United States Nuclear Regulatory Commission Official Hearing Exhibit
In the Matter of: Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3)
ASLBP #: 07-858-03-LR-BD01
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Exhibit CLE00014b
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1.0 Purpose

This procedure provides guidance for the Commissioner of Corrections to implement the Westchester County Radiological Emergency Plan for the Indian Point Energy Center.

2.0 Responsibilities

The Westchester County Department of Public Safety is responsible for coordinating law enforcement activities within the county during any emergency, including an emergency at Indian Point.

Implementation of law enforcement activities is a shared responsibility among New York State Police, County DPS and local police departments based upon established areas of jurisdiction.

The County Department of Corrections may also provide Corrections Officers as a resource to supplement county, state and local law enforcement resources.

For the purpose of Indian Point emergency procedures, law enforcement personnel will be responsible for traffic and access control throughout the impacted areas.

3.0 Concept of Operations

3.1 Overview of Law enforcement Response

3.1.1 The Westchester County Commissioner-Sheriff of Public Safety and the Public Safety Staff will operate from the

county EOC and coordinate with law enforcement to provide the following activities:

- Traffic direction and control in accordance with the emergency plan
- Route alerting and assistance with the dissemination of emergency announcements
- Maintain law and order; protect critical facilities and supplies
- Ensure public safety
- Protect public and private property

3.1.2 The Westchester County Commissioner-Sheriff will request local Police Departments to notify their regular and auxiliary personnel to report to their police stations and verify that the New York State Police are proceeding similarly.

3.1.3 The Commissioner-Sheriff will assign personnel to and will request local Police Departments to immediately assign police to those locations which are most likely to become congested, especially those near the plants, until the traffic control personnel are in place.

3.1.4 Local Police Departments will activate traffic control dispatchers in police stations to make traffic control assignments and distribute equipment (e.g., dosimeters, vests).

3.1.5 Traffic control personnel will report to their police stations to get assignments and pick up equipment.

3.1.6 The Commissioner-Sheriff will advise local Police authorities to request County, Town, City and Village Public Works and Highway Departments to man and deploy tow trucks to pre-designated locations (Table 5). Additional tow trucks may be requested if necessary from the New York State Department of Transportation Region 8 Director and private operators.

3.1.7 The New York State Police will perform the above functions as appropriate, in areas under their jurisdiction (Town of Cortlandt, Town of Somers, State Highways) in coordination with the Director of the Office of Emergency Management and the Commissioner/Sheriff, will deploy available State

Police helicopters to monitor traffic in affected areas and will communicate, as necessary with County and local Police authorities. The New York State Police may close Bear Mountain Bridge to all but emergency traffic, if appropriate, and inform the State Bridge Authority and the Bridge Manager of this action.

3.1.8 The County Department of Corrections may also provide Corrections Officers as a resource to supplement county, state and local law enforcement resources.

3.1.9 The Commissioner-Sheriff may request assistance from the Commissioner of the Department of Emergency Services, as personnel are available, for traffic control activities. Activities of fire personnel will be directed by their respective Department Chiefs, as coordinated by the Commissioner of the Department of Emergency Services.

3.1.10 The Commissioner-Sheriff may request assistance from the Commissioner of Public Works or request that local Police authorities request assistance from their local Highway or Public Works Departments, in the placement of barricades, signs, etc. or for other appropriate support.

3.1.11 The Commissioner- Sheriff will assist the County Commissioner of Parks, Recreation and Conservation by assigning or requesting forces to clear the parks, directing EPZ residents to leave the EPZ or affected AREA's directly or to return home, according to the decision of the EOC (Attachment 8).

3.1.12 The County will provide backup courtesy notification to Sing Sing Correctional Facility, a state corrections facility. The state is responsible to primary notification. Sing Sing will shelter its prison inmates unless otherwise directed by the State Commissioner of Corrections.

3.1.13 Other jails and lockups located in evacuating areas will begin preparations for inmate transfer, sheltering-in-place or release, according to the joint decision of the EOC and the Commissioner/Sheriff. Should the need arise to find alternate housing for prisoners in local detention facilities, the administration of the detention facility should contact the State Department of Corrections with a request for a substitute jail order. During evening hours and weekends, the Department will have an Officer-of-the-Day assigned to

whom the emergency request for a substitute jail order may be made. In such emergency, the Department may be reached at (518) 474-1416.

3.1.14 The Commissioner-Sheriff will assign personnel to and will request local Police Departments to deploy patrols to locate and aid in accidents, to provide information and assistance to evacuating persons and to report areas or locations with serious congestion problems to the traffic control dispatcher.

3.1.15 The Commissioner-Sheriff will assign personnel to and request local Police Departments to provide traffic control and security at reception centers and congregate care centers, as they are activated (see map in EOC).

3.1.16 The Commissioner-Sheriff and local Police Departments will coordinate activities as needed with the Metro North/Conrail Police Department.

3.1.17 After traffic control appears no longer to be needed at a specific traffic control point, the traffic control worker will report back to his/her traffic control dispatcher for further instructions (remain at post, evacuate or be reassigned).

3.1.18 The Commissioner-Sheriff will assign personnel to and request local Police Departments to maintain ingress control checkpoints at the perimeter of the EPZ or affected AREA's. Ingress to evacuated areas will be permitted at the discretion of the Westchester County Commissioner of Health.

3.1.19 The Commissioner-Sheriff will assign personnel to and request local Police Departments to patrol the EPZ or affected AREA's for confirmation of evacuation, to the extent possible, to provide security for evacuated areas and possibly to identify those persons who refuse to evacuate and their locations.

3.1.20 The Commissioner-Sheriff may assign personnel to and request local Police Departments to assist in traffic control operations to ensure the orderly return of evacuees to their home areas.

3.2 Backup Route Alerting

3.2.1 When notified that one or more Indian Point emergency warning sirens has failed, it may be necessary to notify

directly the public located in the vicinity of the siren(s). The primary backup notification means will be the GeoCast automated telephone notification system. Geocast will be activated by OEM staff. The County Warning Point will notify the on duty OEM representative upon notice of a siren failure.

3.2.2 An additional backup means of notification may be route alerting. If necessary, the Commissioner of Emergency Services will coordinate with the Emergency Operations Center (EOC) Law Enforcement representatives to dispatch one or more police vehicles to the area to take the following actions:

1. Go to a designated starting point in the area.

2. The dispatcher will direct the operator of the police vehicle to follow a prescribed route[1] and to give the following messages using a megaphone, bull horn or the vehicle public address system:

   "Attention. There is an emergency at the Indian Point Nuclear Power Plant. Turn on your radio for emergency instructions. I repeat, there is an emergency at the Indian Point Nuclear Power Plant. Turn on your radio for emergency instructions. "

3. In the event of a siren failure prior to the effective manning of the EOC, the action described in Paragraph 2 above may be ordered by the officer-in-charge at the County Warning Point.

3.2.3 Law enforcement personnel within the EPZ have been provided route altering maps and checklists. See route alerting checklist, Checklist 3, of this procedure.

3.3 IPEC Security Related Events

3.3.1 For any security-related event which occurs at Indian Point, Westchester County Department of Public Safety will dispatch the County Director of Homeland Security (or designee) to the site.

3.3.2 This individual will obtain dosimetry and KI prior to being dispatched to the scene.

3.3.3 The County Director of Homeland Security will operate from the plant site at either the Emergency Operations Facility or, if activated, the IPEC Security Incident Command Post.

3.3.4 The Director of Homeland Security will serve as the county's liaison to any site Incident Command/Unified command system assembled to address security issues, including any Federal government Joint Field Operations Center (formerly referred to as Joint Operations Center) established for terrorist events.

4.0 References

4.1 Indian Point Energy Center, Development of Evacuation Time Estimates, dated May 2003, by KLD Associates, Inc. (includes Traffic Management Plan diagrams)

CHECKLIST 1 Department of Public Safety EOC Procedure	Unusual Event

_____ 1. Upon notification from Entergy of an Unusual Event, the County Warning Point (CWP) will notify the County organizations on the Unusual Event call list, including the Commissioner-Sheriff of Public Safety.

Notes: _____

_____ 2. The Commissioner-Sheriff of Public Safety will evaluate the need to notify other department al staff. For incidents involving security events at the plant, the Director of Homeland Security will also be notified.

Notes: _____

_____ 3. Monitor the event and stand by for possible escalation to an ALERT, or until the UE is terminated.

Notes: _____

_____ 4. Upon notification of termination of the classification, contact Public Safety staff to stand down and inform them that the UE has been terminated.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	ALERT

_____ 1. Upon receipt of notification of an Alert respond to the EOC and staff assigned positions.

Notes: _____

_____ 2. Perform additional internal agency notifications, as deemed appropriate, placing off-duty personnel on standby.

Notes: _____

_____ 3. Deploy appropriate personnel to the EOC.

Notes: _____

_____ 4. Notify Department of Public Safety on-duty personnel assigned to traffic control to pick up dosimeters, TLD's, Potassium Iodide (KI), and emergency worker exposure cards from Headquarters and Cortland Precinct.

Notes: _____

_____ 5. Ensure all local police agencies have received notification of the ALERT and place them on standby status.

CHECKLIST 1 Department of Public Safety EOC Procedure	ALERT, continued

_____ 6. Advise local police departments in the 10 Mile EPZ to issue dosimeters, TLD's, Potassium Iodide (KI), and emergency worker exposure cards to on-duty personnel.

Notes:_____

_____ 7. Assist the County Parks, Recreation and Conservation Department in closing parks and beaches. Refer to Attachment 4 for all recreation areas.

Notes:_____

_____ 8. Advise State, County and Local Police to locate and review route alerting map packets for their areas, review materials, and be prepared to conduct route alerting in the event of siren failure.

Note: the County Executive may direct sirens to be sounded any time there is a need to modify public behavior in response to an actual or potential emergency. This may occur as early as an Alert. Therefore, local police departments should be prepared to conduct route alerting as early as the Alert classification. **Route Alerting would only be necessary if the backup GeoCast automated notification system was not available.**

Notes:_____

CHECKLIST 1 Department of Public Safety EOC Procedure	ALERT, continued

_____ 9. Request local police departments to monitor traffic conditions and to report general status of road conditions, particularly on major evacuation routes.

Notes: _____

_____ 10. Coordinate efforts with State and Local police and the Department of Public Works to check on road construction and impediments within the ten mile EPZ to prepare for implementing the traffic management plan.

Notes: _____

_____ 11. Relay any information on road closures or traffic problems to the Department of Transportation EOC Representative and the Westchester County Public Information Officer.

Notes: _____

_____ 12. Coordinate efforts with State and Local police to assess the need for traffic control support to local schools in the event of a pre-cautionary transfer of school children.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	ALERT, continued

_____ 13. Brief the County Executive and OEM Director on the status of traffic control, construction activities, traffic impediments, the status of supporting agencies and any issues concerning public safety.

Notes: _____

_____ 14. Review Traffic Control Points (TCP's) and Access Control Points (ACP's) as necessary in accordance with the traffic management plan.

Notes: _____

_____ 15. Request local Fire Departments for traffic control needs, as appropriate.

Notes: _____

_____ 16. Prepare County Police helicopter for traffic monitoring, if necessary.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	ALERT, continued

_____ 17. Evaluate the need to request New York State Police helicopter to provide assistance with traffic monitoring if necessary. In the event the state helicopter is unavailable or delayed, consider the need for Civil Air Patrol (CAP) support. To arrange CAP support contact SEMO or the State Warning Point.

Notes: _____

_____ 18. Develop a 24 hour shift schedule for extended EOC operations (two 12 hour shifts) and notify replacements of schedule. Note: Have lead positions report to the EOC one half hour prior to their shift for turn over from the previous shift.

Notes: _____

_____ 19. If requested, provide police escort for Field Monitoring Teams.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	ALERT, continued

_____ 21. Standby for possible escalation to an SITE AREA EMERGENCY or until the ALERT is terminated and verbal confirmation is received from Indian Point.

Notes: _____

_____ 22. If the event is terminated, contact Public Safety staff to stand down and inform them that the ALERT has been terminated. Notify local police departments of the event termination.

Notes: _____

_____ 23. Collect dosimetry and KI and request processing of thermoluminescent dosimeters.

CHECKLIST 1 Department of Public Safety EOC Procedure	SITE AREA EMERGENCY

_____ 1. If not already staffed at the EOC, assure Public Safety Staff were notified to respond to the EOC and staff their assigned positions.

Notes: _____

_____ 2. Activate additional off-duty personnel necessary to staff all emergency functions.

Notes: _____

_____ 3. Notify Public Safety Staff to pick up dosimeters, TLD's, Potassium Iodide (KI), and emergency worker exposure cards from Headquarters and Cortland Precinct, prior to dispatch to field assignments.

Notes: _____

_____ 4. Ensure all local police agencies have received notification of the SITE AREA EMERGENCY and request that they man assigned traffic control points.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	SITE AREA EMERGENCY

_____ 5. Advise local police departments in the 10 Mile EPZ to issue dosimeters, TLD's, Potassium Iodide (KI), and emergency worker exposure cards to all responders.

Notes: _____

_____ 6. Advise State, County and Local Police to pick up route alerting map packets for their appropriate area and to be prepared to conduct route altering in the event of siren failure.

Notes: _____

_____ 7. Establish staging area for Mutual Aid issuance of TLD's, Potassium Iodide (KI), and emergency worker exposure cards, and notify responding mutual aid organizations of the location.

Location of Staging Area:

_____ 8. Request local police departments to monitor traffic conditions and to report general status of road conditions.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	SITE AREA EMERGENCY

_____ 9. Coordinate efforts with State and Local police and the Department of Public Works. Check on road construction and impediments to prepare for implementing the traffic management plan.
Notes:_____
_____
_____

_____ 10. Coordinate efforts with State and Local police and the Department of Public Works when relocating schools. (Note: Any movement of schools prior to a General Emergency is considered a precautionary relocation, not an evacuation. Terminology is important for public perception and maintaining calm.)
Notes:_____
_____
_____

_____ 11. Brief the County Executive and Commissioner of Emergency Services on the status of traffic control, construction activities, traffic impediments, the status of supporting agencies and any issues concerning public safety.
Notes:_____
_____
_____

_____ 12. Review Traffic Control Points and Access Control Points as necessary in accordance with the traffic management plan.
Notes:_____
_____
_____

CHECKLIST 1 Department of Public Safety EOC Procedure	SITE AREA EMERGENCY

_____ 13. Assess traffic control resource requirements in the event of evacuation. Request local Fire Department and Department of Corrections support for traffic control needs, as appropriate.

Notes: _____

_____ 14. In the event local resources are not adequate, forward requests for additional law enforcement support to the State EOC.

Notes: _____

_____ 15. Post activated traffic and access control points on EOC map.

Notes: _____

_____ 16. In the event of an Indian Point on-site evacuation or evacuation of the Indian Point Emergency Operations Facility (EOF), provide traffic control and escort support.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	SITE AREA EMERGENCY

_____ 17. Ensure police officers know the locations of reception centers and which centers are open.

Notes: _____

_____ 18. Ensure police officers are recording dosimeter readings every 15 to 30 minutes.

Notes: _____

_____ 19. Prepare County Police helicopter for traffic monitoring, if necessary. (Note: Pilot should be issued dosimetry and advised to avoid plume locations)

Notes: _____

_____ 20. Evaluate the need to request New York State Police helicopter to provide assistance with traffic monitoring if necessary. In the event the state helicopter is unavailable or delayed, consider the need for Civil Air Patrol (CAP) support. To arrange CAP support contact SEMO or the State Warning Point.

Notes: _____

CHECKLIST 1 Department of Public Safety EOC Procedure	SITE AREA EMERGENCY

_____ 21. Develop a 24 hour shift schedule for extended EOC operations (two 12 hour shifts) and notify replacements of schedule. Note: Have lead positions report to the EOC one half hour prior to their shift for turn over from the previous shift.

Notes:_____

_____

_____

_____ 22. Assist the County Parks, Recreation and Conservation Department in closing parks and beaches, not yet complete.

Notes:_____

_____

_____

_____ 23. If requested, provide police escort for Field Monitoring Teams.

Notes:_____

_____

_____

_____ 24. Standby for possible escalation to a GENERAL EMERGENCY or until the SITE AREA EMERGENCY is terminated and verbal confirmation is received from Indian Point.

Notes:_____

_____

_____

CHECKLIST 1 Department of Public Safety EOC Procedure	SITE AREA EMERGENCY

_____ 25. Contact Public Safety staff to stand down and inform them that the SITE AREA EMERGENCY has been terminated.

Notes: _____

_____

_____

_____ 26. Record any additional actions taken:

_____

_____

_____

_____

_____

CHECKLIST 1 Department of Public Safety EOC Procedure	**General Emergency**

_____ 1. If not already staffed at the EOC, assure Public Safety Staff was notified to respond to the EOC and staff their assigned positions.

_____ 2. Public Safety Staff notified to pick up dosimeters, TLD's, Potassium Iodide (KI), and emergency worker exposure cards from Headquarters and Cortland Precinct.

_____ 3. Upon confirmation by the Health Commissioner, advise all Law Enforcement personnel/emergency workers in the EPZ to take Potassium Iodide (KI), (note this should be automatic at a General Emergency. So if direction is not immediately provided, determine status with Health Department).

_____ 4. Confirm status of siren operations and Geocast. Advise State, County and Local Police to pick up route alerting map packets for their appropriate area.

_____ 5. Establish staging area for Mutual Aid issuance of TLD's, Potassium Iodide (KI), and emergency worker exposure cards.

_____ 6. Ensure all local police agencies have received notification of the GENERAL EMERGENCY.

CHECKLIST 4 Department of Public Safety EOC Procedure	**General Emergency**

_____ 7. Advise local police departments in the 10 Mile EPZ to issue dosimeters, TLD's, Potassium Iodide (KI), and emergency worker exposure cards.

_____ 8. Upon confirmation and direction from the County Health Commissioner, Advise all Law Enforcement Agencies/Emergency Workers the ten mile EPZ to take Potassium Iodide (KI) as per the SEMO Health Department protocol.

_____ 9. Establish Traffic Control Points TCP's as necessary in accordance with the traffic management plan.

_____ 10. Request local Fire Departments for traffic control needs as appropriate

_____ 11. Post activated traffic and access control points on EOC map.

_____ 12. If not already implemented, request local police departments to prepare to support possible evacuation by assisting with the following:

- School evacuation
- Manning designated traffic and access control points
- Reporting road conditions and impediments to the evacuation

CHECKLIST 4	General Emergency

_____ 13. Coordinate with the Department of Public Works to remove any impediments on the evacuation routes.

_____ 14. Notify County Police and Local Police to standby for route alerting assignments in the event of a siren failure.

_____ 15. Upon activation of the sirens, receive notice of any siren failures and ensure dispatch of appropriate police to perform route alerting and confirm units have proper route alerting maps

_____ 16. Ensure police officers are recording dosimeter readings every 15 to 30 minutes.

_____ 17. Dispatch County Police helicopter for traffic monitoring if not yet implement and assure personnel have dosimetry and KI.

_____ 18. Evaluate the need to request New York State Police helicopter to provide assistance with traffic monitoring if necessary. In the event the state helicopter is unavailable or delayed, consider the need for Civil Air Patrol (CAP) support. To arrange CAP support contact SEMO or the State Warning Point.

_____ 19. If not already implemented, assist the County Parks, Recreation and Conservation Department in closing parks and beaches.

CHECKLIST 4	General Emergency

_____ 20. Upon completion of evacuation or establishment of a shelter-in-place advisory, coordinate with State and local police to establish access control around impacted area.

_____ 21. Upon completion of emergency duties, ensure police departments in evacuated areas have relocated and have reported status and location.

_____ 22. If requested, provide police escort to Field Monitoring Teams.

_____ 23. Brief the County Executive and Deputy Commissioner of Emergency Services on the status of traffic control, construction activities, traffic impediments, the status of supporting agencies and any issues concerning public safety.

_____ 24. In the event of an Indian Point on-site evacuation or evacuation of the Indian Point Emergency Operations Facility (EOF), provide traffic control and escort support.

_____ 25. Develop a 24 hour shift schedule for extended EOC operations (two 12 hour shifts) and notify replacements of schedule. Note: Have lead positions report to the EOC one half hour prior to their shift for turn over from the previous shift.

_____ 26. Once Indian Point has determined all radioactive releases are controlled and terminated and the plant is in a stable condition advise the County Executive to enter Recovery/Re-Entry SOP's.

Checklist 2

Radiological Emergency Reference Guide
For Traffic Control Personnel

General Information

- Traffic Control Points (TCPs) may be established at an "Alert" Emergency Classification Level or higher (see Attachment 1).

- The purpose of Traffic Control Points is to assist in the rapid and orderly movement of vehicular traffic from risk areas.

  Note: After evacuation is complete, the perimeter of evacuated area will be secured. These locations staff by law enforcement personnel are referred to as Access Control Points (ACPs). Some of these locations may be the same as traffic control points. The only difference is timing and function. Access control points are manned after evacuation is complete to discourage traffic from entering risk areas which may be subject to evacuation or sheltering protective actions.

- Reference attached TCP description (Attachment 3) for specific instructions as to flow of traffic. Discourage the public from stopping to ask questions. Expediting traffic flow is the highest priority. Advise questioners to tune to their car radios for emergency instructions.

- In controlling access to restricted areas, keep traffic moving onto diversionary routes. Discourage vehicles from stopping to ask questions or to gain entry. Advise those insisting on entry that they may be entering a potential radiation area which could be hazardous to their health and that they enter at their own risk. DO NOT USE OR THREATEN TO USE FORCE TO PREVENT ENTRY.

- For your use and information, the enclosed Public Information Brochure identifies Emergency Alert system (EAS) radio stations, evacuation routes and reception center locations.

Personnel Protection

- Before dispatch to a traffic control point in a radiological emergency, obtain two direct reading dosimeters (DRDs); one thermoluminscent dosimeter (TLD); a radiation exposure control card; and potassium iodide (KI) pills from your supervisor. See Attachment 2.

Checklist 2
Radiological Emergency Reference Guide
For Traffic Control Personnel

- Clip the DRDs to clothing on your upper body between waist and shoulders (e.g., in a shirt or jacket pocket). Read DRDs every 15-30 minutes.

- DRD Reporting levels:

  - 1R – Notify your supervisor and record reading on the Exposure Record Card
  - 3R - Notify your supervisor and record reading on the Exposure Record Card. Supervisor will begin process to provide mission relief.
  - 5R - Notify your supervisor and seek relief from Duty. Record reading on the Exposure Record Card. Remain on duty until relieved.

  Note: The State or County Health Commissioner may authorize higher exposure levels. Exposure above 25R requires informed consent.

- The TLD is a more accurate permanent record device for recording your exposure. Clip the TLD to clothing on your upper body between waist and shoulders (e.g., in a shirt or jacket pocket).

- Potassium Iodide (KI) is an over-the-counter radioprotective drug used to block radioactive iodine from collecting in the thyroid gland. Only take KI when directed by your Supervisor. Only the State or County Commissioner of Heath can authorize emergency workers to take KI.

- **DO NOT SMOKE, EAT OR DRINK** while on assignment during a radiological emergency.

- After you complete your assignment, proceed to the Emergency Worker Personnel Monitoring Center (PMC) at Westchester County Fire Training Center , Grasslands Reservation, Valhalla, New York.

- Return dosimetry, KI and Radiation Exposure Card at the PMC.

CHECKLIST 2
ATTACHMENT 1
EMERGENCY CLASSIFICATION LEVELS
FOR THE INDIAN POINT ENERGY CENTER

Four categories are used to classify all reportable incidents at nuclear power plants starting with least severe:

Notification of Unusual Event – Events have occurred or are occurring that indicate a potential degradation of the level of the safety of the plant. No releases of radioactive materials potentially requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

Alert – Events are in progress which involve actual or potential substantial reduction of the level of safety of the plant. Any releases of radioactive materials are expected to be limited to small fractions of federal exposure limits and confined to the immediate area of the plant.

