter}_{(1,2 \text{ or } 50 \text{ years})} \}$$

4.3 TEDE

TEDE is the sum of the effective dose equivalent for external exposures and the committed effective dose equivalent for internal exposures.

$$\text{TEDE} = \text{EDE} + \text{CEDE}$$

4.4 Skin Beta Dose

4.4.1 Data Required

- a. Surface concentration of each radionuclide contributing significantly to exposure (pCi/m^2)
- b. Tables of skin beta dose conversion factors for deposited radionuclides from the FRMAC Assessment Manual Table 5

4.4.2 Procedure

Determine surface concentration of each radionuclide contributing significantly to exposure. Determine the skin beta dose by multiplying each activity by the corresponding value in Table 5. Sum for all radionuclides present.

$$\text{Beta Dose} = \sum \{ \text{Activity} \times \text{Dose Parameter} \}$$

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5.0 INGESTION PATHWAY

Section 3 of Procedure H describes the pathways of concern during the early phase or plume phase. Once the plume has passed, there are other pathways of concern, resulting from the deposition of radioactive materials from the passing cloud. This section describes the approach used to calculate potential doses resulting from ingestion of contaminated foodstuffs. Dose assessment techniques are presented here for CEDE and CDE_{thyroid} exposures resulting from ingestion of contaminated food. In addition, calculations of accident-specific derived intervention levels (DILs) are presented to aid in decisions regarding food embargo.

5.1. CDE Thyroid Exposure (Ingestion Pathway)

5.1.1 Data Required

- Concentration of radionuclide of interest in food of interest, (pCi/kg for solids, pCi/l for liquids)
- Dose conversion factor (mrem/pCi) (from the thyroid column of Table 2.2 in Federal Guidance Report No. 11 for standard man)
- Annual ingestion rate (kg/yr or l/yr)

NOTE: To convert Sv/Bq to mrem/ μ Ci, multiply by 3.7×10^9

5.1.2 Procedure

$$CDE_{\text{thyroid}} = \sum \{\text{Concentration} \times \text{Dose Conversion Factor} \times \text{Annual Ingestion Rate}\}$$

The annual amount of a radionuclide ingested is calculated by multiplying the concentration of the radionuclide by the annual ingestion rate for the appropriate food. CDE_{thyroid} dose is calculated by multiplying the dose conversion factor for the radionuclide of interest by annual amount of that radionuclide ingested. For multiple radionuclides, sum contributions for all radionuclides. This dose can be related to other ingestion periods through consideration of the actual ingestion period and correction for decay that occurs prior to ingestion.

5.2. CEDE (Ingestion Pathway)

5.2.1 Data Required

- a. Concentration of radionuclide of interest in food of interest (pCi/kg or pCi/l).
- b. Dose Coefficient (mrem/pCi) (from the effective column of Table 2.2 in Federal Guidance Report No. 11 for standard man)
- c. Annual ingestion rate (kg/yr or l/yr)

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5.2.2 Procedure

The annual amount of a radionuclide ingested is calculated by multiplying the concentration of the radionuclide by the annual ingestion rate for the appropriate food. CEDE is calculated by multiplying the dose conversion factor for the radionuclide of interest by annual amount of that radionuclide ingested. For multiple radionuclides, sum contributions for all radionuclides. This dose can be related to other ingestion periods through consideration of the actual ingestion period and correction for decay prior to ingestion.

$$\text{CEDE} = \sum \{\text{Concentration} \times \text{Dose Coefficient} \times \text{Annual Ingestion Rate}\}$$

5.3 Calculations of Accident-Specific DILS

The Derived Intervention Levels (DILs) are limits on the concentrations of various radionuclides permitted in human food distributed in commerce for human consumption. DILs are expressed in units of $\mu\text{Ci/kg}$ or Bq/kg .

See Attachment 2 for derivation of DILs.

5.3.1 Data Required

- a. Isotopic analysis of contaminated food, Bq/kg
- b. Isotope specific DILs for most sensitive age group, Bq/kg (FDA PAGs Table D-6 and E-7)

5.3.2 Procedure

Divide the sample results by the appropriate DILS. If any ratio is greater than 1, the food exceeds the PAGs and embargo should be considered DO NOT sum contributions for all radionuclides.

6.0 OTHER METHODS

6.1 Each NFO has procedures for calculating the values listed above using plant-specific values. These procedures are listed in Attachment 8 and available at the SEOC, A&E Room.

6.2 The FRMAC Assessment Manuals contain procedures for calculating the values listed above. FRMAC Assessment Manuals are available in hard copy at the SEOC, A&E Room, or can be downloaded from <http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/manuals.aspx>

6.3 TURBO-FRMAC is the computer code that is used along with the FRMAC assessment Methods. TURBO-FRMAC is installed on all computers in the A&E room.

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7.0 TOTAL POPULATION EXPOSURE

Total population dose will be estimations will be performed consistent with the procedures contained in US NRC Regulatory Guide 1.109, Appendix D, using data derived using the above-listed procedures.

7.1 Population total effective dose equivalent (TEDE) and thyroid committed effective dose equivalents (CDE_{thyroid}) will be calculated annually for the population living within the 50-mile EPZ.

7.2 The 50-mile region may be divided into a number of sub-regions, consistent with the nature of the exposure from the radioactive release, i.e., population dose in areas downwind from the plant will be calculated separately from population dose in areas upwind from the plant or otherwise unaffected by the radioactive plume. Each sub-region will be described based on dispersion factors, population data, and other information.

7.3 All significant exposure pathways will be evaluated. For purposes of this evaluation, a significant pathway is one that contributes 10% or more to the total dose. Pathways include:

- Ingestion of potable water
- Inhalation of airborne effluents
- External exposure to airborne and/or deposited radionuclides
- Ingestion of aquatic and terrestrial food products

7.4 Calculation of total population dose will be the responsibility of the NYS Department of Health, Bureau of Environmental Radiation Protection. Technical assistance with this effort is available through the US DOE, Brookhaven National Laboratories.

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ATTACHMENT 2

INGESTION PATHWAY PROTECTIVE ACTION GUIDES

1. Protective Action Guides (PAG)

The PAG recommended by FDA is the more limiting of:

- 0.5 rem (5 mSv) committed effective dose equivalent (CEDE)
- 5 rem (50 mSv) committed dose equivalent (CDE) to an individual tissue or organ.

2. Derived Intervention Levels (DIL)

The DILs are limits on the concentrations of various radionuclides permitted in human food distributed in commerce for human consumption. DILs are expressed in units of $\mu\text{Ci}/\text{kg}$ or Bq/kg . DILs are calculated using the expression:

$$\text{DIL} = \text{PAG} / (f \times I \times \text{DC})$$

Where

- f is the fraction of food intake assumed to be contaminated
- I is the quantity of food intake in the appropriate period of time, kg
- DC is the dose coefficient for the specific radionuclide, $\text{rem}/\mu\text{Ci}$ or mSv/Bq .

The fraction f, of food intake that is assumed to be contaminated is equal to 0.3, except for ^{131}I in infant diets where f is equal to 1.0.

For a radionuclide whose decay half-life is 55 days or longer, the food intake, I, is taken to be equal to the annual dietary intake of food and beverage. For radionuclides with a half-life less than 55 days, I corresponds to the dietary intake over a period of time during which the radionuclide concentration decays to 0.01 of its initial value. For example, for ^{131}I , FDA uses a value which corresponds to food intake over a period of 60 days in calculating the DIL.

Because of the variation of I and DC with age, FDA calculated DIL values which correspond to 6 age groups. These are 3 months, 1, 5, 10, 15 years and adults. The most limiting DIL value for all age group diets is used as the limit for determining whether a food product can be allowed to be distributed for human consumption.

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The values used by FDA for the annual food and beverage intake for the different age groups are:

Age Groups	3 months	1 year	5 years	10 years	15 years	Adults
Annual Intake (kg)	418	506	660	779	869	943

The most limiting DIL and the corresponding age group have been given by FDA for a number of radionuclides (Tables D-6 and E-7 of the FDA's PAG document). The following are extracted from these tables:

Derived Intervention Levels			
Radionuclides	DIL Bq/kg	DIL μ Ci/kg	Limiting Age Group
⁸⁹ Sr	1400	0.038	3 months
⁹⁰ Sr	160	0.004	15 years
¹³¹ I	170	0.005	1 year
¹³² Te	4400	0.12	3 months
¹³⁴ Cs	930	0.025	Adult
¹³⁷ Cs	1360	0.037	Adult
Cs Group	1200	0.032	Adult
¹⁰³ R	6800	0.18	3 months
¹⁰⁶ Ru	450	0.012	3 months

3. Other Methods

Both TURBO-FRMAC and the FRMAC Assessment Manuals contain procedures for calculating DILs for these and other isotopes. In addition, there are procedures for calculating incident specific Derived Intervention Levels (DRLs) to be used as a surrogates for DILs.

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ATTACHMENT 3

Protective Action Guides for the Early Phase of a Radiological Incident		
Protective Action	PAG (projected dose)	Comments
Sheltering-in-place or evacuation of the public ^a	1 - 5 Rem (10mSv to 50 mSv) over four days ^b	Evacuation (or for some situations, sheltering in place) should be initiated when projected dose is 1 Rem (10 mSv).
Supplementary administration of prophylactic drugs – KI ^c	5 Rem (50 mSv) projected dose to child thyroid from exposure to iodine ^d	Requires approval of State/County medical officials.

^a Should begin at 1 rem (10 mSv) except when practical or safety considerations warrant using 5 rem (50 mSv); take whichever action (or combination of actions) that results in the lowest exposure for the majority of the population. Sheltering may begin at lower levels if advantageous..

^b Calculated dose is the projected sum of the effective dose from external radiation exposure (i.e., groundshine) and the committed effective dose from inhaled radioactive material..

^c Provides thyroid protection from radioactive iodines only. For other information on radiological prophylactics and treatment refer to information available on the FDA, CDC, and REAC/TS websites. ^d Thyroid equivalent dose.

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ATTACHMENT 4

Dose Guidance for Emergency Workers

Guideline	Activity	Condition
5 rem (50 mSv)	All occupational exposures	All reasonably achievable actions have been taken to minimize dose
10 rem (100 mSv) ^a	Protecting valuable property necessary for public welfare (e.g., a power plant)	Exceeding 5 rem (50 mSv) unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.
25 rem (250 mSv) ^b	Lifesaving or protection of large populations	Exceeding 5 rem (50 mSv) unavoidable and all appropriate actions taken to reduce dose. Monitoring available to project or measure dose.

^a For potential doses > 5 rem (50 mSv), medical monitoring programs should be considered.

^b In the case of a very large incident, such as an IND, incident commanders may need to consider raising the property and lifesaving response worker guidelines to prevent further loss of life and massive spread of destruction.

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ATTACHMENT 5

Protective Action Guides for Exposure to Deposited Radioactivity During the Intermediate Phase of a Nuclear Incident

Protective Action Recommendation	PAG (projected dose)^a	Comments
Relocate the general population ^b	TEDE \geq 2 rem (20 mSv) in the first year, 0.5 rem (50 mSv)/year in the second and subsequent years	Projected dose over one year
Apply simple dose reduction techniques ^c	TEDE <2 rem(20 mSv)	These protective actions should be taken to reduce doses to as low as practicable levels

^a The projected sum of effective dose equivalent (EDE) from external gamma radiation and committed effective dose equivalent (CEDE) from inhalation of resuspended materials, from exposure or intake. Projected doses refer to doses that would be received in the absence of shielding from structures or the application of dose reduction techniques. These PAGs may not provide adequate protection from some long-lived radionuclides.

^b People previously evacuated from areas outside the relocation zone defined by this PAG may return to occupy their residences. Cases involving relocation of persons at high risk from such action should be evaluated individually.

^c Simple dose reduction techniques include scrubbing and/or flushing hard surfaces, minor removal of soil from spots where radioactive materials may have concentrated, and spending more time than usual indoors or in other low exposure rate areas.

Longer Term Objectives of the Protective Action Guides

It is the objective of these PAGs to assure that the cumulative dose over 50 years (including the dose from the first and second years) will not exceed 5 rem.

For source terms from reactor incidents, a PAG of 2 rem projected dose for the first year is expected to meet both the second year and 50-year objectives through decay, weathering, and normal part-time occupancy in contaminated areas.

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[REDACTED]

[REDACTED]

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[REDACTED]

Original Information:

[REDACTED]

[REDACTED]

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ATTACHMENT 7

Contact List for Initiating Sampling Procedures			
Type	Agency	Title	Telephone#
Milk	A&M	Director, Division of Food Safety and Inspection	518-457-4492
Drinking Water Supplies	Health	Director, Bureau of Water Supply Protection	518-402-7650
Air	Health	Director, Bureau of Environmental Radiation Protection	518-402-7550
	Environmental Conservation	Chief, Radiological Sites Section	518-402-8789
Soil	Health	Director, Bureau of Environmental Radiation Protection	518-402-7550
	Environmental Conservation	Chief, Radiological Sites Section	518-402-8789
Farm products	A&M	Director, Division of Food Safety and Inspection	518-457-4492
Water (lakes & rivers)	Environmental Conservation	Chief, Radiological Sites Section	518-402-8789
Fish and biota	Health	Director, Bureau of Toxic Substance Assessment	518-402-7800
	Environmental Conservation	Chief, Radiological Sites Section	518-402-8789

This list is maintained by NYSDOH. Distribution of telephone numbers is controlled and numbers will be given on a need-to-know basis. Lists are updated on a quarterly basis.

During an emergency, staff from these agencies will be in the operation center at the State EOC. Requests for sampling will be coordinated through agency staff at the State EOC.