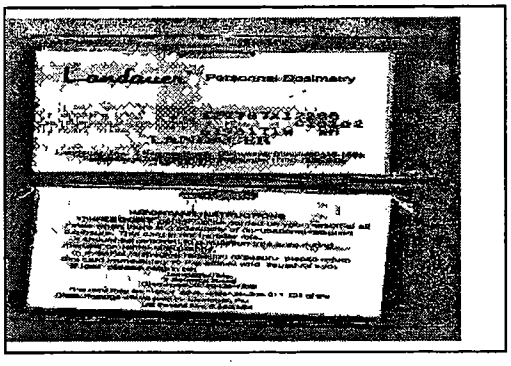
Site Area Emergency – An event has occurred which involves actual or likely major failures of plant functions needed for protection of the public. Releases of radioactive materials are not expected to exceed federal limits except near the plant boundary.

General Emergency – An event has occurred involving actual or imminent core degradation or melting with potential for loss of containment integrity. Releases of radioactive materials can reasonably be expected to exceed federal exposure limits for more than the immediate plant area.

CHECKLIST 2: ATTACHMENT 2
PERSONNEL PROTECTION

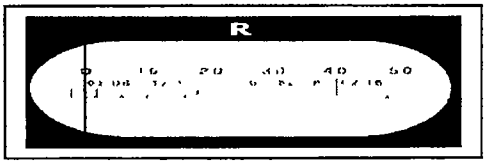
Direct Reading Dosimeters (DRDs). Wear both of these at all times.
High Range – 0 to 200 R
Low Range – 0 to 5R

(Note: Traffic control personnel outside the 10 mile EPZ receive only one DRD – a low range zero to 5R)

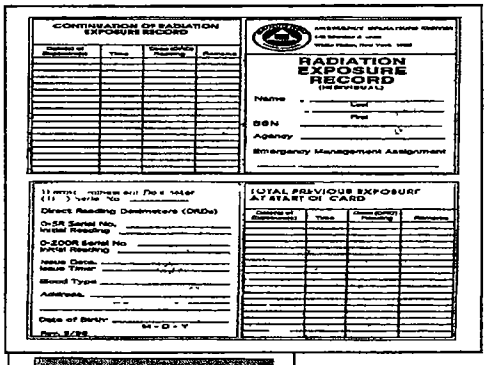


Thermoluminescent dosimeter (TLD)
(Wear this at all times)

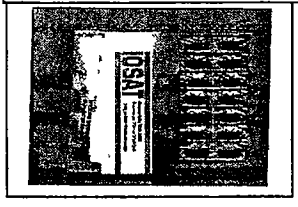
In order to use the DRD dosimeters you must "zero" them. To do that you must place each dosimeter on a dosimeter charger.



As you look through the dosimeter while it's on the charger line up the scale or hairline so it reads zero.



Record you initial readings on the Radiation Exposure Card. Don't forget to check your dosimeters every 15 to 30 minutes. Record any changes on the radiation exposure card every time you read your dosimeters.



Potassium Iodide (KI). Take one pill when directed by your supervisor.

CHECKLIST 2:
TRAFFIC CONTROL POINT DESCRIPTION – SAMPLE

VILLAGE: BUCHANAN

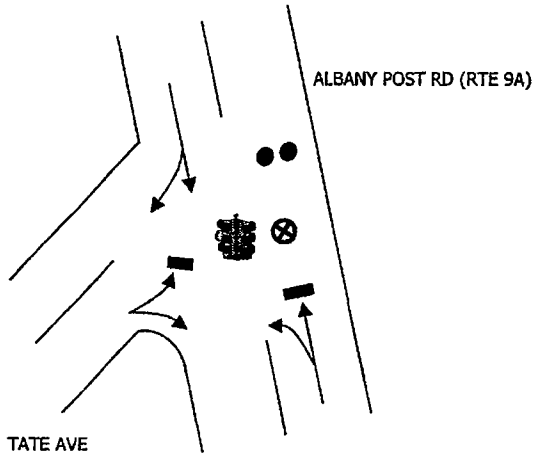
LOCATION: ALBANY POST RD (ROUTE 9A) & TATE AVE

POLICE DEPT: BUCHANAN POLICE DEPT

DPW: BUCHANAN HIGHWAY DEPT

TCP ID: W – 4

ERPA: 1



N

Key

MOVEMENT FACILITATED

MOVEMENT DISCOURAGED/DIVERTED

TRAFFIC GUIDE

STOP SIGN

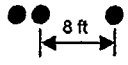
TRAFFIC BARRICADE

2 PER LANE (LOCAL ROADS AND RAMPS)

4 PER LANE (FREEWAY)

TRAFFIC SIGNAL

TRAFFIC CONES SPACED TO DISCOURAGE TRAFFIC BUT ALLOW PASSAGE (3 PER LANE):



DESCRIPTION

1. Facilitate southbound movement on Rte 9A
2. Discourage northbound movement on Rte 9A

MANPOWER/EQUIPMENT

1 Traffic Guide
3 Traffic Cones

LOCATION PRIORITY

3

CHECKLIST 3

DPS DIRECTOR OF HOMELAND SECURITY CHECKLIST

UNUSUAL EVENT

____ If the Notification of Unusual Event was declared as a result of a security-related event, assess the need to report to the onsite Security Command Post:

____ Before reporting to the scene, obtain dosimetry, potassium iodide (KI) and radiation exposure record. Zero direct read dosimeters and don both direct read and thermoluminescent dosimeter.

____ Keep the County Executive and Commissioner-Sheriff of Public Safety advised of incident events and status.

____ For non-security-related events, no further actions are necessary unless directed by the County Executive.

____ Log any additional actions taken:

_____

_____

_____

_____

_____

CHECKLIST 3

DPS DIRECTOR OF HOMELAND SECURITY CHECKLIST

(continued)

ALERT/SITE AREA EMERGENCY

____ If the ALERT OR SITE AREA EMERGENCY was declared as a result of a security-related event, report to the IPEC onsite Security Command Post. For non-security-related events, assess the need to report to the Onsite Emergency Operations Facility (EOF).

____ Before reporting to the scene, obtain dosimetry, potassium iodide (KI) and radiation exposure record. Zero direct read dosimeters and don both direct read and thermoluminescent dosimeter.

____ Notify the Commissioner-Sheriff of Public Safety upon arrival at the IPEC Security Command Post.

____ Serve as the County's Liaison to the Law Enforcement Unified Command.

____ Keep the County Executive and Commissioner-Sheriff of Public Safety advised of incident events and status.

____ Log any additional actions taken:

_____

_____

_____

_____

CHECKLIST 3

DPS DIRECTOR OF HOMELAND SECURITY CHECKLIST

(continued)

GENERAL EMERGENCY

____ If the GENERAL EMERGENCY was declared as a result of a security-related event, assess the feasibility of reporting to the IPEC onsite Security Command Post. For non-security-related events, assess the need to report to the Emergency Operations Facility (EOF). Note: IPEC may be relocating to the Alternate EOF in White Plains. Confirm location of the EOF operation.

____ Before reporting to the scene, obtain dosimetry, potassium iodide (KI) and radiation exposure record. Zero direct read dosimeters and don both direct read and thermoluminescent dosimeter.

Note: The County Health Commissioner should recommend that emergency workers take KI. Take a single dose of KI upon direction.

____ Check DRD exposure readings and record results every thirty minutes. Advise supervisor of 1R, 3R and 5R exposures.

____ Notify the Commissioner-Sheriff of Public Safety upon arrival at the IPEC Security Command Post.

____ Serve as the County's Liaison to the Law Enforcement Unified Command.

____ Keep the County Executive and Commissioner-Sheriff of Public Safety advised of incident events and status.

____ Log any additional actions taken:

_____

_____

_____

ATTACHMENTS

Attachment 1

PREDESIGNATED TOW TRUCK LOCATIONS

Town of Somers

- U.S. Route 6 and Mahopac Avenue

Town of Ossining

- Route 9A and Route 133

Town of Yorktown

- U.S. Route 6 and Taconic State Parkway

Town of Cortlandt

- Route 9A and Tate Avenue

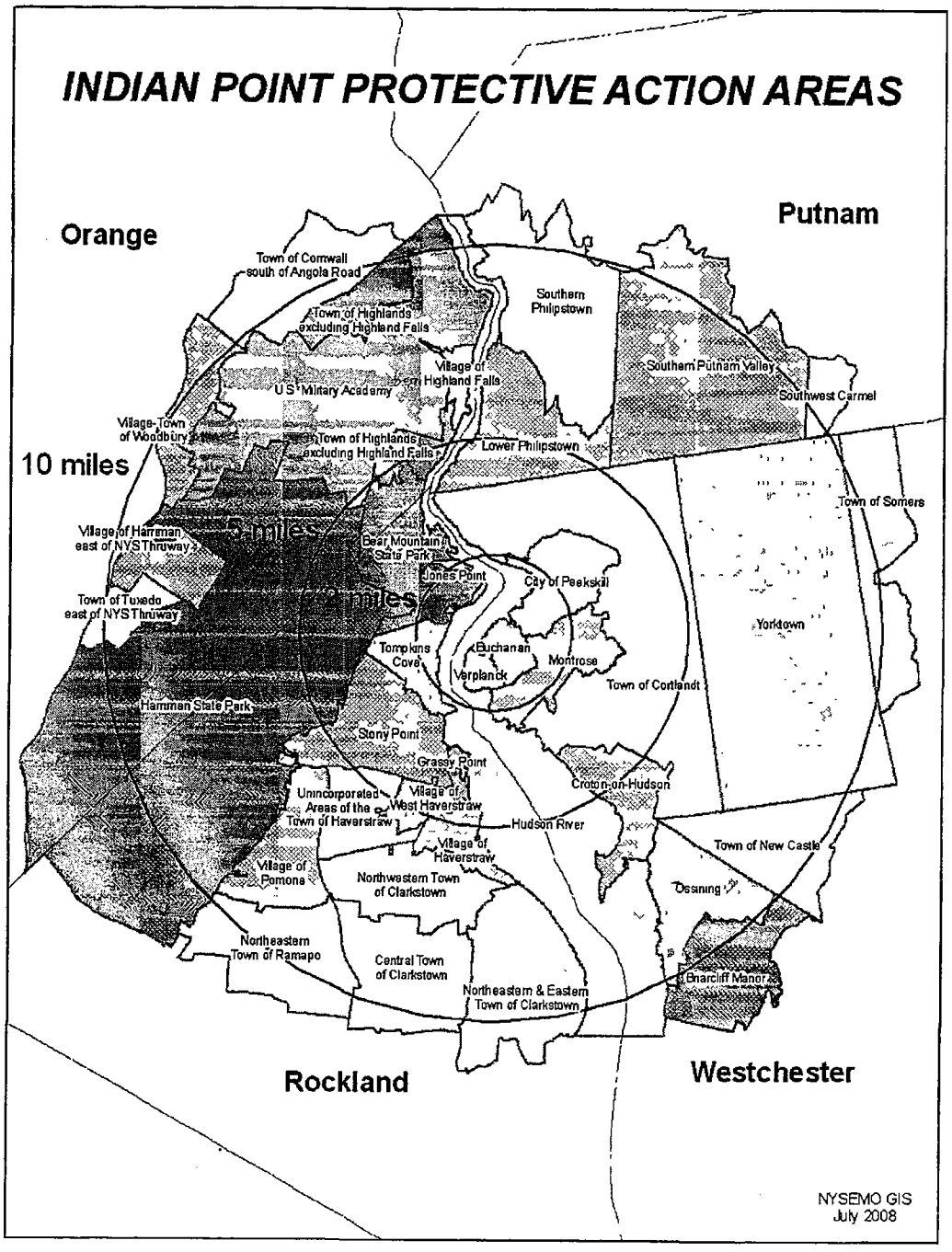
City of Peekskill

- Hudson Avenue and Maple Avenue

Town of New Castle

- Taconic State Parkway and Somerstown Turnpike

ATTACHMENT 2
INDIAN POINT 10-MILE EPZ



ATTACHMENT 3
IMMEDIATE GENERAL EMERGENCY EAS MESSAGE

Message #_____ **Date**_____
Decision Time: _____
Siren Time: _____

Air Time: _____

ANNOUNCER: ***This is not a test*** **This is a test**

The Emergency Alert System has been activated by chief officials of Westchester, Rockland, Orange and Putnam Counties due to an emergency at the Indian Point Nuclear Power Plant in Buchanan, New York. Please listen to this entire message before taking any action.
A General Emergency has been declared.

There has been....*There has not been....* A release of radioactive materials to the environment.
OR
It has not yet been determined whether there has been a radiological release of radioactive materials to the environment.

People living within five miles of the plant are directed to stay inside their homes or businesses. If you have KI (Potassium Iodide), swallow one dose at this time.

"In Westchester, you should stay indoors if you are in Buchanan, Peekskill, Verplanck, Montrose, Mou Airy, Croton-on-Hudson, Crugers, Oscawana, Furnace Woods, Pleasantside, Peekskill Heights and Northeastern Cortlandt, including Mohegan Lake.

"In Rockland, you should stay indoors if you are in the Towns of Stony Point and Haverstraw. People in the Bear Mountain and Harriman State Parks should seek shelter.

"In Orange County, you should stay indoors if you are in the Town of Highlands, the Village of Highland Falls. People in the Harriman and Bear Mountain State Parks should seek shelter.

"In Putnam County, you should stay indoors if you are in Garrison, south of Route 403, and the Continental Village and Lake Peekskill areas.

I repeat, those living within five miles of the plant should go indoors and close windows and doors. If you have KI (Potassium Iodide), ingest one dose at this time.

People living within 10 miles of the plant should consult the Emergency Planning for Indian Point – A Guide for You and Your Family booklet or similar pages of the phone book for detailed information. Stay tuned to this Emergency Alert System station for further information and instructions.

Westchester_____ **Putnam**_____
Orange_____ **Rockland**_____
New York State_____

ATTACHMENT 4
COUNTY BEACHES, PARKS AND RECREATIONAL AREAS

ZONE	FACILITY (Town, School, Other)*	POPULATION PER DAY JAN-MAR	APR-JUNE	JULY-SEPT	OCT-DEC
	WESTCHESTER COUNTY PARKS				
6A	Croton Point Park (C)	O-8O	O-9OO	O-10,OOO	O-9OO
5A	Croton Gorge Park (C)	O-2OO	O-9OO	O-4OO	O-3OO
2C&3A	Blue Mountain Park (C)	O-38O	O-28O	O-1,5OO	O-3OO
4A	Georges Island Park (C)	O-15O	O-7OO	O-1,OOO	O-45O
3A	Blue Mountain Sportsmen Center (C)	O-1OO	O-2OO	O-2OO	O-5OO
12A	Mohansic Golf Course (C)	O-5	O-34O	O-34O	O-34O
2F	Sprout Lake Camping Area (O)	Closed	O-35O	O-7OO	O-350
	VILLAGE OF CROTON				
6	Ball Field Complex (V)	O	O-5O	O-5O	O-5O
6	Black Rock Swim Area (V)		Undeveloped		
6	Duck Pond Park (V)	O-1OO	O-5O	O-5O	O-2O
6	Harmon Chapel Park (O)	O-15	O-1O	O-1O	O-15
6	Harrison Street Park (V)	O-5	O-1O	O-1O	O-1O

* (C) = County, (O) = Other (Privately-Owned), (V) = Village, (T) = Town, (S) = School, (N) = New York State, (P) = City

IPEC00200340

ZONE	FACILITY (Town, School, Other)*	POPULATION PER DAY JAN-MAR	APR-JUNE	JULY-SEPT	OCT-DEC
	WESTCHESTER COUNTY PARKS				
6	J.F.K. Ballfield/Park (V)	O-5	O-100	O-50	O-50
6	Municipal Recreation Room (V)	O-20	O-20	O-5	O-20
6	Senasqua Park & Beach (V)	O-5	O-20	O-30	O-20
6	Silver Lake Beach (V)	O	O-5	O-25	O-5
6	Sunset Beach (V)	O-5	O-10	O-10	O-10
6	Croton Swimming Pool (V)	O	O	O	O-75
	TOWN OF CORTLANDT (August 1981 - July 1982)				
3	Verplanck Playground (T)	O-10*	1-10*	20-40 (M-F, July-Aug) O-10* (Sa/Su & Sept)	O-10*
3	Lake Meahagh (T)	O-200 (Jan-Feb)	1-20* (Apr-May) 20-50 (June)	20-50 (July-Aug) O-20* (Sept)	40-60 (M-F, Dec)
1	Buchanan-Verplanck School (S)	40-60 (M-F)	_____	50-60 (July-Aug)	_____
1	Buchanan Field (O)	_____	40-80 (2 to 4 times/week)	40-80 (July) (2 to 4 times/week)	_____
1	Buchanan Pool (O)	_____	_____	40-500 (M-Sa, July)	_____
1	Letteri Field (O)	_____	_____	100-500 (M-F, Sept)	100-150 (M-F, Oct-Nov)
2	NONE - CITY OF PEEKSKILL				

* Unsupervised

ZONE	FACILITY (Town, School, Other)*	POPULATION PER DAY JAN-MAR	APR-JUNE	JULY-SEPT	OCT-DEC
	WESTCHESTER COUNTY PARKS				
49	Blue Mountain Middle School (S)	2O-6O (M-F) 1OO-2OO (Sa)	2O-1OO (M-F) 1OO-4OO (Sa/Su)	4O-1OO (M-F) 1OO-4OO (Sa/Su, Sept)	2O-6O (M-F) 1OO-4OO (Sa/Su, Oct-Nov)
49	Furnace Woods School (S)	2O-8O (M-F) 1OO-2OO (Sa)	2O-6O (M-F)	1O-2O (M-F, July-Aug)	2O-6O (M-F)
4	Lake Street Tennis Courts (T)	O-1O* (Mar)	1O-5O* (Sa/Su from Memorial Day, Daily when School Closes)	2O-8O (Daily to Labor Day) 1O-2O* (After Labor Day)	1O-2O* (Daily,Oct)
	Roundtree Playground	O-5*	O-5*	O-5*	0-5*
	Sunset Field (T)	O-1O* 5O-1OO (Sa/Su)	1OO-2OO (M-F) 5O-1OO (Sa/Su)	1OO-25O (M-F) 75O-9OO (Sa, Oct-Nov)	75-25O (M-OctNov)
4	Tommy Thurber Park (T)	O-1O*	O-1O*	15-3O (M-F, July-Aug) O-1O* (Sa/Su, Sept)	O-1O*
	Frank G. Lindsey School (S)	2O-6O (M-F) 1OO-2OO (Sa)	2O-6O (M-F) 1OO-2OO (M-F, May-June)	1OO-2OO (M-F, July-Aug)	5O-75 (M-F)
	Hendrick Hudson High School (S)	1OO-2OO (M-F)	1OO-2OO (M-F)	2OO-3OO (M-F, July-Aug)	5O-75 (M-F)
	Cortlandt Racquet Club (O)	1O-2O (2-3 times/week)		_____	_____ 1O-2O (2-3 imes/wee
47	Veterans Administration Pool (O)	2O-6O (Thu-Sa)	1O-2O (Thu-Sa)	_____	2O-6O (Thu-Sat)
5	Charles J. Cook Rec. Center (T)	2O-5O (M-F)	5O-1OO (M-F to Memorial Day) 5O-4OO (Daily from Memorial Day)	7OO-2OOO (Daily to Labor Day) 4O-8O (M-F after after Labor Day)	2O-5O (M-F)

* Unsupervised

IPEC00200342

ZONE	OPULATION PER DAY FACILITY (Town, School, Other)*	JAN-MAR	APR-JUNE	JULY-SEPT	OCT-DEC
	WESTCHESTER COUNTY PARKS				
6	NO FACILITIES				
7	NO FACILITIES				
8	Cortlandt Community Center (T)	150-350 (M-F) 25-100 (Sa/Su)	150-350 (M-F) 25-100 (Sa/Su)	150-400 (M-F) 25-100 (Sa/Su)	150-350 (M-F) 25-100 (Sa/Su)
	Sprout Brook Park (T)	_____	50-300 (Sa/Su from Memorial Day, Daily when Schools Close)	50-350 (Daily to to Labor Day)	_____
	Benjamin Hersch Park (T)	_____	20-100 (Daily)	_____	_____
	Lakeland Middle School (S)	100-250 (Sa)	50-100 (Daily)	50-300 (Daily)	100-250 (Sa)
8	Lincoln Titus School (S)	20-40 (M-F) 10-30 (Sa)	20-40 (M-F) 30-100 (Sa/Su)	50-70 (M-F, July-Aug)	20-40 (M-F, Nov-Dec) 30-100 (Sa/Su, Nov-Dec)
	Van Cortlandtville School (S)	_____	_____	15-35 (M-F, July-Aug)	_____
	Cortlandt Lanes (O)	20-45 (Sa)	_____	_____	20-45 (Sa)
	Evergreen Knolls Playground (O)	_____	_____	15-30 (M-F, July-Aug)	_____
	Fawn Ridge/ Gull Manor Playground (O)	_____	_____	15-30 (M-F, July-Aug)	_____
	Lake Allendale Playground (O)	_____	_____	15-30 (M-F, July-Aug)	_____
	Mohegan Colony Playground (O)	_____	_____	15-30 (M-F, July-Aug)	_____

IPEC00200343

ZONE	FACILITY (Town, School, Other)*	POPULATION PER DAY JAN-MAR	APR-JUNE	JULY-SEPT	OCT-DEC
	WESTCHESTER COUNTY PARKS				
	Walter Panas Tennis Courts (T)	0-10* (Mar)	5-20* (Before Memorial Day) 5-35 (Sa/Su after Memorial Day, Daily when Schools Close)	5-35 (Daily)	5-20* (Daily, Oct)
	Walter Panas High School (S)	_____	_____	20-60 (M-F, July-Aug)	_____
	TOWN OF OSSINING				
22	Waterfront Park-Westerly Marina (T)	0-100	0-100	0-200	0-150
22	Gerlach Park - Crotonville (T)	0-100	0-100	0-200	0-200
22	Ryder Park - Morris Site Drive (T)	0-150	0-200	0-400	0-400
22	Buck Johnson off North State Road (T)	0-25	0-25	0-25	0-25
	VILLAGE OF OSSINING				
22	Veterans Park (T)	0-150	0-250	0-400	0-300
22	Nelson Park - Route 9 (V)	0-100	0-200	0-800	0-200
22	Nelson Sitting (V)	0-50	0-50	0-100	0-50
22	Snowden Avenue Park (V)	0-75	0-150	0-200	0-150
22	Broadway Pool (V)	0	0-10	0-200	0-5
22	Dale Avenue Park (V)	0-15	0-20	0-40	0-20
22	North Malcolm Street Tot Lot (V)	0-20	0-25	0-40	0-25

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ZONE	FACILITY (Town, School, Other)*	POPULATION PER DAY JAN-MAR	APR-JUNE	JULY-SEPT	OCT-DEC
	WESTCHESTER COUNTY PARKS				
22	William Street Tot Lot (V)	O-5	O-10	O-15	O-10
22	Crowbukie Beach - Nature Avenue (V) (end of Beach Road)	O-15	O-25	O-40	O-25
	TOWN OF YORKTOWN				
11	Downing Park (T)	O-50	O-200	O-200	O-100
11	Shrub Oak Memorial Park (T)	O-30	O-100	O-500	O-100
11	Yorktown Memorial Park (T)	O-200	O-50	O-400	O-50
11	Sparkle Lake (T)	O-400	O-50	O-500	O-50
	NEW YORK STATE PARKS				
11/13	Franklin D. Roosevelt State Park (N)	O-500	O-1500	O-25,000	O-7000
	TOWN OF NEW CASTLE				
21	Echo Lake - Route 100, Millwood (T)	O-10	O-25	O-30	O-25
21	Millwood Park - Route 100 (T)	O-25	O-50	O-100	O-50
21	Gedey Park - Millwood (T)	O-20	O-20	O-50	O-20

IPEC00200345

ZONE	FACILITY (Town, School, Other)*	POPULATION PER DAY JAN-MAR	APR-JUNE	JULY-SEPT	OCT-DEC
	WESTCHESTER COUNTY PARKS				
	Riverfront Green (P) (end of Hudson Avenue)	O-10 (M-F) O-30 (Sa/Su)	O-150 (M-F) O-500 (Sa/Su)	O-500 (M-F) O-1000 (Sa/Su)	O-150 (M-F) O-500 (Sa/Su)
	Depew Park - Hudson & Walnut (P) (end of Hudson Avenue)	O-50 (M-F) O-200 (Sa/Su)	O-100 (M-F) O-300 (Sa/Su)	O-1000 (M-F) O-1000 (Sa/Su)	O-100 (M-F) O-400 (Sa/Su)
	Fort Hill - Decatur Avenue (P)	O (M-F) O-1 (Sa/Su)	O-10 (M-F) O-20 (Sa/Su)	O-20 (M-F) O-40 (Sa/Su)	O-10 (M-F) O-20 (Sa/Su)
	Tompkins Park - East Main Street (P)	O (M-F) O-20 (Sa/Su)	O-100 (M-F) O-200 (Sa/Su)	O-200 (M-F) O-400 (Sa/Su)	O-100 (M-F) O-150 (Sa/Su)
	Franklin Park (P) (Franklin & Smith)	O-10 (M-F) O-30 (Sa/Su)	O-30 (M-F) O-100 (Sa/Su)	O-50 (M-F) O-150 (Sa/Su)	O-30 (M-F) O-100 (Sa/Su)
	Lepore Park - West Main Street (P)	O-100 (M-F) O-100 (Sa/Su)	O-300 (M-F) O-300 (Sa/Su)	O-400 (M-F) O-500 (Sa/Su)	O-300 (M-F) O-300 (Sa/Su)
	Monument Park (P) (Division & Highland)	O-10 (M-F) O-10 (Sa/Su)	O-10 (M-F) O-10 (Sa/Su)	O-10 (M-F) O-10 (Sa/Su)	O-10 (M-F) O-10 (Sa/Su)
	Pugsley Park - Main Street (P)	O-10 (M-F) O-10 (Sa/Su)	O-20 (M-F) O-20 (Sa/Su)	O-20 (M-F) O-30 (Sa/Su)	O-20 (M-F) O-20 (Sa/Su)
	Firemen's Park - Crompond Road (P)	O (M-F) O (Sa/Su)	O-5 (M-F) O-5 (Sa/Su)	O-5 (M-F) O-5 (Sa/Su)	O-5 (M-F) O-5 (Sa/Su)

ATTACHMENT 5
PRIMARY EVACUATION ROUTES

Village of Buchanan – primary evacuation route is Route 9A south. For the reception center services, take Route 9A south to I-287 east, to Exit 8. Follow Westchester Avenue east and turn right on Bryant Avenue, then turn left on North Street to **White Plains High School Reception Center,** 550 North Street, White Plains.