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ATTACHMENT8

NFO Dose Assessment Methodologies Available for Use at State EOC

<u>Dose Assessment Procedures</u>	<u>Citation from NFO Emergency Plan</u>
Nine Mile Point	Procedure EPIP-EPP-8, (current revision)
Ginna	Proc. EPIP - 2-4 (current revision) Proc. EPIP - 2-5 (current revision)
Fitzpatrick	EAP-4.1 (current revision)
Indian Point 2 and 3	EP-310 (current revision)

NOTE:

Licensee dose assessment procedures are maintained in the state EOC and are available for use by the Assessment and Evaluation staff. These documents are controlled by the respective licensee's document control procedures.

CAUTION:When evaluating licensee program outputs for CDE thyroid dose calculations, verify whether a time dependency is used to correct for isotopic decay. If the time factor is not utilized, the calculations may not be consistent with EPA and NRC RASCAL results. Also verify whether the program calculates child CDE_{thyroid} or adult CDE_{thyroid} . RASCAL calculates adult CDE_{thyroid} .

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ATTACHMENT 9

PROCEDURE FOR CALCULATING WORKER DOSE CORRECTION FACTOR

A&E staff will use this procedure to calculate a dosimeter correction factor to account for internal exposures. Since a dosimeter only measures external radiation exposure, a correction factor must be calculated to take internal radiation doses into account. This correction factor is multiplied by the dosimeter reading to calculate TEDE. This correction factor will be relayed to the counties in the affected EPZs as soon as information on the isotopic mix is available.

NOTE: IT IS IMPORTANT THAT THE COUNTIES AND EOF* ARE NOTIFIED IMMEDIATELY, SINCE THEY HAVE BEEN INSTRUCTED TO USE $C_f=1$ UNLESS TOLD DIFFERENTLY.

*EOF is for information purposes only.

These correction factors are estimates. Data used to calculate these correction factors are based on assumptions that may have large uncertainties.

PROCEDURE FOR USING RASCAL TO CALCULATE WORKER DOSE CORRECTION FACTOR (WITHOUT KI)

The following formula is used to calculate a dosimeter correction factor for emergency workers who have not ingested KI.

1. Once a release has occurred, run RASCAL using either the release rate or plant conditions option. Actual field measurements used to calculate I/NG ratio are the best data to input into RASCAL.
2. Extract the following data from the output summary:
 - Cloud shine dose (CS) = _____ Rem
 - Period ground shine dose (PGS) = _____ Rem
 - CEDE (inhalation) dose (CEDE) = _____ Rem

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3. Use the following formula:

$$C_f = \frac{(CS + PGS + CEDE)}{(CS + PGS)}$$

$C_f =$ _____

4. Transmit Correction Factor to appropriate counties.

**PROCEDURE FOR USING RASCAL TO CALCULATE WORKER DOSE
CORRECTION FACTOR (WITH KI)**

The following formula is used to calculate a dosimeter correction factor for emergency workers who have ingested KI. This correction factor is an estimate. Data used to calculate these correction factors are based on assumptions that may have large uncertainties.

1. Once a release has occurred, run RASCAL using either the release rate or plant conditions option. Actual field measurements used to calculate I/NG ratio are the best data to input into RASCAL.
2. Extract the following data from the output summary:
 - Cloud shine dose (CS) = _____ Rem
 - Period ground shine dose (PGS) = _____ Rem
 - CEDE (inhalation) dose (CEDE) = _____ Rem
 - Thyroid dose (THY) = _____ Rem

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3. Calculate the contribution from the thyroid dose to the total dose (ThyC):

$$\text{ThyC} = (\text{THY} * 0.03)$$

$$\text{ThyC} = \underline{\hspace{2cm}} \text{ Rem}$$

4. Use the following formula:

$$C_f = \frac{((\text{CEDE}-\text{ThyC}) + \text{CS} + \text{PGS})}{(\text{CS} + \text{PGS})}$$

$$C_f = \underline{\hspace{2cm}}$$

5. Transmit Correction Factor to appropriate counties.

**PROCEDURE FOR USING EPA DCFs to CALCULATE WORKER DOSE
CORRECTION FACTOR (WITHOUT KI)**

The following formula is used to calculate a dosimeter correction factor for emergency workers who have not ingested KI using the methods in the EPA PAG Manual. In order to use this method, you must know which isotopes are in the plume.

$$C_f = \frac{0.7 \text{ Rem/R} \times \text{TEDE}}{\text{EDE}_{\text{immersion}} + 1/96 \text{ EDE}_{\text{deposition}}}$$

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ATTACHMENT 10

A&E Staff Roles & Responsibilities

The following describe the various staff positions in the A&E room at the State EOC. For the most part, these positions are staffed by Radiological Health Specialists from the NYSDOH Bureau of Environmental Radiation Protection. The Department of Public Service, Department of Environmental conservation and NYS Energy Research and Development Authority provide supplemental staff as needed.

Command Liaison - This person interfaces with and provides technical information the decision-makers in the command room. S/He may make recommendations on behalf of the Commissioner of Health.

A&E Team Leader - This person is the team leader for the Assessment and Evaluation Team. S/He will be responsible for providing technical briefings and making protective action recommendations to Command and the Ops Room and overseeing all activities of the A&E Team.

Dose Assessment Team - These personnel will perform dose assessment calculations for both the plume and ingestion phases of the exercise based on plant conditions, release information field monitoring and sampling data. This includes plume modeling, calculation of DRLs and comparison of food sample data to the appropriate DILs. They will also provide plume models to GIS for incorporation into maps.

Dose Assessment Team Leader - This person is the senior Dose Assessment Team member and will review all dose calculations for accuracy prior to relaying this information to the A&E Team Leader, interface with the Field Team Coordinator for comparison of field team data with dose assessment calculations, compare results to the appropriate PAG and make protective action recommendations to the A&E Team Leader.

GIS Liaison - This person will assist the Field Team Coordinator with obtaining and organizing field team data, enter field team data into a spreadsheet for input into GIS, and serve as a liaison between A&E and GIS.

Message Coordinator - This person will coordinate information flow between the Health Desk and A&E, answer the telephone, assist in the preparation of outgoing messages, and monitor DisasterLAN (with the help of the Health Desk) for messages assigned to A&E or DOH.

Exposure Control Coordinator - Reviews information on radiation dose and contamination of state emergency workers, verifies operability of state PMCs, provides technical assistance and instructions to PMC team leader and Radiation Technical

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Specialist, calculates the dosimeter correction factor and relays it to the county and regional state field team coordinators.

Field Team Coordinator - Interfaces with county and regional field team coordinators, dispatches state field teams, plans monitoring routes and sampling locations, determines sampling priorities, reviews monitoring and sampling results, interfaces with senior Dose Assessment personnel for comparison of field team data with dose assessment calculations, plots field team information on maps (with the assistance of GIS) to delineate the extent of the plume and confirm plume modeling.

Engineering Liaison - This person interfaces with the engineering liaison at the EOF and utility technical representatives at the SECC. S/He is responsible for relaying and explaining technical information about the accident at the plant to A&E staff, Command and the Ops Room.

Information Coordinator - This person manages the information flow in A&E. This involves making necessary copies, organizing paperwork, posting relevant information on flip charts and DisasterLAN, answering telephones, etc.

FRMAC Liaisons - These persons will coordinate efforts with the FRMAC.

- The A&E Team leader will liaison with the FRMAC Operations Manager.
- The Dose Assessment Team Leader will interface with the FRMAC Assessment Manager.
- The Field Team Coordinator will interface with the FRMAC Monitoring Manager.

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**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE I - DISASTER INITIATED REVIEW**

DISASTER INITIATED REVIEW

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN

PROCEDURE I - DISASTER INITIATED REVIEW

1.0 PURPOSE

1.1 As a result of major coastal events on the eastern seaboard (Irene and Sandy), New York State, along with federal, local and NFO representatives have mutually defined the process steps and respective roles for conducting a Preliminary Capabilities Assessment (PCA) and Disaster Initiated Review (DIR) following a major event affecting local infrastructure surrounding any of the State's nuclear power generating sites.

1.2 The NRC has primary responsibility for ensuring the adequacy of emergency preparedness for commercial nuclear power plants. NRC defers to DHS-FEMA to assess the status of offsite emergency preparedness, via its Disaster Initiated Review, and to issue a Statement of Reasonable Assurance that the State(s) and local governments emergency plans can and will be implemented in a manner to ensure public health and safety in the event of an accident at an NRC licensed reactor facility.

1.3 The Memorandum of Understanding between DHS-FEMA and the NRC describes the responsibilities and the authorities of the two agencies. All agency decisions involving DHS-FEMA and NRC must take place between Headquarters offices. It is important to note that DHS-FEMA Headquarters management is the sole authority for generating a Statement of Reasonable Assurance. For this reason, direct communication and coordination between the two agencies is essential when events with the potential to impact the onsite or offsite emergency response infrastructure occur.

1.4 These events include, but are not limited to, hurricanes, tornadoes, floods, storms, fires, earthquakes, malevolent acts, and extended plant shutdowns (electric grid issues).

2.0 RESPONSIBILITIES

2.1 FEMA Region II

2.1.1 Preliminary Capability Assessment

(as described in FEMA DIR SOG and NRC Manual Chapter 1601):

- Organizes and conducts a brief, daily "preliminary capabilities assessment" (PCA) conference call federal, state, locals, licensee (power plant) at a pre-arranged specified time to gain an understanding of the conditions of the offsite infrastructure and State/County needs.
- Provides a brief checklist for offsite response organizations (ORO) to discuss for the PCA review (Road Closure, Power Distribution System Shortfalls, Emergency

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Responder capabilities, Reception Center/Personnel Monitoring Center capabilities, Sirens, etc.).

- Continues PCA discussions for determining a final assessment.
- Provides FEMA Radiological staff to State and County EOCs for support, assistance, coordination and gathering information. They will also serve as a communication conduit between the counties and FEMA for providing information regarding the status of the infrastructure.
- Conducts a final PCA for determining if State and County emergency plans can be implemented. If the results of the PCA that no further action is needed, FEMA Regional will notify via email to FEMA HQs that reasonable assurance remains intact and no further actions are needed. FEMA HQs notifies NRC HQs via email of decision.

2.1.2 Disaster Initiated Review

(as described in FEMA DIR SOG and NRC Manual Chapter 1601)

- Should the results of the PCA support that the State and County cannot implement their emergency plans due to infrastructure impediments and the lack of compensatory measures, a DIR will be recommended to FEMA HQs.
- FEMA HQs initiates a conference call with the NRC to further discuss and for understanding the supporting information that could lead to a DIR.
- FEMA HQs makes a final decision and informs the NRC, in writing, if the decision is to perform a DIR.
- FEMA RII RAC will coordinate a 10-12 person team, including a licensee and NRC representative for physically and visually inspecting the infrastructure. The review will consist of interviews with OROs, review of reception centers, adequacy of evacuation roads, etc.
- FEMA reports the results of the DIR to FEMA HQs.
- FEMA HQs provides, in writing, to NRC HQs a formal letter of the results of the DIR and a reasonable assurance decision.

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2.2 Nuclear Regulatory Commission

2.2.1 Preliminary Capability Assessment

(as described in FEMA DIR SOG and NRC Manual Chapter 1601)

- Region I State Liaison Officer (RSLO) serves as the communication conduit between the NRC and FEMA Regional.
- Serves as the communication conduit between the licensee and FEMA.
- Participates on all PCA calls and keeps NRC Regional and HQs informed of the results/concerns/issues resulting from these discussions.
- Helps facilitate concerns by licensee.
- NRC RI keeps licensee senior management informed of FEMA significant issues and concerns that need resolving and final results of the PCA calls.

2.2.2 Disaster Initiated Review

(as described in FEMA DIR SOG and NRC Manual Chapter 1601)

- Following understanding of FEMA's DIR decision, NRC HQs informs the NRC Region that a DIR will be conducted.
- NRC RI Management informs the licensee that FEMA will be conducting a DIR.
- RSLO supports the DIR team for evaluating the infrastructure and for understanding the related issues and assessments.
- Results of the DIR and a reasonable assurance decision will be communicated by FEMA HQs via teleconference, a written report in the required DIR format, and via a formal letter to NRC.
- NRC Regional Administrator reports the results of the DIR to the licensee and FEMA's reasonable assurance decision.

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2.3 New York State Office of Emergency Management REP

- Conducts State internal conference calls with representatives from the NY Public Service Commission (PSC) and the NY Independent System Operator (ISO) for understanding State concerns as a result of the disaster.
- Participates in FEMA-facilitated PCA conference calls and ensure Counties understand any concerns expressed by the PSC and ISO that may be considered “emergency response” issues.
- Supports County emergency response needs and help facilitate solutions, if needed.
- Provide support for compensatory measures needed in order for the counties to implement their emergency plan.
- Should FEMA conduct a DIR, serve as a member of the DIR team.

2.4 New York State Department of Public Service

- Participates in FEMA PCA/DIR facilitated conference calls to provide information on bulk power system supply needs and electronic distribution and transmission system shortfalls.
- Coordinates communications with the New York Independent System Operator (NYISO).

2.5 County Offices of Emergency Management REP

- Participates in FEMA PCA pre-arranged conference calls.
- Provides to FEMA a “contact” person for communicating messages and requests. This will assist FEMA during times when the lead County representative is unavailable due to competing emergency response duties. This individual could also serve as a participant/communicator during the PCA calls.
- County Jurisdiction(s) will assess ability to support their Radiological Plan annex based on response.
- Should FEMA conduct a DIR, provide the necessary staff for supporting the DIR team.

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2.6 Licensee (Power Plant)

- Prior to storm or other impending event, hold discussions with NRC RI and FEMA RII for understanding and coordinating communications with all involved parties.
- Will keep NRC informed on plant status immediately following the event and provide restart estimates as soon as possible.
- Participate on FEMA PCA conference calls and provide assistance to support local radiological plan requirements including, sending licensee representatives to County EOCs, if requested, and other needs.
- Provide routine updates to licensee management.
- Should FEMA conduct a DIR, serve as a member of the DIR team.