Verplanck – primary evacuation route is Route 9A south. For the reception center services, take Route 9A south to I-287 east, to Exit 8. Follow Westchester Avenue east and turn right on Bryant Avenue, then turn left on North Street to **White Plains High School Reception Center,** 550 North Street, White Plains.

City of Peekskill – primary evacuation routes are Route 9A south and Taconic State Parkway south. For reception center services, take I-287 east to Exit 8. Follow Westchester Avenue east. Turn right on Bryant Avenue, then turn left on North Street to **White Plains High School Reception Center,** 550 North Street, White Plains.

Town of Cortlandt - primary evacuation routes are Route 9A south and Taconic State Parkway south. For reception center services, take I-287 east to exit 9. Take Hutchinson River Parkway south to exit 23. Exit toward Mamaroneck turning right onto Mamaroneck Avenue. Take Mamaroneck Avenue to Union Avenue east to **Harrison High School**.

Village of Croton-on-Hudson – primary evacuation route is Route 9 south. For reception center services, take Route 9 A south to Route 100 south. Turn left onto Route 100 C (Grasslands Rd) to **Westchester Community College Gym Reception Center,** 75 Grasslands Road, Valhalla.

Town of Yorktown north of Route 202 – primary evacuation routes are Route 6 west and Route 202/35 west. For reception center services take local roads to I-684 south to Exit x, Route 172. Take Route 172 east to the **Fox Lane High School Reception Center,** South Bedford Road, Bedford.

Town of Yorktown south of Route 202 – primary evacuation routes are Route 100 west and Route 202/35 west. For reception center services take local roads to I-684 south to Exit x, Route 22. Take Route 172 west to the **H.C. Crittenden Middle School Reception Center**, 10 MacDonald Avenue, Armonk.

Northwestern Somers (Baldwin Place, Granite Springs and Amawalk, north of Route 35 and west of Route 118) – primary evacuation route is Route 202 east. For reception center services take local roads to I-684 south to Exit x, Route 172. Take Route 172 east to the **Fox Lane High School Reception Center,** South Bedford Road, Bedford.

Southwestern Somers (Southern Amawalk, South of Route 35 and west of Wood Street and of Muscoot Farm) – primary evacuation routes are Route 100 east and Route 35 North. For reception center services take local roads to I-684 south to Exit x, Route 172. Take Route 172 east to the **Fox Lane High School Reception Center,** South Bedford Road, Bedford.

Western Town of New Castle (area west of Hardscrabble and Millwood Roads) – primary evacuation routes are Taconic State Parkway south and Route 133 east. For reception center services, take local roads to Route 100 C east, to the **Westchester Community College Gym Reception Center,** 75 Grasslands Road, Valhalla.

Town and Village of Ossining – primary evacuation routes are Routes 9 and 9A south. For reception center services, take Routes 9 or 9A to Ashford Avenue. Turn left onto Ashford to the **Ardsley Middle School Reception Center,** 700 Ashford Avenue, Ardsley.

Village of Briarcliff Manor – primary evacuation routes are Routes 9 and 9A south. For reception center services, take Route 9A to Route 100 . Turn left onto Route 100 C east, to the **Westchester Community College Gym Reception Center,** 75 Grasslands Road, Valhalla.

IPEC00200347

Attachment 6: Traffic Control Points

TCP ID	INTERSECTION	PRIORITY	TOWN	POLICE DEPT	DEPT OF PUBLIC WORKS	NO. OF GUIDES	NO. OF CONES	NO. OF BARRICADES
W-1	Albany Post Rd (Rte 9A) & Welcher Ave	1	City of Peekskill	Peekskill PD	Peekskill DPW	1	6	0
W-2	Rte 9 Ramps & Welcher Ave	1	City of Peekskill	Peekskill PD	Peekskill DPW	1	6	0
W-3	Albany Post Rd (Rte 9A) & Bleakley Ave	1	Buchanan	Buchanan PD	Buchanan Highway Dept	1	6	0
W-4	Albany Post Rd (Rte 9A) & Tate Ave	3	Buchanan	Buchanan PD	Buchanan Highway Dept	1	3	0
W-5	Albany Post Rd (Rte 9A) & Kings Ferry Rd	3	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	1	9	0
W-6	Jans Peek Bridge & Rte 9 & Bear Mtn Pkwy	1	City of Peekskill	Peekskill PD	Peekskill DPW	1	6	0
W-7	Annsville Rd (Rte 9) & Old Roa Hook Rd	3	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	0	6	0
W-8	Bear Mountain Pkwy & Division St	1	Peekskill	Peekskill PD	Peekskill DPW	2	6	0
W-9	Albany Post Rd (Rte 9A) & FDR VA Hospital	3	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	1	3	0
W-10	Albany Post Rd (Rte 9A) & Crugers Station Rd	2	Croton-on-Hudson	Croton on Hudson PD	Cortlandt DPW	1	3	0
W-11	Albany Post Rd (Rte 9A) & Springvale Rd	2	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	1	3	0
W-12	Albany Post Rd (Rte 9A) & Access Rd from Highland Ave	2	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	1	0	0
W-13	Main St (Rte 6) & Dayton Ln/Beecher Ln	2	City of Peekskill	Peekskill PD	Peekskill DPW	1	6	0
W-14	Albany Post Rd (Rte 9A) & Rte 9 Ramps	1	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	2	6	0
W-15	Crompond Rd (Rte 202/35) & Bear Mtn State Pkwy	1	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	1	3	0

W-16	Crompond Rd (Rte 202/35) & Maple Row/Croton Ave	3	Cortlandt	NYSP (Cortlandt)	Cortlandt DPW	1	3	0
W-17	Rte 6 & Lexington Ave	1	Cortlandt & Yorktown	NYSP/Yorktown PD	Yorktown Highway Dept	2	6	0
W-18	Crompond Rd (Rte 202/35) & Lexington Ave	3	Cortlandt	NYSP (Cortlandt)	Yorktown Highway Dept	1	3	0
W-19	S Riverside Ave (Rte 9A) & Municipal Place	1	Croton-on-Hudson	Croton PD	Croton DPW	1	6	2
W-20	Crompond Rd (Rte 202/35) & Stony St	3	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	0
W-21	Rte 9/9A & Croton Point Ave	2	Croton-on-Hudson	Croton on Hudson PD	Croton DPW	2	9	8
W-22	Rte 6 & Mill St	3	Yorktown	Yorktown PD	Yorktown Highway Dept	2	6	0
W-23	Crompond Rd (Rte 202/35) & Taconic Ramps	1	Yorktown	Yorktown PD	Yorktown Highway Dept	2	3	0
W-24	Crompond Rd (Rte 202/35) & Strang Blvd	3	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	0
W-25	Crompond Rd (Rte 202/35) & Springhurst St	1 (School), 3	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	0
W-26	Baldwin Rd & Taconic Pkwy Ramps	3	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	0
W-27	Albany Post Rd (Rte 9) & St Augustine Church & School	1	Ossining Village	Ossining Village PD	Ossining Village DPW	1	3	0
W-28	Rte 6 & Old Yorktown Rd(Rte 132)/ Barger St	1	Yorktown	Yorktown PD	Yorktown Highway Dept	2	6	0
W-29	Rte 6 & Taconic Pkwy Ramps	1	Yorktown	Yorktown PD	Yorktown Highway Dept	2	6	0
W-30	Crompond Rd (Rte 202/35) & Granite Springs Rd	1 (School), 3	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	0
W-31	Crompond Rd (Rte 202/35) & Baldwin Rd	1	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	0
W-32	Kitchawan Rd (Rte 134) & Taconic Northbound Ramp	3	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	4
W-33	Kitchawan Rd (Rte 134) & Taconic Southbound Ramp	3	Yorktown	Yorktown PD	Yorktown Highway Dept	0	3	0

W-34	Pines Bridge Rd & Taconic Ramps	1	New Castle	New Castle PD	New Castle DPW	1	3	0
W-35	Rte 9A & Croton Dam Rd	1	Town of Ossining	Ossining Town PD	Town of Ossining DPW	3	15	0
W-36	Albany Post Rd (Rte 9) & Cedar Ln/ Snowden Ave	1	Ossining Village	Ossining Village PD	Ossining Village DPW	2	9	0
W-37	Albany Post Rd (Rte 9) & VanCortlandt Ave	2	Ossining Village	Ossining Village PD	Ossining Village DPW	1	6	0
W-38	Albany Post Rd (Rte 9) & Croton Ave (Rte 133)	1	Ossining Village	Ossining Village PD	Ossining Village DPW	3	6	0
W-39	Dale Ave (Rte 134) & Croton Ave (Rte 133)	1	Ossining Village	Ossining Village PD	Ossining Village DPW	1	3	0
W-40	Albany Post Rd (Rte 9) & Church St	1	Ossining Village	Ossining Village PD	Ossining Village DPW	2	6	0
W-41	Albany Post Rd (Rte 9) & Waller Ave/ Emwilton Pl	1	Ossining Village	Ossining Village PD	Ossining Village DPW	1	6	0
W-42	Rte 6 & Rte 6N/Curry St	2	Yorktown	Yorktown PD	Yorktown Highway Dept	1	3	0
W-43	Saw Mill River Rd (Rte 35) & Pines Bridge Rd	3	Somers	NYSP (Somers)	Somers DPW	1	3	0
W-44	Saw Mill River Rd (Rte 35) & Tomahawk St (Rte 118/202)	3	Somers	NYSP (Somers)	Somers DPW	1	3	0
W-45	Somerstown Tpke (Rte 133/100) & Station Rd (Rte 133)	2	North Castle			1	3	0
W-46	Somerstown Tpke (Rte 133/100) & Northbound Taconic Pkwy Ramps	1	New Castle (Chappaqua)	New Castle PD	New Castle DPW	0	0	2
W-47	Rte 133/100 & Taconic Pkwy Ramps	1	North Castle	North Castle PD		1	9	0
W-48	Rte 9A & Chappaqua Rd	1	Briarcliff Manor	Briarcliff PD	Briarcliff DPW	1	9	0
W-49	Albany Post Rd (Rte 9) & Revolutionary Rd	2	Ossining Village	Ossining Village PD	Ossining Village DPW	1	6	0
W-50	Albany Post Rd (Rte 9) & Rockledge Ave	1	Ossining Village	Ossining Village PD	Ossining Village DPW	2	6	0
W-51	Rte 6 & Rte 118/Baldwin Place Rd	1	Somers	NYSP (Somers)	Somers DPW	2	6	0
W-52	Tomahawk St (Rte 118/202) & Lincolndale Rd (Rte 202)	2	Somers	NYSP (Somers)	Somers DPW	1	3	0
W-53	Rte 9A & N State Rd	1	Briarcliff Manor			1	9	0

W-54	Albany Post Rd (Rte 9) & Scarborough Rd	2	Briarcliff Manor	Briarcliff PD	Briarcliff DPW	2	12	0
W-55	Albany Post Rd (Rte 9) & Tower Hill Rd	2	Briarcliff Manor	Briarcliff PD	Briarcliff DPW	1	6	0
W-56	Sleepy Hollow Rd & Old Sleepy Hollow Rd	3	Mount Pleasant (Pocantico Hills)	Mount Pleasant PD	Town of Mount Pleasant DPW	1	3	0
W-57	Woods Bridge Rd (Rte 35) & Somerstown Rd (Rte 100)	1	Somers	NYSP (Somers)	Somers DPW	2	9	0
W-58	Woods Bridge Rd (Rte 35) & Pepsi-Cola Entrance	3	Somers	NYSP (Somers)	Somers DPW	0	6	0
W-59	Woods Bridge Rd (Rte 35) & Cherry St	3	Lewisboro	NYSP (Somers)	Lewisboro DPW	0	6	0
W-60	Woods Bridge Rd (Rte 35) & Cross River Rd (Rte 35)	3	Bedford	Bedford PD	Bedford DPW	2	9	0
W-61	Cross River Rd (Rte 35) & I-684 Ramps	3	Bedford	Bedford PD	Bedford DPW	4	6	0
W-62	Bedford Rd (Rte 117) & King St (Rte 120)	2	New Castle (Chappaqua)	New Castle PD	New Castle DPW	2	12	0
W-63	Saw Mill Pkwy & Grant St	1	Pleasantville	Westchester Cty PD on Parkway	NY State DOT	1	3	0
W-64	Bedford Rd & Marble Ave	1	Pleasantville	Pleasantville PD	Pleasantville DPW	1	3	0
W-65	Manville Rd (Rte 117) & Pleasantville Rd	1	Pleasantville	Pleasantville PD	Pleasantville DPW	1	6	0
W-66	Bedford Rd (Rte 117) & Rte 9A/100	1	Mount Pleasant (Pleasantville)	Mount Pleasant PD	Mount Pleasant DPW	1	0	2
W-67	Bedford Rd (Rte 117) & Bedford Rd (Rte 448)	1	Mount Pleasant (Pocantico Hills)	Mount Pleasant PD	Mount Pleasant DPW	1	9	0
W-68	Rte 9 & Rte 117	1	Mount Pleasant (Archville)	Mount Pleasant PD	Mount Pleasant DPW	1	0	10
W-69	Mt Kisco Rd/ Bedford Rd (Rte 22) & Main St (Rte 128)	2	North Castle	North Castle PD		1	3	0
W-70	King St (Rte 120) & Rte 22	2	North Castle	North Castle PD		1	0	4
W-71	Rte 9A/100 Exits 26 A,B - County Police Barracks	1	Mount Pleasant (Hawthorne)	Mount Pleasant PD	Mount Pleasant DPW	2	0	10

W-72	Taconic State Pkwy & W Stevens Ave	1	Mount Pleasant (Valhalla)	NYSP (Hawthorne)	Mount Pleasant DPW	1	6	0
W-73	Taconic State Pkwy & Commerce St	1	Mount Pleasant (Valhalla)	NYSP (Hawthorne)	Mount Pleasant DPW	1	6	0
W-74	Taconic State Pkwy & Lakeview Ave	1	Mount Pleasant (Valhalla)	NYSP (Hawthorne)	Mount Pleasant DPW	1	6	0
W-75	Taconic State Pkwy & Cleveland St	1	Mount Pleasant (Valhalla)	NYSP (Hawthorne)	Mount Pleasant DPW	1	6	0
W-76	Saw Mill River Rd (Rte 9A) & Skyline Dr	2	Mount Pleasant (Hawthorne)	Mount Pleasant PD	Mount Pleasant DPW	1	6	0
W-77	Saw Mill River Rd (Rte 9A) & Saw Mill Pkwy Ramp	2	Mount Pleasant (Hawthorne)	Mount Pleasant PD	Mount Pleasant DPW	1	9	0
W-78	Saw Mill River Rd (Rte 9A) & Dana Rd	1	Mount Pleasant (Hawthorne)	Mount Pleasant PD	Mount Pleasant DPW	1	6	0
W-79	Rte 9A & Grasslands Rd (Rte 100C)	3	Mount Pleasant (Valhalla)	Mount Pleasant PD	Mount Pleasant DPW	1	3	0
W-80	Saw Mill River Rd (Rte 9A) & Hunter Ln	2	Greenburgh	Greenburgh PD	Greenburgh DPW	1	6	0
W-81	Saw Mill River Rd (Rte 9A) & Fairview Park Dr	2	Greenburgh	Greenburgh PD	Greenburgh DPW	1	6	0
W-82	Saw Mill River Rd (Rte 9A) & Old Country Rd	2	Greenburgh	Greenburgh PD	Greenburgh DPW	1	6	0
W-83	Saw Mill River Rd (Rte 9A) & Beaver Hill Rd	2	Greenburgh	Greenburgh PD	Greenburgh DPW	1	6	0
W-84	Saw Mill River Rd (Rte 9A) & Payne St	1	Greenburgh	Greenburgh PD	Greenburgh DPW	1	6	0
W-85	Saw Mill River Rd (Rte 9A) & I-287 Ramps	1	Elmsford	Elmsford PD	Elmsford DPW	2	6	0
W-86	Broadway (Rte 9) & Pierson Ave	2	Sleepy Hollow	Sleepy Hollow PD	Sleepy Hollow DPW	1	12	0
W-87	Broadway (Rte 9) & Pocantico St	2	Tarrytown	Sleepy Hollow PD	Sleepy Hollow DPW	1	9	0
W-88	Broadway (Rte 9) & Bedford Rd (Rte 448)	1	Sleepy Hollow	Sleepy Hollow PD	Sleepy Hollow DPW	2	6	0
W-89	Broadway (Rte 9) & Depeyster St	2	Sleepy Hollow	Sleepy Hollow PD	Sleepy Hollow DPW	1	3	0
W-90	Broadway (Rte 9) & Wildey St	2	Tarrytown	Tarrytown PD	Tarrytown	1	3	0

					DPW			
W-91	Broadway (Rte 9) & Neperan Rd	2	Tarrytown	Tarrytown PD	Tarrytown DPW	1	3	0
W-92	Broadway (Rte 9) & Benedict Ave	2	Tarrytown	Tarrytown PD	Tarrytown DPW	1	3	0
W-93	Broadway (Rte 9) & Prospect Ave	2	Tarrytown	Tarrytown PD	Tarrytown DPW	1	3	0
W-94	Broadway (Rte 9) & White Plains Rd (Rte 119)	2	Tarrytown	Tarrytown PD	Tarrytown DPW	1	6	0
W-95	Broadway (Rte 9) & I-287 East/ I-87 South Ramps	1	Tarrytown	Tarrytown PD	Tarrytown DPW	1	6	0
		116	**492**		**42**			

Resource Section

POLICE DEPARTMENT ALERTING LIST

DEPARTMENTS	PHONE #
State Police Millbrook	677-6321
Commissioner/Sheriff	864-7710
District Attorney	995-3408
Ardsley	693-1700
Bedford	241-3111
Briarcliff Manor	941-2130
Bronxville	337-0500
Buchanan	739-6776
	PM 737-8000
Cortlandt	734-2000
Croton-on-Hudson	271-5177
Dobbs Ferry	693-5500
Eastchester	337-3007, 961-3464
Elmsford	592-8383
Greenburgh	682-5300
Harrison	967-5111
Hastings-on-Hudson	478-2345
Irvington	591-8080
Larchmont	834-1000
Mamaroneck Town	381-6100
Mamaroneck Village	777-1122
Mount Kisco	241-1100
Mount Pleasant	769-1941
Mount Vernon	665-2500
New Castle	238-4422
New Rochelle	654-2300
New York State Police	769-2600
North Castle	273-9500
Ossining Town	762-6007
Ossining Village	941-4099
Pelham	738-2000
Pelham Manor	738-1000
Peekskill	737-8000
Pleasantville	769-1500
Port Chester	939-1000
Rye Brook	937-1020
Rye City	967-1234
Scarsdale	723-0410
Sleepy Hollow	631-0800
Tarrytown	631-5544
Tuckahoe	961-4800
White Plains	422-6111
	422-6000
Yonkers	377-7477
Yorktown	962-4141
Greenwich, CT	203-622-8000
NYC Reservoir Police (Bureau of Water Supply, Department of Environmental Protection)	742-2011/245-6694

NOTIFICATION TO ASSISTING AGENCIES

NEW YORK STATE POLICE - Helicopter	Hawthorne	518-242-4500
NEW YORK STATE POLICE - Helicopter	Stewart Airport	845 - 564-7360

ROUTINE CONTACT - Westchester Civil Air Patrol	(Advance Notice, etc.) Director of OEM - Westchester County 914-760-1596
ROUTINE CONTACT - SEMO	New York State Emergency Management Office Region II, Poughkeepsie - 845-454-0430
EMERGENCY CONTACT Civil Air Patrol	New York State Warning Point through HQ Desk Telephone or 518-457-2200 (They will contact the necessary official for authorization.)
CIVIL AIR PATROL	Westchester Liaison

Attachment 9
Sirens Locations and PD Assignments

This is for the "old" siren system.

Siren #-If Alerting is Required-Siren Location

37-Rt. 9 & Acker Ave, Ossining-Town of Ossining PD
38-Pleasantville Rd & Central Dr., Briarcliff-Briarcliff PD
39-Eastern Ave & Churchill St., Ossining Village PD
40-Rt. 133 & Rt. 9-A-Town of Ossining PD
41-**No Alert Required**-Croton Dam Rd. & Cherry Hill Circle, Ossining
42-Rt. 9 & Audobon Rd. (Dominican Sisters) Ossining-Town & Village PD
43-**No Alert Required**-Rt. 134 & Grace Lane- North East of 9-A, New Castle PD
44-Somerstown Pike & Surrey Lane, New Castle PD
45-end of Barnes St. –near Rt.134 & TSP, Yorktown-Yorktown PD &New Castle PD
46-Spring Valley Rd. & Teatown Rd., Yorktown PD
47-G.E. Training Center, Ossining-NYSP Cortlandt
48-**No Alert Required**-Riverside Ave & Croton Point Ave, Croton PD
49-Old Post Rd. & Rt. 129-cemetery, Croton PD
50- **No Alert Required**-Croton Point Park, Croton PD or County PD
51-Rt. 9-A & North Riverside Ave, Croton PD
52- **No Alert Required**-Springvale Rd. & Summit Place, Crugers-NYSP Cortlandt
53-Colabaugh Pond Rd & Woodlake Dr., Cortlandt- NYSP Cortlandt
54- **No Alert Required**-Episcopal Church @ Montrose Point, Montrose-NYSP Cortlandt
55-Mt. Airey & Glengary Rd @Highline Crossing, Cortlandt- NYSP Cortlandt
56-Rt. 129 & Fox Run Rd., Cortlandt- NYSP Cortlandt & Yorktown PD
57-Hanover Ave & Hanover Hilltop Farm, Yorktown PD
58-Baldwin Rd. & Baptist Church Rd., Yorktown PD
59-Hanover Ave & Church Pl., Yorktown PD
60-Baptist Church Rd. & Hunter Brook Rd.- Yorktown PD
61-Broad St. & Loder Rd., Yorktown PD
62-Rt. 202 & TSP, Yorktown PD
63-Old Crompond Rd. & Ave A-Quarry Acres- NYSP Cortlandt
64- **No Alert Required**-Furnace Dock Rd. & Maple Ave, Cortlandt - NYSP Cortlandt
65- **No Alert Required**-Washington Ave & Montrose Station Rd., Cortlandt- NYSP Cortlandt
66- **No Alert Required**-Broadway opposite R/S #6, Buchanan- NYSP Cortlandt
67- **No Alert Required**-Washington Ave & Sherman Ave @ Armory, Peekskill PD
68- **No Alert Required**-Washington St. & Hudson Ave, Peekskill- Peekskill PD
69- **No Alert Required**-Crompond Rd (Rt. 202) & Grant Ave, Peekskill PD
70- **No Alert Required**-Lakeview Dr. & Pemart Ave, Peekskill PD
71-Roa Hook Rd & Bayview Rd, Cortlandt- NYSP Cortlandt
72-Gallows Hill & Pumphouse Rd., Cortlandt- NYSP Cortlandt
73-Crompond (Rt.202)& Lexington Ave, Yorktown PD
74- **No Alert Required**-Westchester Mall @ Rt. 6, Cortlandt –NYSP Cortlandt
75-Woodland Ave & Heyward St.-Mohegan Water Tanks, Yorktown PD
76-Rt. 132 & Suncrest Ave-Copper Beach Middle School, Yorktown PD
77- **No Alert Required**- Whitman Rd. & Poplar Rd., Yorktown PD
78- **No Alert Required**-Wood St & Mountain Rd., Yorktown PD
79-Mill St. & Rt.6, Yorktown PD
301- **No Alert Required**-Verplanck Ballfield-11th St. & Broadway, Verplanck-NYSP Cortlandt
302- **No Alert Required**-Paulding St. & Hayden St., Peekskill PD
303-Hudson St. & Wells St., Peekskill PD
304-Jack Rd at end, Cortlandt-NYSP Cortlandt
305- **No Alert Required**-Lee Blvd. & Hill Blvd., Yorktown PD
306-Curry St. & Tulip Dr.,Yorktown PD
307-Lafayette Ave & Matasac Rd., Peeskill-NYSP Cortlandt
308- **No Alert Required**-Townsend Rd. & Clinton Ave.-Toddville School, Cortlandt-NYSP Cortlandt

309-Camp Field Reservior @ Lindbergh, Peekskill PD
310-Locust Ave & Enrico Dr., Peekskill-NYSP Cortlandt
311- **No Alert Required**-Beach Shopping Center @ Route 6, Peekskill PD
312-Dale Ave & Frederick St.-Lake Allendale, Peekskill-NYSP Cortlandt
313- **No Alert Required**-Hollowbrook Lane & Root Lane, Peekskill PD
314- **No Alert Required**-Seward St & rear of Henderick Hudson HS, Buchanan-NYSP Cortlandt
315-Croton Ave & Jacob Rd. Walter Panis HS, Cortlandt-NYSP Cortlandt
316-Highland Sr. @ C.V.V.F.D. firehouse, Cortlandt-NYSP Cortlandt
317- **No Alert Required**-Crugers Rd. & Dutch St., Montrose- NYSP Cortlandt
318- **No Alert Required**-Route 9A & Furnace Dock Rd., Crugers- NYSP Cortlandt
319-Furnace Dock Rd. near Suffrin Mtn Rd., Cortlandt- NYSP Cortlandt
320- **No Alert Required**-High St. Constant Ave @ Top of Hill, Peekskill PD
321- **No Alert Required**-State St. & Ossining Fire Police HQ, Ossining Village PD
322-Orchard Rd. & Pleasantville Rd., Briarcliff Manor-Briarcliff PD
323-Stony St.-North of Rt. 202 & South of Rt.6, Yorktown PD
324-Barger St. off of Oregon Rd., Cortlandt-NYSP Cortlandt
326-Hemlock St. & Hickory Dr. off of Granite Springs Rd., Yorktown PD
327-Rt.202 & Mercer Rd.- Yorktown HS, Yorktown PD
328-Granite Springs Rd @ Curry St., Yorktown PD
329-Lexington Ave & Strawberry Rd., Yorktown PD
331-Rt. 132 & Main St-Shrub Oak, Yorktown PD
333 -Van Cortlandt Drive & Ridge St., Yorktown PD
335- **No Alert Required**-Elm & Alder-West of 9A un Briarcliff @ college, Ossining
358- **No Alert Required**-French Hill To Darby St., Yorktown PD
380-White Hill Rd. & Mark Rd. (Wilkins Farm) Yorktown PD
382- **No Alert Required**-Washington St. south east of Watch Hill Rd., Cortlandt-NYSP Cortlandt
384 – Aquaduct Street and Taconic State Parkway, Town of Yorktown, Yorktown PD
386 – Journeys End Road and Blinn Road, Town of Yorktown, Yorktown PD

TABLE F-3

LIST OF SIRENS FOR NEW SYSTEM

New Number	Old Siren #	Main Road	Intersecting Road	Municipality
301	37	S. Highland Ave.	Archer and Nelson Ave.	Ossining
302	38	Pleasantville Road	Central Drive	Ossining
[redacted]				
303	40	Croton Ave. and Route 133	Route 9A	Ossining
304	41	Croton Dam Road	Cherry Hill Circle	Ossining
305	42	No. Highland Ave. and Rt. 9	Audabon Drive (Dominican Sisters)	Ossining
306	43	56 Grace Lane --North East of 9-A	Croton Dam Road	New Castle
307	44	165-169 Somerstown Pike	Surrey Lane	New Castle
308	45	200 Barnes St.--Near Rt.134 & T.S.P.	Syska Road	Yorktown
309	46	Spring Valley Raod	Teatown Road	Yorktown
310	47	G.E. Training Center - Fowler Ave.	Hillcrest Ave.	Ossining
	48	Riverside Ave.	Croton Point Ave.	Croton
311	49	Old Post Road	Maple St. and Rt. 129 (cemetery)	Croton
312	50	Croton Point Park	Croton Point Park parking lot	Croton
313	51	180 No. Riverside Ave.	Old Post Road	Croton
[redacted]				
314	53	66 Colabaugh Pond	Woodale Ave.	Cortlandt
[redacted]				
315	55	Mt. Airy Road	Glengary Rd. at highline crossing	Cortlandt
316	56	Rt. 129 and Fox Run Road	Short Hill Road	Cortlandt
317	57	McKeel St.	Revere Drive	Yorktown
318	58	1353 Baldwin Road	Baptist Church Road	Yorktown
319	59	Hanover Ave. & Hanover Hilltop	Church Place	Yorktown

		Farm		
320	60	Hunter Brook Road	Baptist Church Road	Yorktown
[redacted]				
321	62	Crompond Rd. Rt 202	Mohansic Ave.	Yorktown
322	63	Old Crompond Rd.	Ave A - Quarry Acres	Yorktown
323	64	Furnace Dock Road	Maple Ave.	Cortlandt
324	65	Washington St.	Montrose Station Road	Cortlandt
325	66	Broadway	Bleakley Ave and 1st Ave.	Buchanan
326	67	Washington St. - near Armory	Sherman Ave.	Peekskill
327	68	Washington St.	Hudson Ave.	Peekskill
[redacted]				
328	70	116 Lakeview Drive	Pemart Ave.	Peekskill
329	71	Roa Hook Road	Bayview Road	Cortlandt
330	72	Pumphouse Road	28 Gallows Hill Road	Cortlandt
331	73	Crompond Road	Locust Ave.	Yorktown
332	74	Westchester Mall	Route 6	Cortlandt
333	75	Woodland Ave.	3482 Heyward Ave - Mohegan Water Tanks	Yorktown
334	76	Rte 132 and Suncrest Ave.	Copper Beach MS	Yorktown
[redacted]				
335	79	Mill St. and Rt. 6	Mill St.	Yorktown
336	301	11 St. (ballfield)	Broadway	Verplanck
[redacted]				
337	303	Hudson Ave.	Wells St.	Peekskill
338	304	Jack Road - at the end	Valerie Lane	Cortlandt
339	305	Lee Blvd.	Hill Blvd.	Yorktown
340	306	Curry St.	Tulip Drive	Yorktown
341	307	Lafayette St.	Marsac Road	Peekskill
342	308	Townsend Road	Clinton Ave - Toddville School	Cortlandt
343	309	Camp Field Reservoir	Lindbergh Palce	Peekskill
344	310	253 Locust Ave. and Enrico Drive	Rancho Drive	Peekskill
[redacted]				

345	314	210 Seward St.	Hendrick Hudson HS - rear	Buchanan
346	315	Croton Ave. and Route 133	Jacob St.	Cortlandt
347	316	C.V.V.F.D. Fiorehouse	Highland Drive	Cortlandt
348	317	9 Crugers Road extension	Dutch St.	Montrose
349	318	Furnace Dock Road	Rt. 9A	Cortlandt
350	319	317 Furnace Dock Road	Sniffen Mountain	Cortlandt
351	321	State St. & Ossining Fire Police Headquarters	St. Paul's St.	Ossining
	322	Orchard Rd.	Pleassantville Road	Briarcliff Manor
352	323	3256 Stony St.--North of 202 & South of Rt. 6	Judy Road	Yorktown
353	324	8 Barger St.	Oregon Road	Cortlandt
354	326	2789 Hemlock St.	Hickory Drive off of Granite Springs Road	Yorktown
355	327	Rt. 202 / 35	Mercer Rd. - Yorktown HS	Yorktown
356	328	124 Granite Springs Road	Curry St.	Yorktown
357	329	Lexington Ave.	Strawberry Road	Yorktown
358	331	Old Yorktown Road - Rt. 132	Main St.	Yorktown
359	333	2049 Van Cortlandt St.	Rdige St.	Yorktown
360	335	96 Elm Road	Alder Road west of 9A in Briarcliff Manor (college)	Ossining
361	358	Old French Road	Darby St.	Yorktown
362	380	1374 White Hill Road	Mark Road - Wilkens Farm	Yorktown
363	382	1518 Washington St.	Watch Hill Road	Cortlandt
364	384	477 Illington Road	Rt 134	Yorktown
365	386	1355 Journeys End Rd	Rt 134	Yorktown
366	L1	Poplar Street	Forest Court	Yorktown
367	L2	Broad Street	Sara Court	Yorktown
368	M1	RT 118	Birdsall Drive	Yorktown

369	M2	Lake Road	Crow Hill Road	Yorktown
370				
371		Orchard Road		Briarcliff
372		Montrose Point Rd		Montrose
373		Route 6		Peekskill
374		Dale Ave		Cortlandt
375		Springvale Road		Cortlandt
376		Radcliffe Drive		Yorktown
377		US 9	Glen Wood Drive	Ossining
378		Long Hill Road	Sleepy Hollow Rd.	Briar Cliff

APPROVED BY DOH:_____ REVIEWED BY: DES:_____	Westchester County **DEPARTMENT OF EMERGENCY SERVICES**	IP-3.0

INDIAN POINT ENERGY CENTER
IMPLEMENTING PROCEDURE

Health Department
EOC Representative

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1.0 Purpose

This procedure provides guidance for the Department Of Health Commissioner and Health Emergency Management Staff assigned to the Westchester County EOC to implement the Westchester County Radiological Emergency Plan for the Indian Point Energy Center.

2.0 Responsibilities

2.1 County Commissioner of Health – The County Commissioner of Health is responsible for:

- **Public Health Assistance/Information.**
- **Accident (Dose) Assessment** of offsite consequences of a radiological emergency and to coordinate those monitoring activities.
- **Protective Response Evaluation** to determine the proper protective actions to be implemented based on protective action guides and dose projections. Additionally the Commissioner or designated Physician will authorize the consumption of Iodine Prophylaxis (KI) at the General Emergency ECL , for all emergency workers and the general public within the impacted area.
- **Radiological Exposure Control** to minimize radiological exposure of emergency workers and the general public. The Commissioner shall also authorize Emergency Worker exposure in excess of EPA PAG's when necessary.
- **Training** to assure the appropriate Health Department Staff is adequately trained to support accident assessment, protective response evaluation, radiological exposure control and field monitoring team activities.

3.0 Concept of Operations

3.1 When notified of an Unusual Event, the Commissioner of Health and Health Emergency Management Staff will monitor the situation; review procedures and increase level of readiness in the event of incident escalation. No further actions would normally be required unless directed by the County Executive.

3.2 When notified of an Alert or higher emergency classification, County Health Department staff will report to their assigned positions the County EOC and deploy Field Monitoring Teams.

3.3 Field monitoring teams are deployed as early as an Alert in order to establish background levels and to provide confidence that no recordable levels of radiation are being measured offsite as a result of the incident at the plant.

3.4 A County Liaison to the Entergy Emergency Operations Facility will also be dispatched at this time. This liaison will be a Health Department employee.

3.5 The Westchester County Commissioner of Health and Health Emergency Management Staff will operate from the county EOC-to assure accident assessment, protective response evaluation and radiological exposure control are effectively implemented to protect the safety and health of the general public and emergency workers. The Commissioner of Health will authorize Emergency Worker exposure in excess of EPA PAG's when necessary in accordance with Attachments 2 and 3.

3.6 At the Site Area Emergency the Commissioner of Health or designated Physician will prepare for the Isolation of Ingestion Pathways and Sources (i.e. food and water) in support of New York State Department of Health's actions to prevent individuals from ingesting contaminated materials.

3.7 Health Department personnel will also staff key positions at reception centers in order to coordinate radiation monitoring and, if necessary, decontamination. Some reception centers may be activated as early as a Site Area Emergency.

3.8 At the General Emergency, the Commissioner of Health will authorize the consumption of Iodine Prophylaxis (KI) for all emergency workers in the ten mile EPZ and the general public within the impacted area in accordance with, Attachment 1 – State KI Policy. Other protective actions are addressed in the following section.

4.0 Protective Action Decision Making

4.1 In the case of an atmospheric release, the protective actions which may be required are those which protect the population from inhalation of radioactive materials in the plume, from exposure to gamma radiation from the plume, and from short-term exposure to radioactive materials deposited on the ground. For releases which contain a large amount of pure beta emitters, it may also be necessary to consider protective action to avoid doses to the skin from radioactive material deposited on the skin and clothing. For releases that contain radioiodine, protective actions to avoid inhalation leading to doses to the thyroid may be necessary.

4.2 The early phase of a nuclear incident can be divided into two periods: (a) the period immediately following the start of an incident (possibly before a release has occurred), when little or no environmental data are available to confirm the magnitude of releases, and (b) the subsequent period, when environmental or source term measurements permit a more accurate assessment of projected doses.

4.3 During the first period, speed in completing such actions as evacuating, sheltering-in-place, and controlling access may be critical to minimizing exposure. Environmental measurements made during this period may have limited use

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because of the lack of availability of significant data and uncertainty about changes in environmental releases of radioactive material from their sources. In the case of a facility, for example, the uncertainty might be due to changes in pressure and radio nuclide concentrations within the structures from which the plume is being released. Therefore, it may be advisable to initiate early protective actions in a predetermined manner that is related to facility conditions. This will normally be carried out through recommendations provided by the facility operator. During the second period, when environmental levels are known, these actions can be adjusted as necessary.

4.4 For an incident at a facility involving significant potential for an atmospheric release with offsite consequences, the following sequence of actions is appropriate:

- Notification of State and/or local authorities by the facility operator that conditions are such that a release is occurring, or could occur with offsite consequences. For severe incidents (e.g., General Emergencies), the operator should provide protective action recommendations to State and local authorities.

- Monitoring of facility conditions, release rates, environmental concentrations, and exposure rates.

- Estimation of offsite consequences (e.g., calculation of the plume centerline dose rates and projected doses at various distances downwind from the release point).

- Implementation of protective actions in additional areas if needed.

- Decisions to terminate existing protective actions should include, as a minimum, consideration of the status of the plant and the PAGs for relocation (Chapter 4, EPA-400). (Withdrawal of protective actions from areas where

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they have already been implemented is usually not advisable during the early phase because of the potential for changing conditions and confusion).

CHECKLIST 1 Unusual Event

_____ 1. Upon notification from Entergy of an Unusual Event, the County Warning Point (CWP) will notify the County organizations on the Unusual Event call list. Health Department will receive notification.

Log Notification Time:

_____

_____

_____

_____ 2. Perform any internal departmental notifications deemed appropriate.

Notes: _____

_____

_____

_____ 3. Review RECS form information. Brief the County Executive on plant status and follow up with Indian Point, if appropriate.

Notes: _____

_____

_____

_____ 4. No further actions are necessary unless directed by the County Executive.

Notes: _____

_____

_____

_____ 5. Stand by for possible escalation to an ALERT or until the UNUSUAL EVENT is terminated.

Notes: _____

_____

_____

CHECKLIST 1	Unusual Event

_____ 6. Upon termination, relay information to appropriate Departmental staff.

Notes: _____

_____ 7. Log other actions taken:

_____

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CHECKLIST 2 Alert

_____ 1. Upon notification, Health Department staff respond to the EOC and staff their assigned positions.

Notes: _____

_____ 2. Assure Health Department personnel have been dispatched to the following positions:

____ Dose Assessment Room
____ EOC Representatives
____ EOC Radiological Officer
____ EOF Liaison
____ Two Field Monitoring Teams

Notes: _____

_____ 3. Assure all county agencies are providing female emergency workers with NRC Reg. Guide 8.13 and the Declaration of Pregnancy form, prior to issuing dosimetry. Coordinate with the Radiological Officer to assure all local and other support agencies are doing the same. (Attachments 4 and 5)

Notes: _____

_____ 4. Notify Health department staff to pick up dosimeters, TLD's Potassium Iodide (KI), and emergency exposure cards at 112 East Post Road White Plains.

Notes: _____

CHECKLIST 2 Alert

_____ 5. Review the Radiological Emergency Data Form to see if there is a radioactive release exceeding normal operating "Technical Specification Limits". If so, confer with INDIAN POINT and have the field monitoring team supervisor take appropriate actions.

Notes: _____

_____ 6. Place the Emergency Worker Personnel Monitoring Center staff on stand-by.

Notes: _____

_____ 7. Plan reception center staffing assignments for monitoring and decontamination, and place monitoring and decon staff for White Plains High School, Harrison High School and Westchester Community College on stand-by.

Notes: _____

_____ 8. Provide offsite monitoring results to Westchester Command Room, PIO, licensee, other counties, SEMO and jointly assess them. Request offsite monitoring results from the other counties, Entergy and SEMO.

Notes: _____

_____ 9. Brief the County Executive on a regular basis on agency activities, plant status, potential release status, projected dose rates and weather data.

Notes: _____

CHECKLIST 2 Alert

_____ 10. Contact the Department of Corrections to confirm status of KI Distribution Point preparations.

_____ 11. Develop a 24 hour shift schedule for extended EOC operations (two 12 hour shifts) and notify replacements of schedule. Note: Have lead positions report to the EOC one half hour prior to their shift for turn over from the previous shift.

Notes: _____

_____ 12. Stand by for possible escalation to an SITE AREA EMERGENCY or until the ALERT is terminated.

Notes: _____

_____ 13. If terminated, contact Health department staff to stand down and inform them that the ALERT has been terminated.

Notes: _____

_____ 14. Document departmental costs and provide information to DES.

Notes: _____

CHECKLIST 3 Site Area Emergency

_____ 1. Upon notification, Health department staff respond to the EOC and staff their assigned positions.

Notes: _____

_____ 2. Assure Health Department personnel have been dispatched to the following positions:

____ Dose Assessment Room
____ EOC Representatives
____ EOC Radiological Officer
____ EOF Liaison
____ Two Field Monitoring Teams

Notes: _____

_____ 3. Assure all county agencies are providing female emergency workers with NRC Reg. Guide 8.13 and the Declaration of Pregnancy form, prior to issuing dosimetry. Coordinate with the Radiological Officer to assure all local and other support agencies are doing the same. (Attachments 4 and 5)

Notes: _____

_____ 4. Notify Health department staff to pick up dosimeters, TLD's Potassium Iodide (KI), and emergency exposure cards at 112 East Post Road White Plains.

Notes: _____

CHECKLIST 3 Site Area Emergency

_____ 5. Review the Radiological Emergency Data Form to see if there is a radioactive release exceeding normal operating "Technical Specification Limits". If so, confer with INDIAN POINT and have the field monitoring team supervisor take appropriate actions.

Notes: _____

_____ 6. Notify the Health Department staff and to:

- Set up monitoring and decon at the White Plains, Harrison and Westchester Community College reception centers and place staff for the others on stand by.

_____ 7. Coordinate with Corrections to ensure activation of KI distribution Points.

Notes: _____

_____ 8. Open the Westchester County Fire Training Center Emergency Worker PMC.

Notes: _____

CHECKLIST 3 Site Area Emergency

_____ 9. Review the Radiological Emergency Data Form to see if there is a radioactive release exceeding normal operating "Technical Specification Limits" if so confer with the INDIAN POINT and have the field monitoring team supervisor take appropriate actions.

Notes: _____

_____ 10. Review dose assessments and projections on an ongoing basis to prepare for a Protective Action Decision (PAD) in the event of an escalation to a General Emergency.

Note: KI is ordered for the affected public at a General Emergency.

_____ 11. In support of New York State Department of Health's actions prepare for Isolation of Ingestion Pathways and Sources;

- Put milk animals within 2 miles on stored feed and assess the need to extend the distance.
- Quarantine foodstuffs and water in the affected areas, if appropriate until samples can be evaluated for contamination levels.
- Coordinate with County, Local and Public Agencies regarding provisions and availability of adequate supplies of uncontaminated foodstuffs and water.
- Coordinate with the Westchester County PIO to ensure these actions are included in news releases.

_____ 13. Provide offsite monitoring results to the PIO, licensee, other counties, and SEMO and jointly assess them.

Notes: _____

CHECKLIST 3 Site Area Emergency

_____ 14. Brief the County Executive on a regular basis on agency activities, plant status, potential release status, projected dose rates and weather data.

_____ 15. Develop a 24 hour shift schedule for extended EOC operations (two 12 hour shifts) and notify replacements of schedule. Note: Have lead positions report to the EOC one half hour prior to their shift for turn over from the previous shift.

Notes: _____

_____ 16. Stand by for possible escalation or until event is terminated.

Notes: _____

_____ 17. If terminated, contact Health department staff to stand down.

Notes: _____

_____ 18. Document departmental costs and provide information to DES.

Notes: _____

CHECKLIST 4 General Emergency

_____ 1. If this is an Immediate General Emergency Notification, note that the County Warning Point will initiate siren sounding and issue a default Emergency Alert System (EAS) message to sheltering-in-place within five miles.

Immediately confer with the County Executive and DES Commissioner to consider the need for evacuation and administration of KI to impacted public.

NOTE: When the General Emergency is declared the most likely initial protective action is evacuation of the 2-mile radius and 5-mile downwind affected AREA's (weather and other conditions permitting). Sheltering-in-place may be warranted if severe weather conditions exist e.g. heavy snow, tornadoes, floods etc. Refer to attachment 6 for sheltering-in-place guidelines. Expansion of the PAD out to 10 miles or other AREA's may be required depending on wind shifts, field monitoring team data or additional PAR's from the utility.

When a protective action decision is made on evacuation or sheltering-in-place, the decision makers should also consider the following factors:

- **Plant conditions and emergency classification level**
- **Projected dose base on release estimates and meteorological conditions**
- **Projected dose based on simulated field measurements and meteorological conditions**
- **Protective action guides incorporated in the organization's plan**
- **Evacuation travel time estimates**
- **Risk from evacuation**
- **Weather conditions**

Notes: _____
_____
_____

_____ 2. Advise all emergency workers working in the ten mile EPZ to don dosimetry and to take Potassium Iodide (KI) as per the SEMO Health Department protocol.