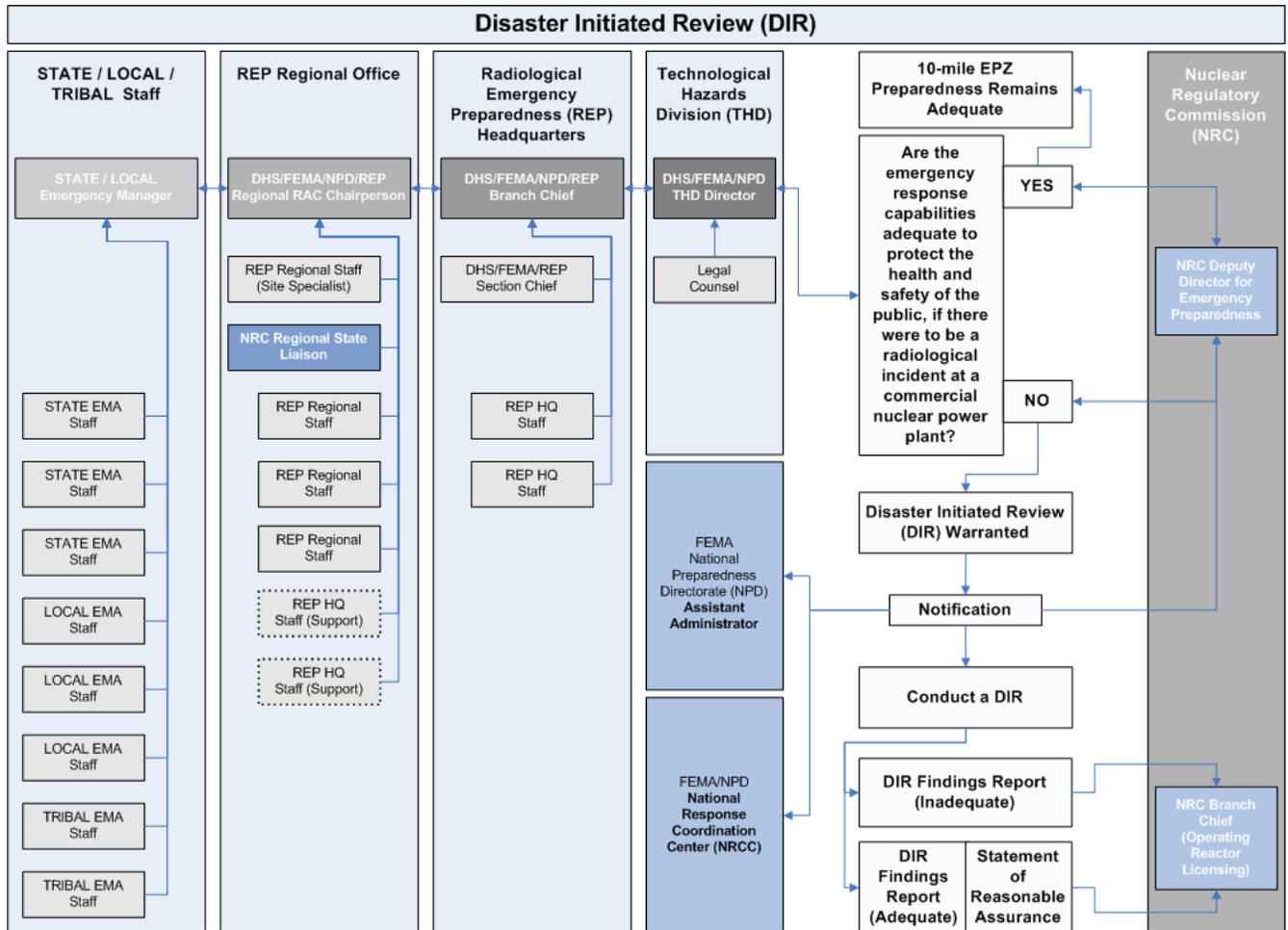
2.7 Group Requirements

- Situational Awareness will be maintained by all parties until PCA or DIR have been completed and the power plant back to normal operations, with the ORO's able to respond to radiological event as per plan guidelines.
- The group should regularly review outcomes and discuss changes based on recent disaster events in New York and elsewhere that have consequence on radiological emergency planning and the DIR process.

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Attachment 1

Graphic of DIR Process



**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE K - RADIOLOGICAL INGESTION EXPOSURE**

RADIOLOGICAL INGESTION EXPOSURE

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NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN

PROCEDURE K - RADIOLOGICAL INGESTION EXPOSURE

1.0 INTRODUCTION

The purpose of this procedure is to establish a framework for the responsibilities of the New York State Disaster Preparedness Commission (DPC) with respect to the radiological ingestion exposure pathway. This procedure also identifies State agency emergency management readiness, response and recovery activities.

The contents of this document reflect the current policies and criteria associated with managing the radiological ingestion exposure pathway from the operating nuclear power plants located within New York State, as well as those that border the State, and therefore require an ingestion exposure pathway component for response. Attachment 1 depicts the operating nuclear power plants for which this procedure has been developed.

The information identified in this procedure relies upon the ability of the DPC, through appropriate State agencies, to accomplish the following:

- activate appropriate State agency field staff;
- collect, transport and analyze ingestion pathway samples;
- assess and evaluate the potential impact of ingestion pathway contamination; and
- alert local governments of the emergency and the potential for adverse public health impact.

The DPC is responsible to the Governor for the implementation of the radiological emergency preparedness program. This procedure calls for State agency coordination among federal and local governments, the nuclear facility operators, and the private sector for information, technical assistance and/or resources as necessary.

In response to an ingestion pathway incident, State, County and Federal governments will all be responsible for specific roles and activities in a coordinated response. The State's role, which is built around existing regulatory authority and ongoing programs, includes:

- assessment of impact;
- evaluation of response options; and
- implementation of necessary response actions

The role of the Federal government, which would be assisting the State through the Department of Energy, the Federal Radiological Monitoring and Assistance Center, and the National Response Framework, would include:

- technical resource supplement;
- personnel;
- monitoring and assessment; and

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- laboratories

The impacted county(ies) would be called upon to provide the following support:

- maintenance of ongoing monitoring programs (i.e., public water supply);
- providing information on local agriculture, producers and their premises locations;
- guiding State/Federal responders; and
- supporting State response for ingestion concerns

The licensee that owns the affected plant would continue to work to stabilize and return the plant to pre-accident conditions. Offsite monitoring would also be supplied by the licensee to supplement the county/state resources.