Notes: _____
_____
_____

CHECKLIST 4 General Emergency

_____ 3. Assure Health Department personnel have been dispatched to the following positions:

____ Dose Assessment Room
____ EOC Representatives
____ EOC Radiological Officer
____ EOF Liaison
____ Two Field Monitoring Teams
____ Reception Center Staff
____ Emergency Worker Personnel Monitoring Center

Notes: _____

_____ 4. Assure all agencies are providing female emergency workers with NRC Reg. Guide 8.13 and the Declaration of Pregnancy form, prior to issuing dosimetry. Coordinate with the Radiological Officer to assure all local and other support agencies are doing the same. (Attachments 4 and 5)

Notes: _____

_____ 5. Notify Health department staff to pick up dosimeters, TLD's Potassium Iodide (KI), and emergency exposure cards at 112 East Post Road White Plains.

Notes: _____

_____ 6. Notify the Health Department staff to:

- Be prepared to initiate monitoring and decontamination operations at the White Plains, Harrison HS and Westchester Community College reception centers and, based upon the Areas impacted by the evacuation order, monitoring and decon at additional reception centers as needed.

CHECKLIST 4 General Emergency

_____ 7. Coordinate with Corrections to ensure activation of KI distribution Points.
Notes: _____

_____ 8. Open the Westchester County Fire Training Center Emergency Worker PMC.
Notes: _____

_____ 9. Review dose assessments and projections on an ongoing basis to prepare for a Protective Action Decision (PAD) in the event of an escalation to a General Emergency.
Note: KI is ordered for the affected public at a General Emergency.

_____ 10. Prepare for Isolation of Ingestion Pathways and Sources;

- Put milk animals within 2 miles on stored feed and assess the need to extend the distance.
- Quarantine foodstuffs and water in the affected areas, if appropriate until samples can be evaluated for contamination levels.
- Coordinate with County, Local and Public Agencies regarding provisions and availability of adequate supplies of uncontaminated foodstuffs and water.

_____ 11. Provide offsite monitoring results to the Command Room, PIO, licensee, other counties, and SEMO and jointly assess them.
Notes: _____

CHECKLIST 4 General Emergency

_____ 12. Brief the County Executive on a regular basis on agency activities, plant status, potential release status, projected dose rates and weather data.

Notes: _____

_____ 13. Request periodic status reports from the reception centers concerning processing of evacuees and levels of contamination identified.

_____ 14. Develop a 24 hour shift schedule for extended EOC operations (two 12 hour shifts) and notify replacements of schedule. Note: Have lead positions report to the EOC one half hour prior to their shift for turn over from the previous shift.

Notes: _____

_____ 15. If terminated, contact Health department staff to stand down.

Notes: _____

_____ 16. Document departmental costs and provide information to DES.

Notes: _____

Attachment 1

Iodine Prophylaxis (KI) Policy

Westchester has adopted the State KI policy and position paper, titled, "Implementation of the Use of Potassium Iodide (KI) as a Protective Action for the Public", developed by the New York State Nuclear Emergency Preparedness Subcommittee Technical Issues Task Force, Revision 2, June 2007.

This document follows:

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

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.

Constellation Energy Group (Nine Mile Point)

James D. Jones _____ _____ _____
Name Signature Date

Entergy Nuclear Northeast (J.A. FitzPatrick and Indian Point Energy Center)

Michael Slobodien _____ _____ _____
Name Signature Date

Constellation Energy Group (R.E. Ginna Station)

Sherri Kennedy _____ _____ _____
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Andrew Feeney _____ _____ _____
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New York State Health Department

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Name Signature Date

IPEC00200385

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:

   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.

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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 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.

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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.

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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,
- 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 AREAs 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.

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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.

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).

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- 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).

- 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.
- 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.
- 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 exits (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.

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- 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."

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 years	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 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).

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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.

5. Implementation Considerations

This section provides suggestions for implementing the recommendations contained above.

5.1 Licensee actions

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The Part 1 Notification Fact Sheet item 7.B. should be modified to read, "Evacuate and implement the KI plan for the following AREA'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.

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

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 nucle. power plant.

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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.

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.

Attachment 2
EPA PROTECTIVE ACTION GUIDES FOR EMERGENCY WORKERS

Dose limit[a] (REM) Emergency Workers	Activity	Condition
5	all	
10	protecting valuable property	lower dose not practicable
25	life saving 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. (Ref: EPA 400-R-92-001, May 1992).

The default Correction Factor is 1. Calculation of the correction factor is performed in the Westchester County EOC in conjunction with the New York State EOC, not in the field. The Correction Factor may be transmitted to the field resulting in revised field reporting values.

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ATTACHMENT 3
RADIOLOGICAL EXPOSURE CONTROL
EMERGENCY WORKER AUTHORIZATION - FOR EXPOSURE OVER 5 REM

DATE: _____

NAME: _____

AGENCY: _____

SOCIAL SECURITY NUMBER: _____

TLD NUMBER: _____

DOSIMETER NUMBER: _____ 0-5 R

_____ 0-200 R

EXPOSURE TO DATE: _____

Permission is granted for this worker to remain in the EPZ until his/her exposure reaches:

_____ 10 R

_____ 25 R

_____ >25 R
(with informed consent)

COUNTY EXECUTIVE: _____

DATE:_____ TIME:_____

COMMISSIONER OF HEALTH: _____

DATE:_____ TIME:_____

Attachment 4
NRC REGULATORY GUIDE 8.13

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 Section 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 uniform 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.

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.

The magnitude of risk of childhood cancer following in utero exposure is uncertain 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

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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 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

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rem (1 mSv) should be justified by the licensee.

A. IMPLEMENTATION

The purpose of this section is to provide information to licensees and applicants regarding the NRC staff's 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.

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 informed 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.

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3. If I 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.

   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 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.

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 declare in writing that you are already pregnant.

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.

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*.

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.

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.[1(1)] (Electronically available at www.nrc.gov/NRC/RG/index.html)

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.

10. National Radiological Protection Board, *Advice on Exposure to Ionising Radiation During Pregnancy*, National Radiological Protection Board, Chilton, Didcot, UK, 1998.

11. M.L. Thomas and D. Hagemeyer, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, 1996," Twenty-Ninth Annual Report, NUREG-0713, Vol. 18, USNRC, 1998.[2]

Attachment 5

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)

DRAFT

Attachment 6
Sheltering-in-place Guidelines

The Sheltering-in-place Option gives the County the capability to implement an effective protective action for the general public in the event of a puff-type radiological release incident at the Indian Point Energy Center (IPEC). In addition, for those situations requiring evacuation and where evacuation cannot be implemented because of time constraints and/or impediments to highway movement, Sheltering-in-place may be implemented in lieu of evacuation.

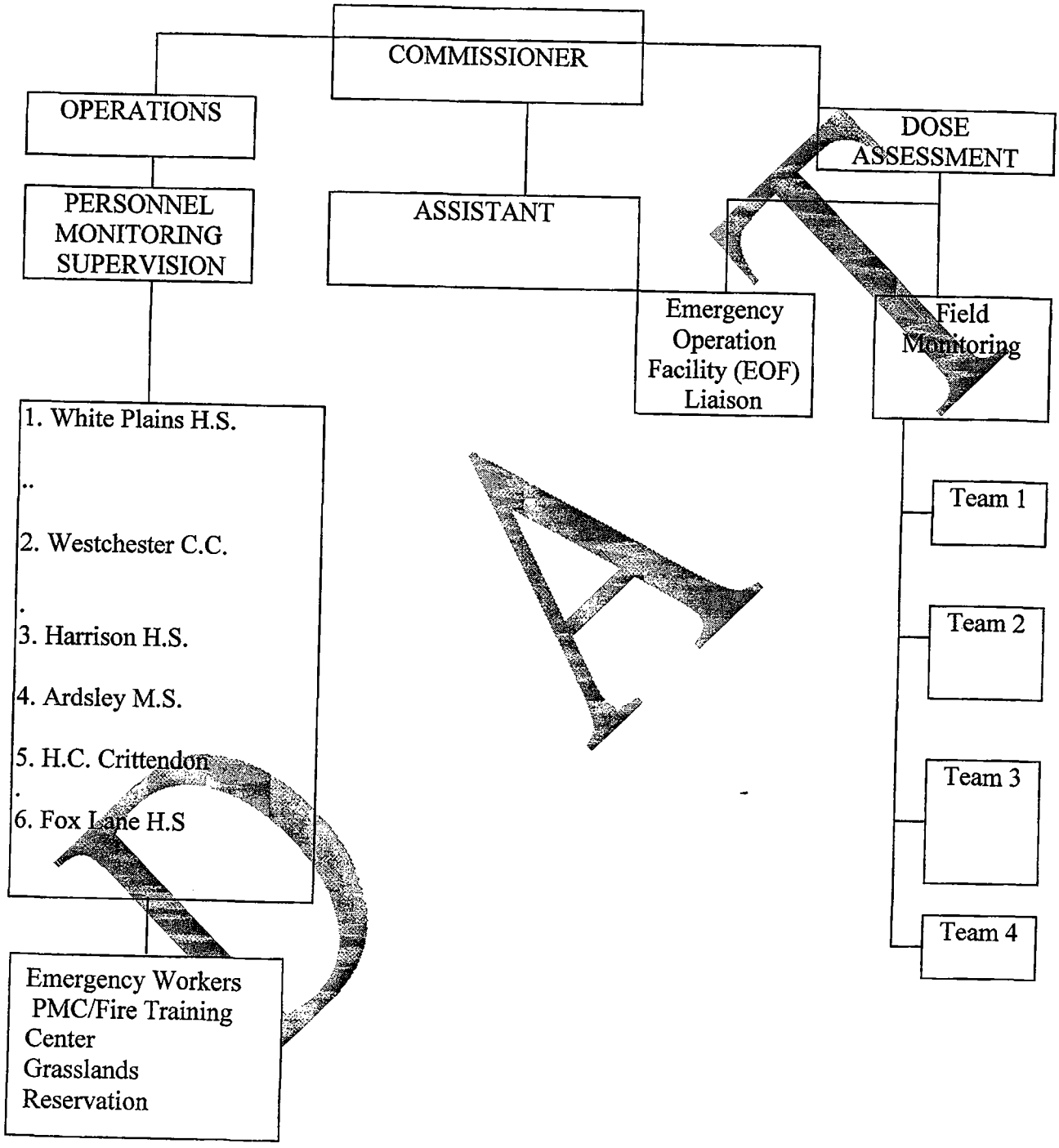
If Sheltering-in-place is implemented, the general public and special facility administrators should be informed of the following:

1. Remain indoors and close all windows and doors.
2. Turn off all fans, air conditioning equipment and other sources of outside air.
3. Close blinds and drapes.
4. Extinguish fires in fireplaces and close flues.
5. **Keep listening to the TV and radio.** For heightened awareness of a radiological emergency and for possible protective actions announced via the Emergency Alert System.

Sheltering-in-place may be preferable to evacuation as a protective action in some situations. Because of the higher risk associated with evacuation of some special groups in the population (e.g., those who are not readily mobile), sheltering-in-place may be the preferred alternative for such groups as a protective action at projected doses up to 5 rem. In addition, under unusually hazardous environmental conditions use of sheltering-in-place at projected doses up to 5 rem to the general population (and up to 10 rem to special groups) may become justified. Sheltering-in-place may also provide protection equal to or greater than evacuation due to the nature of the source term and/or in the presence of temporal or other site-specific conditions. Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile, and d) local physical factors which impede evacuation.

ATTACHMENT 7

HEALTH DEPARTMENT EMERGENCY ORGANIZATION



ATTACHMENT 8
RECEPTION CENTER LIST

Reception Center	Status	Assigned Supervisor/Contact No.
White Plains High School 550 North Street White Plains		
Westchester Community College 75 Grasslands Road Valhalla		
Harrison High School 255 Union Avenue Harrison		
Ardsley Middle School 700 Ashford Avenue Ardsley		
H.C. Crittenden Middle School 10 MacDonald Avenue Armonk		
Fox Lane High School South Bedford Road Bedford		

DRAFT

APPROVED BY DOH:_____	Westchester County DEPARTMENT OF EMERGENCY SERVICES	IP-3.1

EMERGENCY PREPAREDNESS
IMPLEMENTING PROCEDURE

Dose Assessment

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Dose Assessment

1.0 Purpose

The purpose of this procedure is to provide instructions for assessing the radiological consequences of an emergency at the Indian Point Station. Dose assessment methodologies are provided for determining dose rates and doses from actual or projected releases of airborne radioactive materials, and protective action options to be implemented based on these calculations.

2.0 Concept of Operations

The Westchester County Dose Assessment function is performed at the county EOC. The County Dose Assessment Team receives Indian point data from Radiological Data Forms parts I&II (Fig. 2), field monitoring teams and the Meteorological Radiological Process Data Acquisition System (MRPDAS). There is also an Indian Point technical representative who coordinates with the dose assessment team to provide plant status. The dose assessment organization will direct the Field Monitoring Teams to obtain readings and field conditions as appropriate to verify and assist in dose assessment functions.

3.0 Responsibilities

3.1 County Commissioner of Health – The County Commissioner of Health or their designee is responsible for assuring there is adequately trained staff to support dose assessment activities on a 24/7 basis if there is an event at the Indian Point Nuclear Facility for which the teams will be activated and for providing necessary consultation during events.

3.2 County Commissioner Department of Emergency Services – The County Commissioner Department of Emergency Services or their designee is responsible for maintaining the plans procedures in support of dose assessment activities and assuring that training is provided to the appropriate health department personnel.

3.3 Emergency Director (ED) – The ED is responsible for all activities in the Dose Assessment Room and communicates with the Command Room providing protective action options and recommendations. These options and recommendations are based on forecasted meteorological conditions, IPEC plant conditions, dose assessment calculations, and results of field monitoring. The ED maintains a discourse with the IPEC Technical Representative stationed in the Dose Assessment Room to ascertain changing plant status, and provides updates to the EOC.

3.4 Senior Dose Assessor – The Senior Dose Assessor is responsible for all activities in the Dose Assessment Room when the ED is absent from the room. The Senior Dose Assessor is responsible for coordination of the Dose Assessors in applying technical data acquired from IPEC and Field Monitoring Teams, and providing documentation to the ED. The Senior Dose Assessor maps theoretical radiological plumes utilizing the IPEC computer program and/or manually aligning appropriate Xu/Q overlays on the Wind Sector Map, and maintains display boards in the Dose Assessment Room with current meteorological and IPEC plant conditions, and projected doses. The Senior Dose Assessor coordinates communications with dose assessors at the NYSEOC and other County Health Departments, and the County Health Department representative at the EOF.

3.5 Dose Assessors - The Dose Assessors are responsible for taking technical data acquired from IPEC and field monitoring teams, applying this data in accordance with this SOP and performing calculations to project radiological doses and to support other dose assessment calculations.

3.6 Utility Phone Operator – The Utility Phone Operator maintains communications with NYS and other County's dose assessment personnel, WCDOH personnel in the EOF, and

others as directed by the ED and the Senior Dose Assessor. The Utility Phone Operator also handles all incoming phone calls to the Dose Assessment Room.

3.7 MRPDAS Computer Operator - The MRPDAS Computer Operator is responsible for continuous access of meteorological data, plant parameter status and fixed radiological monitor readings from IPEC. The MRPDAS Computer Operator is also responsible for operation of the Dose Computer in performing computerized dose assessment calculations, and providing all information to the Senior Dose Assessor.

3.8 RECS Phone Operator- The RECS Phone Operator monitors notifications from IPEC and records information on Radiological Emergency Data Forms, if required. (Note: under the new RECS system, the Part 1 and 2 forms are faxed and emailed. The RECS telephone operator would only have to record information read over the phone if the fax and email system failed.)

3.9 E-Mail Messenger – E-Mail Messenger is responsible for maintaining communications with County Commissioner of Health, Health Desk and other EOC personnel via e-mail. The E-Mail Messenger is also responsible for receipt of all notifications and Radiological Emergency Data Forms from IPEC via Rightfax.

3.10 EOF Liaison - The EOF Liaison reports to the IPEC EOF to monitor IPEC plant conditions and report condition updates to the Westchester County EOC Dose Assessment Room. The Liaison may also report on other information such as the results of Entergy's field monitoring activities. Liaison will also be available to brief Entergy at the EOF regarding Westchester County response status.

3.11 Field Monitoring Team Coordinator – The Field Monitoring Team Coordinator is stationed in the Dose Assessment Room and is responsible for overall coordination of the field monitoring teams. The Field Monitoring Team Coordinator is responsible for initial deployment of field monitoring teams as discussed with the ED, and the relocation of field monitoring teams throughout the event. The Field Monitoring Team Coordinator is responsible for maintaining communication with field monitoring teams via cell phones and the RACES Operator stationed in the Dose Assessment Room, recording results of field monitoring, and providing these results to the Senior Dose Assessor.

3.12 Assistant Field Monitoring Team Coordinator – The Assistant Field Monitoring Team Coordinator responds directly to the radiological equipment storage location to observe field monitoring teams perform pre-departure checklist items on all equipment. From this location the Assistant Field Monitoring Team Coordinator establishes contact with the Field Monitoring Team Coordinator to receive briefing information prior to deployment of field monitoring teams and prior to responding to the EOC Dose Assessment Room to assist the Field Monitoring Team Coordinator.

3.13 Radiological Safety Officer – The Radiological Safety Officer is responsible for ensuring all exposure records are documented during exercises and real events and transmitted to the county for record keeping, reporting emergency work exposures to the County Commissioner of Health, and coordinating with the Health Department for the retrieval of control TLDs from field locations.

4.0 References

a. Entergy, Dose Assessment, IP-EP-310.

b. Environmental Protection Agency, EPA -400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, May 1992.

5.0 Procedure

IPEC00200419

Dose Assessment

5.1 At the Alert status or higher the county warning point will notify the Department of Health Contact who will notify the dose assessment team members via the Department of Health call out list and direct them to report to the EOC.

5.2 Once the dose assessment team members have been notified and deployed to the EOC, the team lead will check attachment 9 to ensure all positions are filled and complete attachment 10 Field Monitoring Team Roster and notify the EOC Operations Manager of team status.

5.3 The dose assessment team lead will assess the Indian Point data and consult with the IPEC technical representative to establish a baseline for future dose projection and protective action recommendations.

5.4 Verify dose projections by actual field team readings if possible.

5.5 Weather conditions and source term will have a determination on dose projections; therefore it is critical to monitor meteorological conditions as well as plant conditions for possible change in projected dose rates or dose.

5.6 When thyroid doses are calculated, the child thyroid dose is used conservatively, since child thyroid dose is approximately two times the adult thyroid dose for iodine inhalation.

5.7 At a Site Area Emergency, the dose assessment team should discuss the protective action decision (PAD) in anticipation of the protective action recommendation (PAR) from Indian Point and be prepared to finalize the PAD once Indian Point has made their recommendation.

5.8 Once the PAD is finalized with the County Executive, the PIO staff will initiate the EAS message.

5.9 The county has the capability to calculate dose assessments by two means. The primary means is by using a PC based computerized dose assessment program. The backup is via manual calculations. The computer program mimics the Manual system (i.e. uses the same formulas and methods). use attachment 1 for computer dose assessment procedure. Additionally, there are two methods of manually estimating offsite dose. One method is to use data input from the Radiological Emergency Data Form (Parts I and II) (FIG.2), MRP-DAS, or the county representative at the EOF. The second method involves taking radiation readings and samples offsite to estimate the dose at various offsite locations.

Attachment 1

PROCEDURE FOR PC BASED DOSE ASSESSMENT PROGRAM

1. Turn computer and monitor on
2. Access dose assessment program (in most cases this simply means clicking on the dose assessment icon).
3. Hit any key to continue
4. Do you want to back-calculate RR from an actual field reading? Y or N? Hit N and <Enter>
5. What is Noble Gas Release Rate (NGRR Ci/sec)? Input NG RR and <Enter>
6. Do you know the Iodine Release Rate (IRR Ci/sec)? Y or N? Hit N and <Enter>
7. Have you obtained a chem. sample? Y or N? Hit N and <Enter>
8. Enter wind speed (WS m/sec). Input WS and <Enter>
9. Enter Pasquill category. Input Pasquill and <Enter>
10. Enter Wind Direction (WD) in degrees. Input WD and <Enter>
11. Enter expected release duration in hours (Default 4 hours). Input release duration and <Enter>. Hit <Enter> to default to 4 hours.
12. Enter time since reactor shutdown (hours). Input time and <Enter>
13. Current DCF value ( )Change? Y or N? Hit N and <Enter>
14. Enter point of interest Xu/Q. If no point of interest hit N and <Enter>
15. Calculations will now be performed. Print out results.

Attachment 2
Determination of Potentially Affected Sectors and Plume Arrival Time

1. Obtain meteorological conditions (wind speed, wind direction, and Pasquill Stability class) from Radiological Emergency Data Form (Part I) or MRPDAS.

NOTE: Wind direction is always the direction <u>from</u> which the wind is coming.

2. Select the appropriate Xu/Q overlay as indicated on the flow chart (Figure 1) located on the outside cover of the overlay book. The overlay should be aligned as indicated on Figure 1.

3. Determine all sectors affected by the overlay by considering the potentially impacted area to include centerline sector and affected adjacent sectors. Use the most conservative isopleth line for the sector when two or more are overplayed.

4. Refer to Table 4 to convert affected sectors to AREA's as they relate to 2, 5, and 10 mile zones.

NOTE: Only one sector is needed to qualify an AREA for action.

5. Enter the current meteorological conditions and potentially affected sectors and AREA's on Assessment Worksheet No. 1.

6. Calculate plume arrival times for 2, 5 and 10 miles and any other location of interest using the equations on Assessment Worksheet No. 1.

7. Enter or attach meteorological forecast information from EOF or other (back-up) source (e.g., NYSEOC, MRPDAS, NOAA) on Assessment Worksheet No. 1.

Attachment 3
Dose Projections Using Data Input from Radiological Emergency Data Forms (Part I and II)
Note: See figure 2 for example of Radiological Emergency Data Forms

1. Obtain the following information from the Nuclear Facility Operator (NFO) on Part I and Part II of the Radiological Emergency Data Form:

   a) Noble Gas Release Rate (Ci/sec)
   b) Particulate release rate (Ci/sec), if available
   d) Wind Direction (degrees from)
   e) Wind Speed (meters/sec) (1 m/s = 2.2 mph)
   f) Pasquill Stability Class (A-G)
   g) Time of Reactor Shutdown or Reactor Scram

> NOTE: If only a Noble Gas Release Rate (NGRR) is available, multiply the NGRR by 1E-4 for a Loss of Coolant Accident (LOCA) or 1E-2 for a Main Steam Line release to obtain the Iodine Release Rate (IRR). Iodine release rates will be determined by actual effluent analyst of vent samples but this information is not immediately available. In the absence of immediate information on Iodine release rates, default values are used. When the actual release rates become available they are used to perform dose assessments.
>
> NOTE: If the particulate release rate is not available, enter "0" (zero) for particulate release rate into TEDE dose rate equation on Assessment Work Sheet No. 2.

2. Verify Release Rates with the EOF and/or NYSEOC. Continue with this procedure while awaiting this verification.

3. Enter the following data onto Assessment Worksheet No. 2:

   a) appropriate information from step 1

   b) appropriate Xu/Qs for site boundary, 2, 5, and 10 miles from Tables 1, 2, and 3

   c) release rates (RR), Xu/Qs, and the inverse of the wind speed (1/WS) into the TEDE (Whole Body) and TODE-Thyroid Dose Rate equations for site boundary, 2, 5, and 10 miles

Attachment 3
Dose Projections Using Data Input from Radiological Emergency Data Forms (Part I and II)
(continued)

d) Appropriate value for the Noble Gas Dose Conversion Factor (NG DCF) from Table 5A for the TEDE (Whole Body) Dose Rate equation for site boundary, 2, 5, and 10 miles.

> NOTE: NG DCF is the constant used to convert noble gas concentration to equivalent mRem whole body exposure while taking into account the decay of noble gases for elapsed time from reactor shutdown to the arrival of the plume at the point of interest.

e) Appropriate value for the Iodine Dose Conversion Factor (I DCF) from Table 5B for the TODE-Thyroid Dose Rate equation for site boundary, 2, 5, and 10 miles.

> NOTE: I DCF is the constant used to convert radioiodine concentrations to equivalent mRem dose to a child's thyroid.

> NOTE: Specific release rates for five iodine isotopes may become available from the Nuclear Facility Operator after a period of time. Use Table 5B to determine the I DCF value for each iodine isotope present.

4. Calculate the TEDE (Whole Body) and TODE-Thyroid Dose Rates (mRem/hr) for site boundary, 2, 5, and 10 miles on Assessment Worksheet No. 2.

> NOTE: Separate TODE-Thyroid Dose Rate equations should be calculated for all five iodine isotopes when isotopic data becomes available. The results of each equation must be added together to determine the total TODE-Thyroid Dose Rate (mRem/hr) for each particular distance.

Attachment 3
Dose Projections Using Data Input from Radiological Emergency Data Forms (Part I and II)
(continued)

5. Enter the following data onto Assessment Worksheet No. 3:

   a. duration of release from the NPO on Part II of the Radiological Emergency Data Form. If unavailable, a default value of 4 hours is to be assumed.

   b. calculated TEDE (Whole Body) and TODE-Thyroid Dose Rates (mRem/hr) for site boundary, 2, 5, and 10 miles from Assessment Worksheet No. 2.

6. Multiply the Dose Rates (mRem/hr) by the duration of release (Hrs) and divide by 1000 on Assessment Worksheet No. 3 to obtain the projected TEDE (Whole Body) and TODE-Thyroid Doses (Rem) for site boundary, 2, 5, and 10 miles.

NOTE: These projected doses are along the centerline of the plume. For off-centerline projected doses, repeat steps 3 through 6 using the Xu/Q value of the most conservative isopleth nearest the location of interest on the appropriate Xu/Q overlay. Selection of the appropriate Xu/Q overlay is described in Figure 1.

7. To determine the emergency worker CDE-Thyroid dose for KI administration purposes, perform the calculations on Assessment Worksheet No. 6.

NOTE: Use the <u>adult</u> CDE-Thyroid dose conversion factors listed on the worksheet for these calculations.

Attachment 4

Dose Projections From Sample Data

Dose projections can also be performed for any location within the plume area described by the Xu/Q overlay, if radiological monitoring sample results or dose projection data is available from any other location within the plume area. The following equation is to be used for these projections.

$$\frac{\text{(Xu/Q of Location of Interest)}}{\text{(Xu/Q of Sample Location)}} \times \text{(Dose Rate or Dose at sample location)} = \text{Dose Rate or Dose at location of interest}$$

1. Obtain meteorological conditions (wind speed, wind direction, and Pasquill Stability class) from Radiological Emergency Data Form (Part I) or MRPDAS.

> NOTE: Wind direction is always the direction <u>from</u> which the wind is coming.

2. Select the appropriate Xu/Q overlay as indicated on the flow chart (Figure 1) located on the outside cover of the overlay book. The overlay should be aligned as indicated on Figure 1.

3. Determine from the overlay the most conservative Xu/Q value nearest the location at which the radiological sample results were reported or dose projection data is available. Record this Xu/Q value and enter it as the Xu/Q of Sample Location in the equation listed Above.

4. Select a location of interest in the plume area for which dose or dose rate projections are desired.

5. Determine from the overlay the most conservative Xu/Q nearest the location selected in step 4. Record this Xu/Q value and enter it as the Xu/Q of Location of Interest in the equation listed at the top of the page.

6. Enter the radiological sample results or dose projection data into the first equation on Assessment Worksheet No. 4 and perform the indicated multiplication to obtain a dose rate or dose projection.

7. Repeat steps1 through 6 for any additional locations for which dose rate or dose projections are desired

> NOTE: Results from a closed-window at 3 feet radiation field survey (mR/hr) can be used directly on Assessment Worksheet No. 3 to calculate a dose (gamma only).

Attachment 4

Dose Projections From Sample Data
(continued)

8. Iodine sample results from an airborne survey must be converted from cpm to a dose rate (mrem/h) using the following equations listed on Assessment Worksheet No. 4. These results are used to calculate a dose on Assessment Worksheet No. 3:

$$\text{Iodine Activity (uCi/cc)} = \frac{[\text{Iodine Sample (cpm) (from Charcoal or AgZe) - Background (cpm)}]\text{x}4.6\text{E-}9}{\text{Sample Volume (ft}^3\text{)}}$$

$$\text{CDE-Thyroid Dose Rate (mrem/h)} = \text{Iodine Activity(uCi/cc) (from Charcoal or AgZe)} \times 8.0\text{E}8^*$$

CDE Thyroid Dose = Thyroid Dose Rate (mrem/hr) x Release duration

Sample Problem

Determine TODE-Thyroid dose from the following field team data: Assume the team is in the plume center line and time is less then 24 hours after shutdown.

Open Window 3 foot reading = 300 mrem/hr

Closed Window 3 foot reading = 270 mrem/hr

Air Sample Background reading = 50 cpm

Air Sample Volume = 10 (ft3)

Particulate Filter Sample reading = 65 cpm

Charcoal or AgZe Sample reading = 2650 cpm

DDE = The closed window reading at 3 feet

DDE=270 mrem/hr

Iodine Activity (uCi/cc) = $\frac{\text{Iodine Sample (cpm) from charcoal or AgZe – Background (cpm) x 4.6E-9}}{\text{Sample Volume (ft3)}}$

Iodine Activity (uCi/cc) = $\frac{(2650-50) \times 4.6E-9}{10}$

Iodine Activity = 1.2E-6 uCi/cc

Thyroid Dose Rate = Iodine Activity (uCi/cc) x IDCF

Thyroid Dose Rate = 1.2 E-6 x 8.0 E8

Thyroid dose Rate = 960 mrem/hr

TODE-Thyroid = (DDE dose rate + CDE Thyroid dose rate) x Release duration

If release duration is unknown use 4 hours default

TODE-Thyroid = (270 mrem/hr + 960 mrem/hr) x 4 hrs

TODE_Thyroid = 4900 mrem or 4.9 Rem

*NOTE:	For greater than 24 hours after shutdown, use only the I-131 DCF (2.6E9).

Attachment 5

Determination of Protective Action Options

1. Determine and circle (on Assessment Worksheet No. 3) the protective action options to be recommended based on the projected doses calculated on Assessment Worksheet No. 3 and the following table:

DOSE (REM) TO THE POPULATION	EPA RECOMMENDED ACTIONS(a)
Total Effective Dose Equivalent (TEDE) < 1 Total Organ Dose Equivalent-Thyroid < 5 (TODE-Thyroid)	No planned protective actions (b). County/State may issue an advisory to seek shelter and await further instructions. Monitor environmental radiation levels. Sheltering-in-place is particularly useful to assure that a population is positioned so that, if the need arises, communication with the population can be carried out expeditiously.
TEDE 1 to < 5 TODE (Thyroid) 5 to < 25	Evacuation unless constraints make it impractical, then shelter. Monitor environmental radiation levels. Control access to affected areas. Seek shelter as a minimum. Sheltering-in-place may be preferable to evacuation as a protective action in some situations, i.e., evacuation of special populations, unusual environmental conditions. For unusual environmental conditions, projected doses up to 5 Rem TEDE to the general population (and up to 10 Rem TEDE to special populations) may be justified.
TEDE 5 TODE (Thyroid) 25	Conduct evacuation for general population. Monitor environmental radiation levels and adjust area for evacuation based on these levels. Control access to affected areas.

(a) These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration.
(b) At the time of the incident, officials may implement low-impact protective actions in keeping with the principle of maintaining radiation exposures as low as reasonably achievable (ALARA).

Attachment 5

Determination of Protective Action Options
(continued)

2. Describe the recommended protective actions as they relate to site boundary, 2, 5, and 10 miles on Assessment Worksheet No. 3.

3. Use the appropriate Xu/Q overlay as selected in Attachment 2. The overlay should be aligned as indicated on Figure 1.

4. Determine all sectors affected by the overlay. Consider the potentially impacted area to include centerline sector and affected adjacent sectors. Use the most conservative isopleth line for the sector when two or more are overlaid.

5. Refer to Table 4 to convert affected sectors to AREAs as they relate to 2, 5, and 10 mile zones.

NOTE: Only one sector is needed to qualify an AREA for action.

6. List AREAs with protective actions to be taken on Assessment Worksheet No. 3.

7. Correction Factor for Internal Dose

The dose limits in EPA 400-R-92-001 are expressed in terms of the radiation dose equivalent received from external sources (EDE) and the committed effective dose equivalent (CEDE) due to the intake of the radionuclide during the emergency. The external component of the dose to emergency workers is measured using the personal monitoring devices issued to these workers. These include TLD badges and direct reading dosimeters. The internal component, on the other hand, cannot be directly measured and can only be calculated from knowledge of the radionuclide in the release and estimates of the intake of these radionuclides by the emergency responders. In the absence of information on these radionuclides, county staff should use a value of <u>one</u> (1) for the correction factor. The New York State Department of Health staff will use available information on the release or plant status to determine the appropriate value of a correction factor to be used, and will communicate this value via telephone and/or fax to the dose assessment staff at the County Emergency Operations Center (EOC). When a value for the correction factor is provided to the county EOC staff, the New York State Department of Health may recommend that this value be used by the dose assessment staff when comparing the emergency worker dose to the appropriate PAG.

When a release occurs and <u>no</u> information is available on the release characteristics, its pathway or the plant's safety systems status, the New York State Department of Health may recommend a default value for the correction factor.

Attachment 6
Determination of Release Rates Necessary to Reach the PAGs

1. To determine the release rates that are necessary to reach the PAGs, perform the following calculations. Use Assessment Worksheet No. 5 to perform the following calculations.

2. TEDE EVACUATION PAG = 1 Rem

   Using Assessment Worksheets No. 2 and No. 3, calculate the TEDE dose using 1 Ci/sec release rate and 4 hour release duration (if release duration is unknown).

NOTE: For this calculation, use the Xu/Q value that corresponds to the land point representing the shortest distance between the plant and the county.

Take the reciprocal of the release rate as shown below.

1 over {TEDE ~ Dose ~ (Rem)} = Release rate necessary to reach 1 Rem TEDE PAG

3. TODE-THYROID EVACUATION PAG = 5 Rem

   Using Assessment Worksheets No. 2 and No. 3 calculate the TODE-THYROID dose using 1 Ci/sec release rate and 4 hour release duration (if release duration is unknown).

NOTE: For this calculation, use the Xu/Q value that corresponds to the land point representing the shortest distance between the plant and the county.

Take the reciprocal of the release rate and multiply by 5 as shown below.

{1 ~ x ~ 5} over {TODE-THYROID ~ Dose ~ (Rem)} = Release rate necessary to reach 5 Rem TODE-THYROID PAG

Attachment 7
EPA 400-R-92-001
Manual of Protective Action Guides and Protective Actions
General Public

A. PAGs for the Early Phase of a Nuclear Incident

Protective Action for General Public	PAG (projected dose)	COMMENTS
Evacuation (or sheltering-in-place[a])	1-5 REM[b] TEDE or 5-25 REM TODE-Thyroid	Evacuation (or, for some situations, sheltering-in-place[a]) should normally be initiated at 1 rem.

[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 (Total Organ Dose Equivalent (TODE)).

Although the PAG is expressed as a range of 1-5 rem, it is emphasized that, under normal conditions, evacuation of members of the general population should be initiated for most incidents at a projected dose of 1 rem. (It should be recognized that doses to some individuals may exceed 1 rem, even if protective actions are initiated within this guidance.) It is also possible that conditions may exist at specific facilities which warrant consideration of values other than those recommended for general use here.

Sheltering-in-place may be preferable to evacuation as a protective action in some situations. Because of the higher risk associated with evacuation of some special groups in the population (e.g. those who are not readily mobile), sheltering may be the preferred alternative for such groups as a protective action at projected doses up to 5 rem. In addition, under unusually hazardous environmental conditions use of sheltering-in-place at projected doses up to 5 rem to the general population (and up to 10 rem to special groups) may become justified. Sheltering-in-place may also provide protection equal to or greater than evacuation due to the nature of the source term and/or in the presence of temporal or other site-specific conditions. Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile and, d) local physical factors which impede evacuation.

Attachment 8
EPA 400-R-92-001
Manual of Protective Action Guides and Protective Actions
Emergency Workers

B. Guidance on Dose Limits for Workers Performing Emergency Services

Dose limit[a] (REM) TEDE	Activity	Condition
5	all	
10	protecting valuable property	lower dose not practicable
25	life saving 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]Total Effective Dose Equivalent (TEDE): 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.

(a) These actions are recommended for planning purposes. Protective action decisions at the time of the incident must take existing conditions into consideration.

(b) At the time of the incident, officials may implement low-impact protective actions in keeping with the principle of maintaining radiation exposures as low as reasonably achievable (ALARA).

Attachment 9
Dose Assessment
Staff Resources

Senior Dose Assessor	1
Dose Assessors	2
Utility Phone Operator	1
RECS Phone Operator	1
E-Mail Messenger	1
MRPDAS Computer Operator	1
EOF Liaison	1
Radiological Safety Officer	1
Emergency Director	1
Field Monitoring Team Coordinator	1
Assistant Field Monitoring Team Coordinator	1

Attachment 10
Field Monitoring Team Roster Positions

Field Team Coordinator

_____

Assistant Field Team Coordinator

_____

Field Monitor(s)

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

ASSESSMENT WORKSHEET NO. 1

DATE_____ NAME_____

CURRENT METEOROLOGICAL CONDITIONS

Wind Direction (from)	**degrees**
Wind Speed	**meters/second x (2.2 = mph)**
Pasquill Stability Class	**(A-G)**

SECTORS AFFECTED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

AREAs AFFECTED:

0-2 Miles:
2-5 Miles:
5-10 Miles:

PLUME ARRIVAL TIME

2 Miles:	**120** (mph)	=	**minutes**
5 Miles:	**300** (mph)	=	**minutes**
10 Miles:	**600** (mph)	=	**minutes**
Other:	(**Miles**_____)(x60) (mph)	=	**minutes**

METEOROLOGICAL FORECAST

ASSESSMENT WORKSHEET NO. 2

NOTE 1: TODE-Thyroid exposure is for a child's thyroid.
NOTE 2: TEDE exposure is from mixture of noble gases, iodine's and particulates.

Date_____

Time_____

Name_____

RELEASE RATES

NG_____Ci/sec

I-131_____Ci/sec

I-132_____Ci/sec
I-133_____Ci/sec
I-134_____Ci/sec
I-135_____Ci/sec
Total_____
Ci/sec
Iodine's

I/NG RATIO: for LOCA use 1E-4
for MSL release use 1E-2

METEOROLOGY

Wind Direction_____Deg
Wind Speed_____m/s
Pasquill Stability Class_____
S.B. Xu/Q _____
2 Mi. Xu/Q _____
5 Mi. Xu/Q _____
10 Mi. Xu/Q _____

*Reactor Shutdown Time_____

Time After Shutdown_____

TEDE DOSE RATE

[(NG R) (NGDCF + (I RR)** (3.3 E7)+(Part.*RR)(2.27E7)] (Xu/Q) (1/WS) =

S.B.	( ) ( ) + ( ) (3.3 E7)+(Part.*RR)(2.27E7)] ( ) ( ) =			_____mREM/hr
2 Mi.	( ) ( ) + ( ) (3.3 E7)+(Part.*RR)(2.27E7)] ( ) ( ) =			_____mREM/hr
5 Mi.	( ) ( ) + ( ) (3.3 E7)+(Part.*RR)(2.27E7)] ( ) ( ) =			_____mREM/hr
10 Mi.	( ) ( ) + ( ) (3.3 E7)+(Part.*RR)(2.27E7)] ( ) ( ) =			_____mREM/hr
Location of Interest	( ) ( ) + ( ) (3.3 E7)+(Part.*RR)(2.27E7)] ( ) ( ) =			_____mREM/hr
				_____mREM/hr

TODE-THYROID DOSE RATE

[(NG RR) (NG CF) + (I RR) (I DCF)] (Xu/Q) (1/WS) =

S.B.	( ) ( ) + ( ) (I DCF)	( )	( )	=_____mREM/hr
2 Mi.	( ) ( ) + ( ) (I DCF)	( )	( )	=_____mREM/hr
5 Mi.	( ) ( ) + ( ) (I DCF)	( )	( )	=_____mREM/hr
10 Mi.	( ) ( ) + ( ) (I DCF)	( )	( )	=_____mREM/hr
Location of Interest	( ) ( ) + ( ) (I DCF)	( )	( )	=_____mREM/hr

- *To be obtained from licensee.
- **IRR = (NGRR) (I/NG Ratio)

ASSESSMENT WORKSHEET NO. 3

Name: _____ Date: _____ Time: _____

PROJECTED DOSES

Release Duration (Hrs.):
The following dose values are projected for the following time period:
FROM:_____ UNTIL:_____

TEDE

	(mREM/Hr)	(Hrs)	= (mREM) / 1000 =	_____Rem
S.B.	( )	( )	= ( ) / 1000 =	_____Rem
S.B.	( )	( )	= ( ) / 1000 =	_____Rem
S.B.	( )	( )	= ( ) / 1000 =	_____Rem
10 Mi.	( )	( )	= ( ) / 1000 =	_____Rem
Location of Interest	( )	( )	= ( ) / 1000 =	_____ Rem

TODE-THYROID DOSE

	(mREM/h)	(Hrs)	= (mREM)	/ 1000 =	_____Rem
S.B.	( )	( )	= ( )	/ 1000 =	_____Rem
2 Mi.	( )	( )	= ( )	/ 1000 =	_____Rem
5 Mi.	( )	( )	= ( )	/ 1000 =	_____Rem
10 Mi.	( )	( )	= ( )	/ 1000=	_____Rem
Location of Interest	( )	( )	= ( )	/ 1000 =	_____Rem

PAG (Circle appropriate options)

	TEDE		TODE-Thyroid
No preplanned action	< 1REM	or	< 5REM
Evacuate affected AREAs			

Dose Assessment
Shelter-in-place > 1REM or > 5REM IP-3.1

Recommendations:

1.
2.
3.
4.

IPEC00200439

ASSESSMENT WORKSHEET NO. 4

DATE_____ **TIME**_____ **NAME**_____

(1) $\frac{\text{(Xu/Q of Location of Interest)}}{\text{(Xu/Q of Sample Location)}}$ **x** **(Dose Rate or Dose at sample location)** **=** **Dose Rate or Dose at location of interest**

$\frac{(\quad)}{(\quad)}$ **x (** **mR/hr) = _mR/hr**

(2a) **Iodine Activity in uCi/cc** **=** $\frac{\text{[Iodine Sample(cpm)(From Charcoal or AgZe) -Background(cpm)]}}{\text{(Sample Volume ft}^3\text{)}}$ **x 4.6 E-9**

Iodine Activity in uCi/cc **=** $\frac{(____)\text{(cpm) -}____\text{(cpm) x 4.6 E-9}}{(____\text{ft3})}$

(2b) **Thyroid Dose Rate (mREM/hr) =** **Iodine Activity (uCi/cc) x 8.0E8***

Thyroid Dose Rate= mREM/hr **(_____uCi/cc) x** **(8.0E8*_____mRem/hr/uCi/cc)**

*NOTE: For greater than 24 hours after shutdown, use only the I-131 DCF

ASSESSMENT WORKSHEET NO. 5

1. Determination of Release Rates to Reach PAGs

2. TEDE Release Rate To Reach PAG

a. TEDE Evacuation PAG = 1 REM

TEDE Dose using 1 Ci/sec Release Rate and 4 hr. Release Duration = _____ (REM)

Release Rate Necessary To Reach 1 REM TEDE PAG = $\frac{1}{\text{(REM)}}$ = ____

3. TODE-Thyroid Release Rate to Reach PAG

a. TODE-THYROID Evacuation PAG = 5 REM

TODE-THYROID Dose Using 1 Ci/sec Release Rate and 4 hour release duration = ____ (REM)

Release Rate Necessary To = $\frac{1 \times 5}{\text{(REM)}}$ = ____

ASSESSMENT WORKSHEET NO. 6

Date_____ Time_____ Name_____

RELEASE RATES

NG___
Ci/sec
I-131_
Ci/sec
Total_
Ci/sec
Iodine's

For Less Than 24 Hours after shutdown, use Total Iodine's

For Greater Than 24 Hours after shutdown, use I-131

I/NG RATIO: for LOCA use 1E-4
for MSL release use 1E-2

METEOROLOGY

Wind Direction_____
Deg
Wind Speed__
m/s
Pasquill Stability Class_____

S.B. Xu/Q _____

2 Mi. Xu/Q _____
5 Mi. Xu/Q _____

10 Mi. Xu/Q _____
Reactor Shutdown Time_____

Time After Shutdown_____

CDE-THYROID DOSE RATE

	(I RR)	(I DCF*)	(Xu/Q)	(1/WS)		
S.B.	( )	( )	( )	( )	=	_____ mR/hr
2 Mi.	( )	( )	( )	( )	=	_____ mR/hr
5 Mi.	( )	( )	( )	( )	=	_____ mR/hr
10 Mi.	( )	( )	( )	( )	=	_____ mR/hr
Location of Interest	( )	( )	( )	( )	=	_____ mR/hr

*NOTE: For less than 24 hours after shutdown, use adult CDE-THYROID dose conversion factor of 4.0E8.
For greater than 24 hours after shutdown, use adult CDE-THYROID dose conversion factor of 1.3E9.

CDE-THYROID DOSE

	(mR/Hr)	(Hrs)		(mREM)		
					/ 1000 =	_____ Rem
S.B.	( )	( )	=	( )	/ 1000 =	_____ Rem
2 Mi.	( )	( )	=	( )	/ 1000 =	_____ Rem
5 Mi.	( )	( )	=	( )	/ 1000 =	_____ Rem
10 Mi.	( )	( )	=	( )	/ 1000 =	_____ Rem
Location of Interest	( )	( )	=	( )	/ 1000 =	_____ Rem

RECOMMEND KI FOR EMERGENCY WORKERS 25 REM CDE-THYROID.

TABLE 1

SITE BOUNDARY Xu/Q FOR 1 METER/SEC WINDSPEED

Wind Direction Degrees (from)	Distance (Meters)	Affected Sector	Pasquill Stability Class						
			A	B	C	D	E	F	G
169 — 190**	2977	1* (N)	5.5E-7	9.0E-7	5.7E-6	2.1E-5	4.3E-5	1.1E-4	2.0E-4
191 — 213**	3234	2* (NNE)	5.2E-7	1.0E-6	5.0E-6	1.9E-5	3.9E-5	9.6E-5	1.8E-4
214 — 235	716	3 (NE)	3.6E-6	2.0E-5	5.3E-5	1.5E-4	2.7E-4	4.9E-4	7.1E-4
236 — 258	701	4 (ENE)	3.7E-6	2.0E-5	5.4E-5	1.6E-4	2.7E-4	5.0E-4	7.2E-4
259 — 280	762	5 (E)	3.2E-6	1.8E-5	4.8E-5	1.4E-4	2.5E-4	4.7E-4	6.8E-4
281 — 303	625	6 (ESE)	4.7E-6	2.5E-5	6.4E-5	1.8E-4	3.1E-4	5.5E-4	7.9E-4
304 — 325	610	7 (SE)	4.9E-6	2.6E-5	6.6E-5	1.9E-4	3.2E-4	5.6E-4	8.0E-4
326 — 348***	701	8 (SSE)	3.7E-6	2.0E-5	5.4E-5	1.6E-4	2.7E-4	5.0E-4	7.2E-4
349 — 10***	1006	9 (S)	2.1E-6	1.0E-5	3.2E-5	9.9E-5	1.8E-4	3.6E-4	5.4E-4
11 — 33***	1006	10 (SSW)	2.1E-6	1.0E-5	3.2E-5	9.9E-5	1.8E-4	3.6E-4	5.4E-4
34 — 55***	488	11 (SW)	7.7E-6	3.6E-5	8.8E-5	2.5E-4	4.0E-4	6.7E-4	9.2E-4
56 — 78***	2349	12* (WSW)	6.6E-7	1.5E-6	8.3E-6	3.0E-5	6.0E-5	1.4E-4	2.6E-4
79 — 100***	1802	13* (W)	8.1E-7	3.2E-6	1.3E-5	4.3E-5	8.5E-5	1.9E-4	3.3E-4
101 — 123**	1689	14* (WNW)	9.0E-7	3.7E-6	1.4E-5	4.8E-5	9.2E-5	2.0E-4	3.5E-4
124 — 145**	1432	15* (NW)	1.2E-6	5.1E-6	1.9E-5	6.1E-5	1.2E-4	2.4E-4	4.0E-4
146 — 168**	1416	16* (NNW)	1.2E-6	5.2E-6	1.9E-5	6.2E-5	1.2E-4	2.5E-4	4.0E-4

* These sectors have the plume going out over the water before it touches public or private land. Site boundary in these cases is taken to be the land fall point at the sector center.