When considering ingestion pathway responses and actions, short term and long-term aspects of this response must be kept in mind. Short-term consideration would be given to establishing intensive monitoring, sampling and evaluation programs aimed at preventing contamination of foodstuffs and water or minimizing consumption of contaminated foodstuffs and water. Long term considerations will include: identification of restricted zones requiring relocation of the impacted population; return to this area once radiation levels have been reduced and dealing with the economic impact of an ingestion pathway incident.

Technical Federal support is an integral part of New York State's ingestion pathway response. In the early hours of a radiological emergency, support will be provided through the US Department of Energy's (USDOE) Radiological Assistance Program (RAP) and Federal Radiological Monitoring and Assessment Center (FRMAC) Home Team. Technical expertise with sophisticated monitoring, sampling and laboratory analysis capability will be provided through the RAP Team located at the Brookhaven Area Office. The RAP Team can immediately initiate communications and begin to assist with data analyses, request additional DOE support if needed, and provide data products while en route.

If the emergency conditions warrant, the Federal Radiological Monitoring and Assessment Center (FRMAC) will be activated to obtain Federal interagency technical support. FRMAC is administered by USDOE. USDOE will provide sophisticated aerial monitoring capability and plume modeling using NARAC. USDOE resources from Region I will be supplemented as required from other DOE facilities including the National Laboratories. (See Procedure H, for a complete summary of available Federal assistance.)

Sampling teams, which will be fielded by NYS in response to ingestion concerns, can be comprised of representatives from the DPC agencies and USDA, depending upon the situation. The DPC agencies will provide vehicles for the transport of the sampling teams and for the transport of samples to the DOH lab in Albany.

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Each State agency which has a role in responding to an ingestion exposure pathway incident will use existing agency procedures based upon its responsibilities as defined in the NYS REP Plan.

2.0 CONCEPT OF OPERATIONS

The concept of operations for this procedure stems from those existing governmental and licensee responsibilities currently identified within this plan. The procedures contained in this plan form the basis for State response to an ingestion exposure pathway incident. However, unlike the plume exposure pathway, the radiological exposure concerns from the ingestion pathway are not as direct and may not require immediate protective actions. The information contained within this procedure centers around these ingestion exposure pathways (see Attachment 2):

- Milk
- Foodstuffs
- Animal feeds
- Water

From an emergency management and public health perspective, the milk pathway is of primary concern. The radioactive materials enter the human food chain through deposition of radioactive material to pasture land, ingestion and concentration of this radioactive material by lactating animals, and consumption of contaminated milk and further concentration of radioactive materials by the human population. The two-step concentration of radioactive materials plus the short time period between initial deposition of the radioactive materials and its ingestion by the public, amplified by the potential detrimental impact upon children and infants who are most sensitive to the biological effects of radiation, are what make the milk pathway a critical concern.

For potential ingestion exposure pathways, State agencies have prepared procedures which would be implemented under the direction of the Chairman of the DPC. The DPC Chairman is designated as the lead agent on behalf of the Governor. Appropriate State agency procedures contain information for sampling, detecting the presence of contamination, analyzing and evaluating the problem, and recommending and implementing protective actions.

Response levels for Protective Actions Guides are based on US Food and Drug Administration guidance, shown in Attachment 2 to Procedure H (USFDA PAG's).

2.1 Notification Information and Coordination of Agency Response and Recovery Procedures

Coordination and communication are necessary to effectively implement ingestion exposure pathway protective actions. New York State, through the NYSOEM system,

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will coordinate all operational and informational requirements with local governments and bordering states and the Province of Ontario. NYSOEM will insure that this information is coordinated among appropriate officials as necessary in accordance with the State Comprehensive Emergency Management Plan (CEMP) and the REPP. In addition, State agencies, as appropriate, will maintain periodic contact with counterparts in contiguous states and provinces to provide specific details pursuant to respective responsibilities.

3.0 ALERT AND NOTIFICATION

Procedures for the alert and notification of State agencies for a nuclear power plant accident are contained in Procedure B of this plan, and will be used as appropriate for mobilization of State agencies for the ingestion exposure pathway response. Procedures for notification of other affected governments are also contained in Procedure B. This ingestion procedure deals with the responsibilities of State Government for alert and notification to local government and other appropriate officials in the event of an ingestion exposure pathway concern.

When the State Planning Section, A & E Branch confirms that radiological ingestion is of concern, NYSOEM will implement procedures for alert and notification of all potentially affected local governments. State assessment personnel will provide NYSOEM with a listing of those counties within the actual or potentially affected areas, and will also provide continual status updates. NYSOEM will notify appropriate State agencies that send representatives to the State EOC, and potentially affected local governments. In addition, notification will be made to other states and the Province of Ontario (as appropriate) and the Federal Emergency Management Agency (FEMA) who will in turn notify appropriate Federal agencies and Canadian officials.

Appropriate attachments contained in Procedure B comprise NYSOEM's procedures for alert and notification, by operating nuclear power plant site, for the ingestion exposure pathway.

In the event that expeditious notification to county emergency management offices is required, NYSOEM will use NY-Alert, the National Warning System (NAWAS) and New York State Police Information Network (NYSPIN). NAWAS and NYSPIN provide the capability for simultaneous notification of local governments on the circuit.

The alert and notification procedures, as defined for the three operating nuclear power plant sites in New York, can be expanded to cover all NYS, or different areas of NYS, as the situation warrants.

As a means of augmenting alert and notification for an incident, DPC agencies will employ their respective communications systems.

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4.0 DIRECTION AND CONTROL RESPONSIBILITIES

In the event of a nuclear power plant incident, Emergency Operations are managed from the Command Room at the State EOC in Albany. From this location, the Chairman of the DPC (as the Governor's designee) and other State officials direct the emergency management response and recovery operations. The Command Room is supported by the Operations Section, the Planning Section (including radiological assessment and evaluation), communications and public information. These components provide the necessary information to Command Room personnel to facilitate the State's decision-making.

From the Command Room, decisions concerning State response and recovery are provided.

The objectives of the Command Room operation are:

- to assess the magnitude of the situation;
- define radiological impact;
- implement procedures to respond to the situation;
- implement protective actions;
- initiate public information procedures;
- coordinate all actions with appropriate government officials.

With respect to a plume exposure pathway response, Command Room personnel use the existing "Executive Hotlines", which are dedicated landlines, or other bridge lines to coordinate emergency management actions with County Executive personnel. Attachment 3 depicts Command Room informational flow and coordination responsibilities for the ingestion exposure pathway.

The following is a checklist of Command Room activities which will be completed in the event of an ingestion exposure pathway incident:

- assess the magnitude of the ingestion pathway concern
- determine appropriate protective actions to be employed to protect public health, property and the environment
- implement protective actions or measures as required in coordination with local officials

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- coordinate the dissemination of public information through the Joint Information Center (when one exists);
- keep local officials informed of protective action recommendations (PARs), the implementation of PARs and public information;
- determine the requirement for Federal resources that may be necessary to augment the State efforts pursuant to the National Response Framework, or the U.S. Department of Energy's Radiological Assistance Program;
- provide periodic briefings to the Governor from the Chairman of the DPC on the current and projected status of the incident and provide recommendation on the requirement for a State Disaster Emergency Declaration pursuant to Article 2-B of State Executive Law;
- as the incident progresses, evaluate protective actions and adjust as necessary in the interest of public safety;
- provide periodic updates on the status of the management of the incident to all components in the State EOC ;
- manage the implementation of short- and long-term State recovery actions; and
- insure that all information is coordinated with other bordering states and the Province of Ontario, Federal authorities and the nuclear facility operator.