** If the wind speed is LESS than 4 m/sec, use the Sector 2 Xu/Q value for these wind directions.

*** If the wind speed is LESS than 4 m/sec and the Pasquill Stability Class is A, use the Sector 8 Xu/Q for these wind directions. If the wind speed is LESS than 4 m/sec and the Pasquill Stability Class is B thru G, use the Sector 10 Xu/Q for these wind directions.

TABLE 2

2, 5, and 10 Mile Xu/Q FOR 1 METER/SEC WINDSPEED

Pasquill Stability Class	Xu/Q		
	2 Mile	5 Mile	10 Mile
A	5.2E-7	2.4E-7	1.4E-7
B	8.3E-7	3.2E-7	1.8E-7
C	5.0E-6	1.2E-6	4.0E-7
D	1.9E-5	5.1E-6	2.1E-6
E	3.9E-5	1.1E-5	5.3E-6
F	9.5E-5	3.1E-5	1.5E-5
G	1.8E-4	6.7E-5	3.4E-5

Ref. IP2 (IP-1007) IP3 (IP-1001)

IPEC00200444

TABLE 3

Xu/Q FOR 1 METER/SEC WINDSPEED FOR OTHER DISTANCES

MILES	METERS	Pasquill Stability Class						
		A	B	C	D	E	F	G
1.0	1608	9.5E-7	4.0E-6	1.5E-5	5.0E-5	9.0E-5	2.1E-4	3.4E-4
1.5	2412	6.3E-7	2.1E-6	1.1E-5	2.0E-5	5.4E-5	1.3E-4	2.2E-4
2.0	3216	5.2E-7	8.3E-7	5.0E-6	1.9E-5	3.9E-5	9.6E-5	1.8E-4
2.5	4020	4.4E-7	5.8E-7	3.5E-6	1.4E-5	3.7E-5	7.0E-5	1.7E-4
3.0	4824	3.6E-7	5.0E-7	2.8E-6	1.0E-5	2.2E-5	5.7E-5	1.3E-4
3.5	5628	3.2E-7	4.2E-7	2.0E-6	8.1E-6	1.8E-5	4.7E-5	1.1E-4
4.0	6432	2.8E-7	3.7E-7	1.6E-6	6.8E-6	1.5E-5	4.0E-5	9.4E-5
4.5	7236	2.6E-7	3.5E-7	1.4E-6	5.8E-6	1.3E-5	3.5E-5	7.3E-5
5.0	8040	2.4E-7	3.2E-7	1.2E-6	5.1E-6	1.1E-5	3.1E-5	6.7E-5
5.5	8844	2.1E-7	3.1E-7	9.9E-7	4.4E-6	1.0E-5	2.8E-5	5.9E-5
6.0	9648	2.0E-7	2.7E-7	8.3E-7	3.8E-6	9.1E-6	2.5E-5	5.4E-5
6.5	10452	1.9E-7	2.5E-7	7.5E-7	3.5E-6	8.2E-6	2.3E-5	5.0E-5
7.0	11256	1.8E-7	2.4E-7	6.7E-7	3.2E-6	7.5E-6	2.1E-5	4.7E-5
7.5	12060	1.7E-7	2.3E-7	6.1E-7	3.0E-6	6.9E-6	1.9E-5	4.3E-5
8.0	12864	1.6E-7	2.2E-7	5.5E-7	2.7E-6	6.3E-6	1.8E-5	4.1E-5
8.5	13668	1.5E-7	2.1E-7	5.0E-7	2.5E-6	5.8E-6	1.7E-5	3.8E-5
9.0	14472	1.5E-7	2.0E-7	4.6E-7	2.3E-6	5.5E-6	1.6E-5	3.6E-5
9.5	15276	1.4E-7	1.9E-7	4.2E-7	2.1E-6	5.4E-6	1.5E-5	3.4E-5
10.0	16080	1.4E-7	1.8E-7	4.0E-7	2.1E-6	5.3E-6	1.5E-5	3.4E-5

Ref. IP2 (IP-1007) IP3

TABLE 4

CONVERSION OF SECTORS TO AREAs FOR DISTANCES OF 0-2, 2-5, and 5-10 MILES

	Downwind Direction	Evacuation Area Sectors	Ring Down wind	AREAs Included
A			2-mile	Verplank, Buchanan, Montrose, Peekskill
B				
C	NNE	1,2,3	2-mile + 5-miles	Peekskill, Town of Cortlandt, Buchanan, Verplanck, Montrose, Croton-on-Hudson
D	NNE	1,2,3	5-mile + 10-miles	Verplank, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Yorktown, Somers west of Rt 118
E	NE	2,3,4	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
F	NE	2,3,4	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Yorktown, Somers west of Rt 118
G	ENE	3,4,5	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
H	ENE	3,4,5	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Yorktown, Somers west of Rt 118
I	E	4,5,6	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
J	E	4,5,6	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Yorktown, Somers west of Rt 118, New Castle west of Hardscabble Rd
K	ESE	5,6,7	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
L	ESE	5,6,7	5-mile + 10-miles	City of Peekskill, Town of Cortlandt (including Verplanck, Montrose, Camp Smith and VA Hospital), Village of Buchanan, Village of Croton-on-Hudson, Town of Ossining, Town of Yorktown, Village of Briarcliff Manor Town of New Castle, west of Hardscrabble Rd Somers, west of 118 and Wood St.
M	SE	6,7,8	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
N	SE	6,7,8	5-mile + 10-miles	City of Peekskill, Town of Cortlandt (including Verplanck, Montrose, Camp Smith and VA Hospital), Village of Buchanan, Village of Croton-on-Hudson, Town of Ossining, Town of Yorktown, Village of Briarcliff Manor Town of New Castle, west of Hardscrabble Rd Somers, west of 118 and Wood St.
O	SSE	7,8,9	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
P	SSE	7,8,9	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Ossining, Briarcliff Manor
Q	S	8,9,10	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Ossining,

				Briarcliff Manor
R	S	8,9,10	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Ossining, Briarcliff Manor
S	SSW	9,10,11	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
T	SSW	9,10,11	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
U	SW	10,11,12	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
V	SW	10,11,12	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
W	WSW	11,12,13	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
X	WSW	11,12,13	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
Y	W	12,13,14	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill
Z	W	12,13,14	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
AA	WNW	13,14,15	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill
BB	WNW	13,14,15	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
CC	NW	14,15,16	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
DD	NW	14,15,16	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
EE	NNW	15,16,1	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
FF	NNW	15,16,1	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
GG		16,1,2	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
HH		16,1,2	5-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
II		Up River	2-mile + 5-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
JJ		Down River	2-mile + 10-miles	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson, Ossining, Briarcliff Manor
KK			5-mile	Verplanck, Buchanan, Montrose, Peekskill, Town of Cortlandt, Croton-on-Hudson
LL			Full EPZ	City of Peekskill Town of Cortlandt (including Verplanck, Montrose, Camp Smith and VA Hospital) Village of Buchanan Village of Croton-on-Hudson Town of Ossining Town of Yorktown Village of Briarcliff Manor Town of New Castle, west of Hardscrabble Rd Somers, west of 118 and Wood St.

TABLE 5 A

TEDE (WHOLE BODY) DOSE CONVERSION FACTORS

Time after shut down (hours)	N.G. DCF (mRem/hr/uCi/cc)
0 — 1.5 hrs.	4.7E5
1.5 — 2.5 hrs.	2.8E5
2.5 — 3.5 hrs.	2.3E5
3.5 — 4.5 hrs.	2.0E5
4.5 — 6.5 hrs.	1.7E5
6.5 — 12.5 hrs.	1.2E5
> 12.5 hrs.	5.8E4

NOTES: Use higher number for borderline time after shutdown.

I (CEDE) DCF = 3.3E7 mRem/hr/uCi/cc
This number is already included in TEDE (Whole Body) dose rate equation as a constant.

Particulate (DDE) DCF = 2.7E7 mRem/hr/uCi/cc. This number is already included in TEDE dose rate equation as a constant. Iodine and particulate DCFs should be utilized when calculating TEDE when iodine's and particulates are present.

DCFs based on default noble gas nuclide mix.

IPEC00200448

TABLE 5B

CDE-THYROID DOSE CONVERSION FACTORS

ISOTOPES	I DCF (mRem/hr/uCi/cc)
I-131	2.6E9
I-132	1.5E7
I-133	4.4E8
I-134	2.6E8
I-135	7.6E7
Iodine Mix	8.0E8

NOTE: For greater than 24 hours after shutdown, use only I-131 value when using isotopic analysis. For less than 24 hours after shutdown, use iodine mix if isotopic breakdown is not available. If isotopic breakdown is available, use each iodine DCF separately, then add together for total dose rate for each distance.

FIGURE 1

OVERLAY SELECTION FLOW CHART

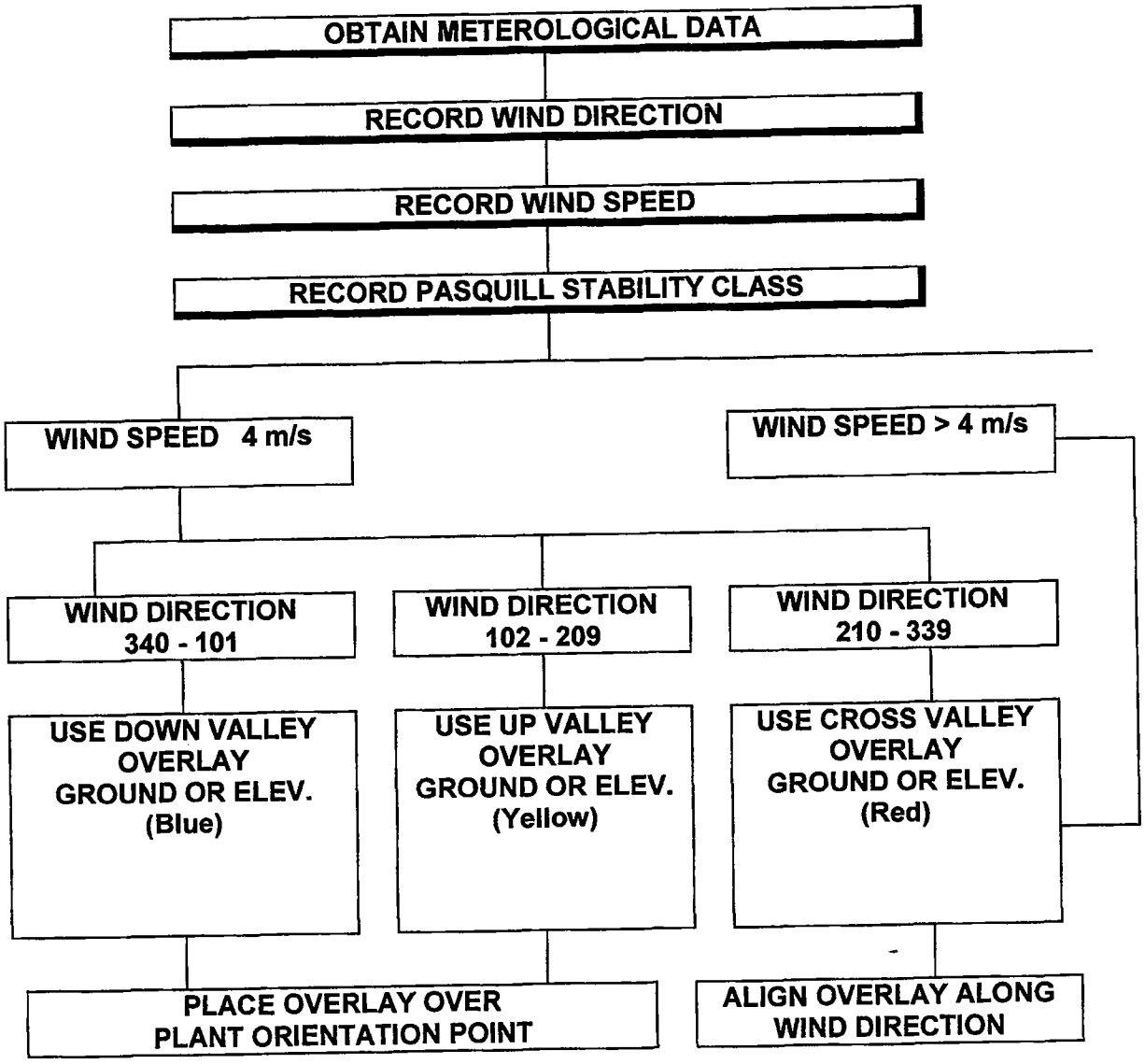

Figure 2 RECS Form Part 1

(next page)

NEW YORK STATE

Indian Point Energy Center

RADIOLOGICAL EMERGENCY DATA

PART 1 Notification # _____

This is the Indian Point Energy Center with a Part 1 notification on: _____ (Date) at _____ (Time-24 hr clock)

1. This is:
   A. An Actual Emergency B. An Exercise at **Unit 2** **Unit 3** **Both**

   Reactor Status:

   Unit 2 A. Operational B. Shutdown _____ (Date) at _____ (Time-24 hr clock)

   Unit 3 A. Operational B. Shutdown _____ (Date) at _____ (Time-24 hr clock)

2. The Emergency Classification is:

   A. UNUSUAL EVENT C. SITE AREA EMERGENCY E. EMERGENCY TERMINATED

   B. ALERT D. GENERAL EMERGENCY

   This Emergency Classification declared on: _____ (Date) at _____ (Time-24 hr clock)

3. EAL # _____

   Event Description.

4. Release of Radioactive Materials due to the Classified Event:

   A No Release

   B. Release **BELOW** federal limits
   - ☐ To Atmosphere ☐ To Water

   C Release **ABOVE** federal limits
   - ☐ To Atmosphere ☐ To Water

   D. Unmonitored release requiring evaluation

5. Wind Speed: _____ Meters/Sec at elevation 10 Meters

6. Wind Direction: (From) _____ Degrees at elevation 10 Meters

7. Stability Class: A B C D E F G

8. The following Protective Actions are recommended to be implemented as soon as practicable:

   A. **NO NEED for PROTECTIVE ACTIONS** outside the site boundary

   B. **EVACUATE** and **IMPLEMENT the KI PLAN** for the following Areas
   All remaining Areas **MONITOR the EMERGENCY ALERT SYSTEM**

   2 miles around 5-miles downwind 5 miles around 10-miles downwind Entire EPZ

   In the following Sectors 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

   NOTE: OFFSITE AUTHORITIES SHOULD CONSIDER SHELTER-IN-PLACE + TAKE KI IF EVACUATION IS NOT FEASIBLE

   C. **SHELTER–IN-PLACE** and **IMPLEMENT the KI PLAN** for the following Areas and
   All remaining Areas **MONITOR the EMERGENCY ALERT SYSTEM**

   2 miles around 5-miles downwind 5-miles around 10-miles downwind Entire EPZ

   In the following Sectors 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

9. Reported By - Communicator: _____ Telephone # _____

Figure 2 RECS Form – Part II

NEW YORK STATE
Indian Point Energy Center
RADIOLOGICAL EMERGENCY DATA FORM
PART 2

This is an: ○ A. Exercise ○ B. Actual Emergency

11. Message transmitted at: DATE: _____ TIME: _____ FROM: _____

12. General release information:

A. Event Release Started — Date _____ Time: _____
B. Event Release Expected to End: — Date. _____ Time: _____
C Event Release Ended: — Date: _____ Time: _____
D. Reactor Shutdown. N/A OR — Date: _____ Time: _____

Meteorological Data:

E. Wind Speed: _____ meters / second — At Elevation: 10 meters
F Wind Direction (from). _____ degrees — At Elevation 10 meters
G. Stability Class (Pasquill): _____

13. Atmospheric release information: As of Date: _____ Time: _____

A. Release from GROUND LEVEL FT.
B Iodine / Noble Gas Ratio: _____ (Assumed or Actual)
C. Total Release Rate: _____ Ci/SEC.
D. Noble Gas Release Rate: _____ Ci/SEC.
E. Iodine Release Rate: _____ Ci/SEC
F. Particulate Release Rate. _____ Ci/SEC

14. Waterborne release information: As of Date: _____ Time: _____

A. Volume of Release: _____ *gallons*
B Total Concentration: _____ *µCi/ml*
C. Radionuclides in Release: _____
D. Total Activity Released: _____ Ci

15. Dose calculations (based on release duration of _____ hrs.):

Calculation is based on: (circle one)

○ Inplant Measurements ○ Field Measurements ○ Assumed Source Term

Table below applies to: (circle one) ○ **Atmospheric Release** ○ **Waterborne Release**

DISTANCE	Xu/Q	DOSE TEDE (REM)	DOSE TODE (REM)
SITE BOUNDARY			
2 Miles			
5 Miles			
10 Miles			
____Miles			

16. Field measurement of dose rates or surface contamination/deposition:

Mile / Sector OR Mile / Degrees	Location of Sample Point	Time of Reading	Dose Rate (mR/hr.) OR Contamination (µCi/m²)

Emergency Director Review and Approval: _____

Electronic Form

Attachment 11

Field Monitoring Points

SITE	SECTOR	MILE COORDINATES	DISTANCE FROM INDIAN POINT	SITE LOCATION	MAP	GRID LOCATION
1	W5	1	0.9	Lower South St and Welcher Ave., Peekskill	17	C7
2	W7	1	0.9	Tate and Westchester Ave., Verplanck	17	B7
3	W8	2	1.0	Tate and Bannon Ave., Verplanck	17	B7
4	W10	2	1.0	Broadway and 9th Street, Verplanck	17	B7
5	W4	2	1.7	Franklin and Washington Ave., Peekskill	21	C6
6	W1	2	2.1	Cortlandt Sanitation Garage, Roa Hook Rd., Cortlandt	21	B5
7	W7	3	2.3	F.D.R. Veterans Hospital, Montrose	17	C9
8	W3	3	2 5	Peekskill High School, Elm Street, Peekskill	21	C5
9	W5	3	2 5	Montrose Station Rd (Blue Mtn Res)	17	D7
10	W2	4	3 6	Jack Road & Route 9, Cortlandt	21	C4
11	W4	4	3.6	Community Hospital of Peekskill, Crompond Road	21	D5
12	W16	4	3.6	Rtes 202 & 6, parking area south of Bear Mountain Bridge	21	A4
13	W7	4	3.6	Furnace Dock Rd. & Washington St., Cortlandt	17	D8
14	W3	5	3.9	Cortlandt Nursing Care Ctr Oregon Rd., Peekskill	21	D4
15	W5	5	4 2	Furnace Dock Rd. & Maple Ave., Cortlandt	17	E7
16	W8	5	4.3	Skyview Haven Nursing Home Rte. 9A, Croton	14	D10
17	W6	6	5.8	Croton Gorge Park, Rte. 129, Cortlandt	14	E10
18	W3	6	6.2	JCT Lexington Ave & Rte 6, Lake Mohegan	22	E4
19	W4	7	6 5	Crompond Rd. & Stoney St , Yorktown	22	G5
20	W8	7	6.5	Police House, Croton Point Park	14	D12
21	W6	8	7.1	Underhill Ave. & Croton Lake Rd. (Rte 129)	18	G8
22	W7	8	7.8	Cedar Manor Home, Cedar Lane, Ossining	14	F12
23	W6	9	8.5	IBM, Route 134, Yorktown Heights	14	H10
24	W5	10	9.0	Yorktown Fire Dept , Hanover Ave , Yorktown	18	J7
25	W8	10	9.3	Holla Hose Co. #5, State Street, Ossining	11	E14
26	W7	10	9 6	Taconic Pkwy & Rte. 100 Exit ramp, New Castle	11	H12
27	W4	10	9 8	JCT Rte. 6 & Gomer Street, Yorktown	26	H3
28	W5	10	9.8	JCT Rtes 118, 202 & 35, Yorktown	22	K5
29	W6	10	9.9	Rtes 100 & 129 (JCT), Yorktown	18	J9

APPROVED BY DES:_____ DOH:_____	**Westchester County** **DEPARTMENT OF EMERGENCY SERVICES**	IP-3.2

EMERGENCY PREPAREDNESS SOP

Field Monitoring Teams

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IPEC00200456

1.0 Purpose

1.1 This procedure provides guidance for field monitoring during plume phase field measurements and analysis and post plume phase measurement and analysis.

2.0 Responsibilities

2.1 County Commissioner of Health – The County Commissioner of Health or their designee is responsible for assuring there is adequately trained staff to support field monitoring activities on a 24/7 basis if there is an event at the Indian Point Nuclear Facility for which the teams will be activated.

2.2 County Commissioner Department of Emergency Services – The County Commissioner Department of Emergency Services or their designee is responsible for maintaining the plans procedures in support of field monitoring team activities and assuring that training is provided to the appropriate health department personnel.

2.3 Field Monitoring Team Coordinator – The Field Monitoring Team Coordinator is stationed in the Dose Assessment Room and is responsible for overall coordination of the field monitoring teams. The Field Monitoring Team Coordinator is responsible for initial deployment of field monitoring teams as discussed with the ED, and the relocation of field monitoring teams throughout the event. The Field Monitoring Team Coordinator is responsible for maintaining communication with field monitoring teams via cell phones and the RACES Operator stationed in the Dose Assessment Room, recording results of field monitoring, and providing these results to the Senior Dose Assessor.

2.4 Assistant Field Monitoring Team Coordinator (AFMTC) – The Assistant Field Monitoring Team Coordinator responds directly to the radiological equipment storage location to observe field monitoring teams perform pre-departure checklist items on all equipment. From this location the Assistant Field Monitoring Team Coordinator establishes contact with the Field Monitoring Team Coordinator to receive briefing information prior to deployment of field monitoring teams and prior to responding to the EOC Dose Assessment Room to assist the Field Monitoring Team Coordinator.

IPEC00200457

2.5 Field Monitors – The Field Monitors are responsible for taking radiation measurements and sample collection.

3.0 Concept of Operations

3.1 Field monitoring teams are activated and deployed by the Senior Dose Assessor in the EOC at the ALERT status or higher. The teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates.

The field teams are managed to obtain sufficient information to characterize the release and to control radiation exposure.

Field monitoring measurements and sampling are an integral part to support adequate assessments and protective action decision making.

3.2 Communication is provided by Nextel Phones and the RACES volunteers using mobile radios in vehicles with a remote base station in the EOC, with a remote handset in the Dose Assessment Room in the EOC. See also Attachment 1 to the Health Department's Field Monitoring Procedures Manual.

4.0 Procedure

4.1 At the Alert status or higher the county warning point will notify the Department of Health Contact who will notify field monitoring team members via the Department of Health call out list and direct them to report to the Health Department field monitoring equipment storerooms.

4.2 Once the field team members have been notified and deployed to storerooms, the field monitoring team lead will notify the appropriate Health Department personnel that the field teams will be arriving and to provide access to the facility.

IPEC00200458

4.3 As each team arrives, the designated team leader will complete the Attachment "1" Pre-departure Checklist and direct their team to obtain field monitoring team kit, KI and conduct inventory and equipment checks per Attachment "2" Field Monitor Kit Checklist.

4.4 As the teams assemble their equipment the AFMTC will obtain an initial briefing and the first monitoring point from the EOC.