5.0 ORGANIZATIONAL RESPONSIBILITIES

In the event of a radiological ingestion exposure pathway accident, State agencies will provide the necessary resources to protect public health, property and the environment. State agencies involved in the ingestion exposure pathway response will use their own specific agency procedures. Activities will be coordinated by NYSOEM at the State EOC. The following is a listing of the State Agency responsibilities associated with the radiological ingestion pathway:

5.1 Department of Health

As the State's lead agency for the protection of public health for radiological incidents, DOH will:

- collect samples of potable water, soil, produce and vegetation;
- take environmental radiation measurements;
- provide laboratory analysis for samples taken in the field;
- recommend protective actions;

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- assist in the coordination and delivery of public information relating to protective actions implemented;
- serve as the focal point in the State EOC for the analysis and assessment of radiological information;
 - provide technical training as required;
 - provide technical support for Personnel Monitoring Centers (PMC's).

5.2 Department of Agriculture and Markets

- maintain an inventory of dairy farms, food processing plants and stock farms;
- coordinate with USDA and local farm bureau representatives and cooperative extension agents to identify crop farms, dairy farms, food processing plants, and stock farms in the affected areas;
- collect samples of milk;
- may collect produce, meats, animal feeds, etc., from the marketplace;
- recommend protective actions;
- implement protective actions as appropriate for milk, produce and animal feeds;
- embargo produce and milk in contaminated areas;
- restrict use of animal feeds;
- provide information and direction to farmers within the affected areas;
- assist in the development and release of public information;
- coordinate with appropriate local and federal agencies (Farm Bureau, Cooperative Extension, USDA) for necessary resources;
- provide technical training as required;
- identify milk shed, including location of dairy farms and amount of milk produced in each EPZ;
- maintain an inventory of milk processing plants and subsequent sale locations;
- identify affected crops prioritize sampling according to harvest date; and
- identify time of year for cows and goats on pasture.

5.3 Department of Environmental Conservation

- collect samples of environmental flora and fauna;
- collect samples of other environmental media to aid later evaluation of environmental transport;
- using agency resources, transport samples to laboratory facilities;
- implement protective actions with respect to environmental flora and fauna;
- assist in public information for protective actions;
- support communications using agency resources;
- provide regulatory oversight for waste management and disposal;
- assist Ag & Markets with on-farm disposal of contaminated milk and animal wastes;
- assist the State DOH in radiological assessment at the State EOC;
- assist DOH in field monitoring and other activities.

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5.4 Division of State Police

- provide division resources to support communications;
- expedite the delivery of samples for laboratory analysis;
- maintain access control points; and
- provide personnel to staff State Emergency Worker Personnel Monitoring Centers (PMCs).

5.5 Department of Transportation

- provide resources for the transport of the mobile radiation laboratory
- assist in the maintenance of access control points
- support communications with agency resources
- provide resources and personnel to staff State Emergency Worker PMCs
- maintain accessibility of routes during severe weather conditions.

5.6 State Office of Emergency Management

- act as transportation coordinator for collection and transportation of samples to appropriate laboratories
- provide coordination for response and recovery activities for the State EOC and the NYSOEM Regional Offices, if activated
- provide notification to Federal, State and local governments
- provide training and awareness to State and local officials
- coordinate the delivery and implementation of resources to sustain operational requirements
- support communications with agency resources
- coordinate the State's Public Information Program
- assist in the implementation of protective actions
- coordinate the overall ingestion pathway planning components of the State's procedure
- provide liaison to appropriate Federal agencies
- provide dosimetry and survey and sampling equipment.

6.0 PUBLIC INFORMATION RESPONSIBILITIES

The potential magnitude and impact of an ingestion exposure pathway incident requires an extensive public alert and notification capability on the part of state and local government. There is a requirement for notification to the general public, agricultural industry, retail and wholesale food and commodity distributors, industrial representatives and other appropriate entities.

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Procedures exist in this plan for providing public information during a nuclear power plant incident. Through the use of a Joint Information Center (JIC) located near to the potentially affected area, local, State, Federal and licensee public information officers coordinate and disseminate all information to the general public on the status of the incident and protective measures to be employed for public safety. The JIC (when one exists) is the designated location for the release of information to the public during an ingestion exposure pathway response.

The JIC may, at the discretion of the NYS DPC, continue to operate for the initial portions of an ingestion pathway response. For long-term ingestion pathway activities, the public information function may return to Albany. In the event that no JIC exists in the areas with ingestion pathway impact, the information will be provided to the public from Albany or another designated location.

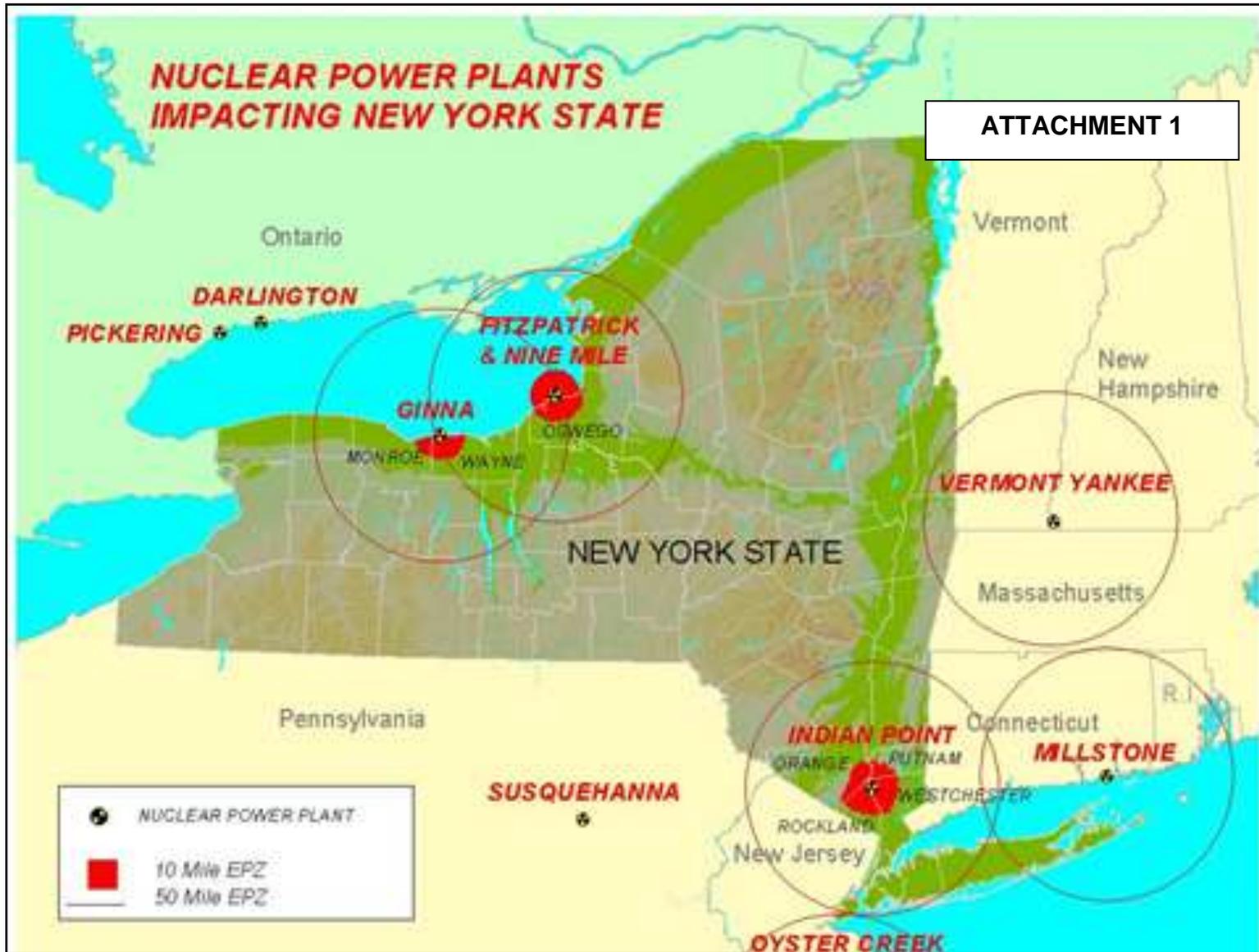
To provide effective public information releases to the general public, the New York State Emergency Alert System (EAS) can be activated if determined to be necessary. Additionally, NY-Alert may be used to disseminate EAS and other emergency notifications. The primary means for accessing EAS for dissemination of protective action decisions will be with the assistance of local access (county) personnel. If the EAS cannot be accessed locally, or if a large region must be notified simultaneously, NYSOEM will coordinate the issuance of the message via EAS as appropriate. (Reference EAS procedures on file at the EOC.) Public information may also be disseminated to specific areas through NY-ALERT and/or reverse dialers such as CODE RED or Hyper Reach.

While the JIC is operational, all public information news releases and EAS and other messages will be compiled and written at the JIC. This information will be provided to the representative for the public information function at the State EOC upon completion.

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PROCEDURE K - RADIOLOGICAL INGESTION EXPOSURE

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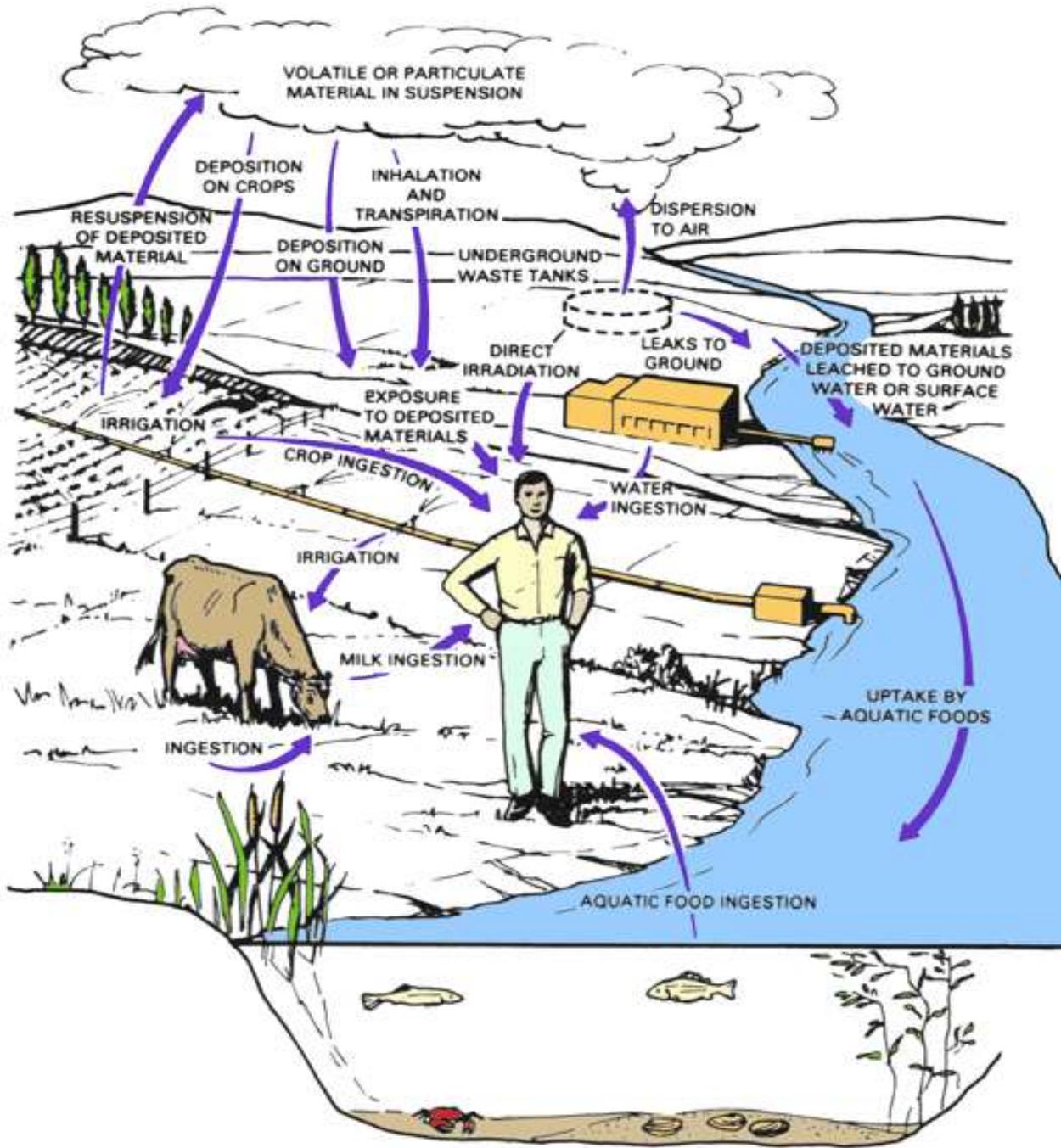
**NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE K - RADIOLOGICAL INGESTION EXPOSURE**



NEW YORK STATE RADIOLOGICAL EMERGENCY PREPAREDNESS PLAN
PROCEDURE K - RADIOLOGICAL INGESTION EXPOSURE

ATTACHMENT 2

PATHWAYS FOR EXTERNAL AND INTERNAL EXPOSURE OF MAN
FROM AIRBORNE AND LIQUID RELEASES OF RADIOACTIVE EFFLUENTS



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