4.5 Once the teams have completed the equipment inventory and have assembled their equipment and the initial briefing has been completed the AFMTC will inform the EOC that they are ready to be dispatched to the first monitoring location.

4.6 The teams will have aids such as a Geographic Atlas or Hagstrom Atlas, plus a Westchester RERP map and list of monitoring sites to assist in finding their monitoring locations.

4.7 While the teams are in transit they will ensure that the Eberline RO2A, RO-20 survey meter or equivalent is in the "ON" position. If the instrument indicates any reading above 5mR/hr, notify the EOC immediately.

4.8 The teams will monitor their personal exposure every 15 minutes and document on their exposure card. If any team members exposure approaches 1R notify the EOC and they may modify field activities. A default correction factor is calculated by the EOC dose assessment staff for internal dose TEDE, refer to Attachment 12.

4.9 After each radiation measurement or air sample is taken, record on Attachment 7 and report the following information to the EOC:

- Car radio call in sign
- Team designation

IPEC00200459

- Location (site number and grid coordinates)
- Radiation readings on RO2A or RO-20 or air sampler as appropriate

4.10 The teams will conduct surveys and air samples as directed by the EOC.

- Dose rate surveys are performed in accordance with Attachment 3
- Count rate surveys are performed in accordance with Attachment 4
- Air samples are performed in accordance with Attachment 5

4.11 Prior to issuing female emergency workers dosimetry, provide, NRC Reg. Guide 8.13 and the Declaration of Pregnancy form. (Attachments 12 and 13)

IPEC00200460

Attachment 1

Pre-Departure Checklist

EMERGENCY OFF-SITE MONITORING TEAMS

TEAM DESIGNATION _____

TEAM MEMBERS

Coordinator
NAME_____

Technical Monitor
NAME_____

Communicator
NAME_____

DATE _____ TIME_____

1.0 Each team will remove one (1) Field Monitoring Kit (two pieces) from the storage area.

2.0 Teams will inventory and check working order of all equipment in the Field Monitoring Kits attachment 2 Field Monitor Kit Checklist.

3.0 Teams will receive a preliminary briefing from the AFMTC. Thermoluminescent dosimters (TLDs) and potassium iodide will be distributed to the team members.

4.0 Team members must zero 0-5R and 0-200R personal dosimeters. Complete personal exposure record cards, and place the dosimeters and TLD's on the outside of their protective clothing between the neck and waist.

5.0 The communications person will be responsible to see that the vehicle radio is installed and functioning, that the Nextel phone is working and is on, and that the vehicle tank is full.

6.0 AFMTC will give final briefing to teams and assign field monitoring site locations to the teams based on information he receives via phone from the Emergency Operations Center (EOC).

7.0 All field monitors will synchronize personal time pieces with that of the field coordinator.

(SEE ATTACHMENT 10 FOR EOC PHONE NUMBERS)

Attachment 2
Field Monitor Kit Checklist

			YES	NO
1.	One Eberline RO 2 A, RO-20 (or equivalent)	circuit ck _____	___	___
2.	One RM-14 Radiation monitor	battery ck _____	___	___
	One HP-210 Al detection probe		___	___
	One Eberline SH-4A probe/sample holder		___	___
3.	One Rad$_E$co Air Pump mod. H-809C		___	___
	One Rad$_E$co paper filter/cartridge holder for air pump		___	___
	Three Silver Zeolite and three Charcoal filters		___	___
	Box of paper filters		___	___
4.	Four mod. 611 0-5 R dosimeters	zero ck _____	___	___
	Four mod. 638 0-200R dosimeters	zero ck _____	___	___
5.	One dosimeter charger	unction ck _____	___	___
6.	Four personal protective equipment kits (includes)		___	___
	One Coverall with Hood		___	___
	One pr. PVC gloves		___	___
	One pr. Latex gloves – XL.		___	___
	One Respirator/with respirator instruction manual			
	One pr. PVC boots		___	___
7.	One Motorola Mobile Radio with Microphone		___	___
	One power cable for radio		___	___
	One Magnetic base antenna		___	___
8.	Nine (9) D size batteries (include replacement batt.)		___	___
9.	One Eveready lantern plus battery	function ck _____	___	___
10.	One stop watch	function ck _____	___	___
11.	One screwdriver		___	___
12.	Two mechanical pencils		___	___
	Two wax marking pencils		___	___
13.	One roll masking tape		___	___
14.	One roll duct tape		___	___

IPEC00200462

Attachment 2

Field Monitor Kit Checklist

(continued)

		YES	NO
15.	Assorted sizes plastic sampling bags	___	___
16.	One water sample bottle	___	___
17.	One doz. Pr. Disposable gloves	___	___
18.	Large plastic bags for contaminated items	___	___
19.	Tweezers	___	___
20.	One Westchester County Road Atlas	___	___
21.	One sector/radius grid map	___	___
22.	One clipboard	___	___
23.	Fuses	___	___
24.	Field Monitoring Team Procedures Manual (includes)		
	a. Basic protocol	___	___
	b. IP-3.2, Field Monitoring Team Procedure	___	___
	c. List of fixed field monitoring sites	___	___
	d. Guidelines for use of KI	___	___
	e. Phone numbers of response personnel (RECS)	___	___
	f. List of off-site monitoring teams	___	___
	g. Packet of operating instructions for survey equipment	___	___
25.	Items to be distributed to team members prior to deployment include:		
26.	One Nextel Phone	___	___
TLD's		___	___
KI		___	___
Personal exposure cards		___	___

Coordinator verification inventory complete all equipment in working order.

Sign_____ Date _____

Attachment 3

Conduct Dose Rate Survey

1.0 Survey meter operational check.

a) Install batteries, if not already done.

b) Perform and record battery check. SAT ____ UNSAT ___

c) Perform and record check using the Cs check source in the kit. For RO-20 or equivalent, turn range switch to 5 mR/hr.

Open window, position the "DETECTOR AREA" of the instrument on top of the uncovered Cs-137 check source and read the meter. The RO-20 or equivalent should read "1-10 mR/hr". SAT ____UNSAT____

NOTE: Exercise care in not puncturing the thin foil window on the bottom of the instrument when source checking.

e) Turn range switch to "OFF".

f) Zero meter

g) Note condition of the meter and the calibration due date on the calibration sticker.

CAL DUE DATE _____ Condition of meter

_____

2.0 Switch the dose rate instrument range selector switch to the highest scale that will give the operator a mid range meter reading.

3.0 Dose rate measurement should be performed approximately 3 feet, one meter (1m) above the ground (waist level) outside the emergency vehicle, unless directed otherwise by the EOC.

4.0 Record the survey results on Attachment 9, Dose Rate Survey Record.

IPEC00200464

Attachment 3

Conduct Dose Rate Survey

continued

5.0 Determine if the survey location may be within the radioactive plume and advise EOC.

5.1 IF Beta Gamma (OW) measurements are less than 110 % of the Gamma (CW) measurements,
THEN dose rate measurements indicate that the plume is elevated over and/or horizontally displaced from the survey location.

5.2 Identify on Attachment 9, Dose Rate Survey Record, that the location is not in plume.

5.3 IF Beta Gamma (OW) measurements are equal to or greater than 110% of the Gamma (CW) measurements,
THEN dose rate measurements indicate that the plume may have touched down at the Survey locations → Take an air sample and contact the EOC.

(SEE ATTACHMENT 10 FOR EOC PHONE NUMBERS)

IPEC00200465

Attachment 4

Conduct of Count Rate Survey

1.0 Don surgical gloves and obtain smear discs and sample envelopes from the Emergency Monitoring Kit.

2.0 Record Date, Time and Survey Location on sample envelope.

3.0 Wipe smear disc on horizontal surfaces to obtain a sample of 100 cm^2.

4.0 Wipe the smear disc in a lazy S pattern approximately 16 inches long,
or
Wipe smear disc in an area of approximately 4 inches by 4 inches.

5.0 If smear samples are taken from a non-horizontal surface, provide a description of the sampled surface on the smear disc envelopes.

6.0 Determine Background Count Rate by reading count rate instrument with no sample present.

> NOTE
>
> The smear sample counting area background count rate must be less than 300 counts per minute (cpm) using a count rate instrument.

> NOTE
>
> A rough order of magnitude for Dose rate conversion to CPM is count rate (CPM) = 3000 x dose rate (mR/hr).

7.0 Record the Background counts per minute (Bcpm) on Attachment 8, Count Rate Survey Record.

IPEC00200466

Attachment 4

Conduct of Count Rate Survey
continued

8.0 Obtain the smear Gross Count Rate.

- Place detector probe within ½ inch of the smear disc with the sample surface toward the detector window.
- Count the smear disc.
- If activity is indicated within 15 seconds, allow the meter indicator to stabilize before recording.
- Record the maximum smear sample Gross counts per minute (Gcpm) on Attachment 8 Count Rate Survey Record.
- Complete the appropriate data on Attachment 8 Count Rate Survey Record.

IPEC00200467

Attachment 5
Conduct of an Air Sample

1.0 Prerequisites

- The Air Sampler shall be located in a manner that will minimize cross contamination.
- All samples shall be labeled and saved for further analysis.

2.0 Set up Air Sampler if the filter and cartridge require replacement.

- Unscrew the particulate filter and Silver Zeolite Cartridge rings from the air sampler head.
- Install a new Silver Zeolite Cartridge ensuring the arrow on the side of the cartridge points toward the air sampler.
- Install a new particulate filter ensuring the side of the filter which has a woven appearance is nearest to the Silver Zeolite Cartridge.
- Reassemble the air sampler head and screw into air sampler.

NOTE

The air sampler is calibrated with both the Particulate Filter and Silver Zeolite Cartridge in place. Both must be in place even if an iodine sample has not been requested and the Silver Zeolite Cartridge will not be analyzed in the field.

3.0 Draw a 10 cubic ft. air sample (refer to Attachment 6 for air sampler run times). Use a watch, stopwatch, or timer to measure the time duration unless otherwise directed by the EOC (Air pumps have been calibrated for 10 minute run-time 1 cu ft/min).

4.0 Obtain a general area count rate with the count rate instrument and pancake probe at approx. waist level. If the background exceeds 300 CPM move to a location where the background is less than 300 CPM.

5.0 Record air sampler run time and flow rate on the Air Sample Data Collection Envelope and Attachment 7.

6.0 Wearing protective gloves, unscrew the filter holder section of the sampler head from the Silver Zeolite cartridge holder section such that the particulate filter is held in place in the removed section.

IPEC00200468

Attachment 5
Conduct of an Air Sample
(continued)

7.0 Remove the retainer ring from the filter holder and obtain a count rate on the particulate filter by holding the Eberline SH-4A Probe/Sample Holder against the pancake probe. Record the count rate as Gross CPM on Air Sampler Data Collection Envelope and on Attachment 7.

8.0 Using tweezers, remove the filter from the holder. Place the filter in an Air Sample Data Collection Envelope.

9.0 Recount the filter holder without the particulate filter in place. Enter this count rate as background CPM on the Air Sample Data Collection Envelope and on Attachment 7.

10.0 Subtract the background cpm (Bcpm) from gross cpm (Gcpm) and record as "Net cpm" on the Air Sample Data Collection Envelopes.

11.0 Measure the contact Dose Rate and record on the Air Sample Data Collection Envelope.

12.0 Retain the sample for later analysis.

NOTE

Monitor the driver and passenger area dose rates. If any area exceeds 2.0 mR/hr, notify the EOC and request guidance.

13.0 Wearing protective gloves remove the Silver Zeolite cartridge from the sampler head and place it in an Air Sample Data Collection Envelope.

14.0 Count both sides of the Silver Zeolite cartridge through the envelope. Record the higher count rate as "Gross" on the Air Sample Data Collection Envelope and on Attachment 7.

IPEC00200469

Attachment 5
Conduct of an Air Sample
(continued)

15.0 Subtract the background cpm (Bcpm) from the gross cpm (Gcpm) and record the result as "Net cpm" on the Air Sample Data Collection Envelope.

- Measure the contact dose rate and record on the Air Sample Data Collection Envelope
- Retain the sample for later analysis.

16.0 Establish contact with the EOC.

17.0 Transmit the data from the Air Sample Data from Attachment 7.

(SEE ATTACHMENT 10 FOR EOC PHONE NUMBERS)

Attachment 6

Air Sampler Model H-809C

Run Times

Running time for 10 cubic ft. sample

Note that pumps are calibrated to 1 cu ft per minute (CFM).

Attachment 7
Sample Record

TEAM: _____ Date: _____

			SURVEY		AIR SAMPLE				
#	Time	Location	Window Closed mR/hr	Window Open mR/hr	Background cpm	Particulate Gross cpm	Silver Zeolite Gross cpm	Flow Rate lpm	Run Time Min
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									

Attachment 8
COUNT RATE SURVEY RECORD

Date: _____

Team: _____

TIME 24 HR CLOCK	SAMPLE LOCATION DESCRIPTION	COUNT RATES	
		GROSS (gcpm)	BKGD (bcpm)

Attachment 9

DOSE RATE SURVEY RECORD

Date:_____Team Members:_____Instrument Cal Due Date:

Team:_____ _____Instrument Beta Correction Factor:

TIME (24 HR CLOCK)	SAMPLE LOCATION DESCRIPTION	INSTRUMENT MODEL/SERIAL #	DOSE RATES—mR/hr		IS (ow) READING >110% OF (cw) READING?	
			OPEN WINDOW (ow) BETA-GAMMA	CLOSED WINDOW (cw) GAMMA	YES	NO

NOTE: IF (YES), THEN SURVEY LOCATION MAY BE WITHIN PLUME

TAKE AN AIR SAMPLE CONTAC EOC.

Attachment 10

Key EOC Phone Numbers

EOC Emergency Director	864-5200
Field Monitoring Team Coordinator	864-5256
Senior Dose Assessor	864-5256
EOC Health Department Rep	864-5297
Dose Room Fax	

Attachment 11

Post Field Monitoring Team Activities

1.0 When your field assignments have been completed, you will be instructed to report directly to the Emergency Worker Personnel Monitoring Center (PMC) located at the Westchester County Department of Emergency Services Training Facility, 4 Dana Road, Grasslands Campus, Valhalla.

2.0 At the PMC, you, your vehicle, and equipment will be monitored for contamination. If all is found to be "clean" you will be instructed to return to the Westchester County Office Building II where the equipment will be returned to the storeroom or handed over to a new team on 2nd shift.

3.0 If you, your vehicle, or equipment is found to be contaminated, decontamination procedures will have to be completed before returning to Muscoot Farm.

4.0 Personal dosimetry and exposure record cards will be turned into the PMC administrative officer.

5.0 Field team data sheets will be sent to the EOC, to the attention of the Emergency Director.

6.0 Any collected samples (air, vegetative, H_2O, etc.) must be processed as per the attached sampling protocol.

7.0 If you have been in the plume measuring radiation levels, your vehicle may be contaminated. Before returning, the vehicle must be checked for contamination. Drive the vehicle out of the contaminated area. With your RO2A check the wheel wells and upper surfaces of the vehicle for contamination. If the readings are 0.1 mR above background (background reading obtained during first series of radiation readings taken before entering the plume or contaminated area) report reading to the EOC. At this time you may be advised to report to the Fire Training Center for decontamination.

* Exercise caution while surveying your vehicle for contamination.

1. Bag probe prior to survey
2. Try to avoid contact with contaminated surfaces

Attachment 12

Correction Factor for Internal Dose

Total Effective Dose Equivalent (TEDE) being the sum of Effective Dose Equivalent (external gamma rays, as from noble gases) and Committed Effective Dose Equivalent (e.g., from ingested iodine and particulate), the doses recorded by direct reading dosimeters (e.g., Dosimeter Corp. 5R gamma & x-ray dosimeter Model 611/FEMA CDV725) or other external gamma ray measuring devices will be utilized unless otherwise advised by NY DOH. The New York State Department of Health will, based upon the type of accident and radioactive release data from the utilities, assess the need to issue an up-dated correction factor for direct reading dosimeters to account for the Committed Effective Dose Equivalent (CEDE). The New York State Department of Health will transmit the correction factor to the Assessment and Evaluation Section of the County Emergency Operation Center (EOC).

The default Correction Factor is 1. Calculation of the correction factor is performed in the Westchester County EOC in conjunction with the New York State EOC, not in the field. The Correction Factor may be transmitted to the field resulting in revised field reporting values.

Attachment 13

NRC REGULATORY GUIDE 8.13

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 Section 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 uniform 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.

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.

The magnitude of risk of childhood cancer following in utero exposure is uncertain 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

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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

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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 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.

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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.

A. IMPLEMENTATION

The purpose of this section is to provide information to licensees and applicants regarding the NRC staff's 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 informed 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 I 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.

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 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.

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.

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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 declare in writing that you are already pregnant.

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.

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*.

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.[1(1)] (Electronically available at www.nrc.gov/NRC/RG/index.html)

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.

10. National Radiological Protection Board, *Advice on Exposure to Ionising Radiation During Pregnancy*, National Radiological Protection Board, Chilton, Didcot, UK, 1998.

11. M.L. Thomas and D. Hagemeyer, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, 1996," Twenty-Ninth Annual Report, NUREG-0713, Vol. 18, USNRC, 1998.[2]

Attachment 14

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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Attachment 15

Field Monitoring Points

IPRA DREA _1	SITE_	SECTOR	DIST_F M_IP	SITE_LOCATION	MAP_	GRID_LOC
1	4	10.00	1.00	Broadway & 9th Street, Verplanck	14.00	L-4
2	3	8.00	1.00	Tate & Bannon Ave., Verplanck	14.00	L-5
3	2	6 00	1.00	Tate & Westchester Ave., Verplanck	14.00	K-5
4	5	4.00	2.00	Franklin $ Washington Ave., Peekskill	14 00	J-6
5	6	1 00	2.00	Cortlandt Sanitation Garage, Roa Hook Rd.	14.00	G-4
6	7	7.00	2.00	F.D.R. Veterans Hospital, Montrose	14.00	M-6
7	9	5.00	3.00	Montrose Station Rd. (Blue Mtn. Res.)	14.00	K-7
8	10	2.00	4.00	Jack Rd. & Route 9, Cortlandt	17.00	E-5
9	11	4 00	4.00	Community Hospitals of Peekskill, Crompond Rd	14.00	H-8
10	12	16.00	4.00	Rtes 202 & 6, parking area So. Of Bear Mtn Bridge	17 00	E-2
11	13	7 00	4.00	Furnace Dock Rd & Washington St , Cortlandt	14.00	M-8
12	8	3 00	3.00	Peekskill High School, Elm St., Peekskill	14.00	H-6
13	14	3 00	4.00	Cortlandt Nursing Care Ctr. Oregon Rd., Peekskill	17.00	F-7
14	15	5 00	4 00	Furnace Dock Rd. & Maple Ave , Cortlandt	14.00	K-9
15	16	7 00	4.00	Skyview Haven Nursing Home Rte. 9A, Croton	11.00	O-7
16	17	6 00	6 00	Croton Gorge Park, Rte. 129, Cortlandt	14.00	O-10
17	18	3 00	6 00	JCT Lexington Ave & Rte 6, Lake Mohegan	17.00	E-10
18	19	4 00	7 00	Crompond Rd. & Stoney St , Yorktown	18.00	H-12
19	21	6.00	7 00	Underhill Ave & Croton Lake Rd (Rte 129)	14.00	M-13
20	22	7 00	8.00	Cedar Manor House, Cedar Lane, Ossining	9.00	S-10
21	23	6.00	9.00	IBM, Rte 134, Yorktown Hgts.	11.00	P-14
22	24	5 00	9.00	Yorktown Fire Dept , Hanover Ave , Yorktown	15.00	J-16
23	26	7 00	10 00	Taconic Pky & Rte 100 Exit ramp, New Castle	11.00	R-14
24	27	4.00	10.00	JCT. Rte 6 & Gomer St , Yorktown	18.00	D-15
25	28	5.00	9.00	JCT. Rtes 118, 202 & 35, Yorktown	15 00	H-17
26	29	6.00	10 00	Rtes 100 & 129 (JCT), Yorktown	15 00	N-17
27	1	3 00	1.00	Lower South St. & Welcher Ave., Peekskill	14.00	K-5
28	20	8.00	7.00	Police House, Croton Point Park	11.00	S-7
29	25	3 00	9.00	Holla Hose Co. #5, State St., Ossining	9.00	U-10

APPROVED BY	Westchester County	IP-3.4
DOH:_____ Date:_____ DES:_____ Date:_____	DEPARTMENT OF EMERGENCY SERVICES	

INDIAN POINT ENERGY CENTER
IMPLEMENTING PROCEDURE

RECEPTION CENTER OPERATIONS

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1.0 Purpose

1.1. This procedure provides the guidance for Reception Center activation and operation during an emergency at the Indian Point Energy Center. The major responsibilities of the Reception Center are to monitor, register, provide KI, and if necessary decontaminate evacuees prior to directing them to congregate care shelters or other suitable locations.

2.0 Responsibilities

2.1County EOC

2.1.1 **County Commissioner of Health (CCOH)**-The CCOH has overall responsibility for making public health decisions to protect the citizens and emergency workers of Westchester County in a radiological emergency. The CCOH will direct departmental resources in support of monitoring and decon at reception centers; and coordinates with department of Social Services, Department of Emergency Services and other agencies involved in reception center operations.

2.1.2 **County Commissioner of Social Services (COSS)**-The COSS is responsible to active the White Plains, Harrison and Westchester Community College Reception Centers following notification of a Site Area Emergency. Place the remainder of the Reception Centers on stand-by; notify the American Red Cross to open or place the Congregate Care Centers on stand-by.

2.1.3 **County Fire Services Coordinator (Department of Emergency Services)**- The County Fire Services Coordinator is responsible for notifying and requesting mobilization of local fire services to conduct vehicle monitoring and KI distribution at reception centers.

2.2 Reception Centers

2.2.1 **Reception Center Supervisor** - The RCS is responsible for the overall management and supervision of all activities with the center. These include ensuring that the center is properly staffed and equipped, that the assigned personnel have been correctly trained, work schedules are established and the center is properly set up. Upon termination of the emergency, the RCS will inspect all areas for damage and ensure that the equipment is put away and that all required stock replenishment is identified for replacement by the Department of Emergency Services. (Checklist 1 Reception Center Supervisor Checklist)

2.2.2 **Assistant Reception Center Supervisor** - The ARCS takes direction from RCS and initially will issue personal protective equipment and dosimetry and take attendance of all reception center positions. Assists in setup, operation, and deactivation of the reception center. (Checklist 2 Assistant Reception Center Supervisor Checklist)

2.2.3 **Roving Monitor (RM)** - The RM is responsible for monitoring and maintaining the separation of clean and contaminated monitoring areas in the reception center and taking background measurements. (Checklist 3 Roving Monitoring Checklist)

2.2.4 **Portal Monitor Team Lead (PMTL)** - The PMTL is responsible for directing the set up of monitoring/registration area and for supervising the monitoring/registration operations. (Checklist 4 Portal Monitor Operator Lead Checklist)

2.2.5 **Portal Monitor Team (PMT)** - The PMT takes direction from the PMTL and operates the portal monitor. (Checklist 5 Portal Monitor Operator Checklist)

2.2.6 **Portal Escort (PE)** – The PE takes direction from the PMTL and is responsible for setup of the area between the portals and locker rooms and escorting contaminated evacuees from the portal area to the locker room entrances where they hand off the evacuee to the Decon Escort for deconing. (Checklist 6 Portal Escort Checklist)

2.2.7 **Decon Monitor (DM)** - The DM is responsible for set up and conduct of the decontamination/registration area. (Checklist 7 Decon Monitor Checklist)

2.2.8 **Decon Recorder (DR)** - The DR assists the DM in monitoring and documenting individual evacuee contamination. (Checklist 8 Decon Recorder Checklist)

2.2.9 **Decon Escort (DE)** – The DE is stationed at the entrance to the male and female decon areas. They escort contaminated evacuees into the appropriate decon area and advise them on the process they will go through for decontamination and registering afterwards. (Checklist 9 Decon Escort Checklist)

2.2.10 **Decon Assistants** – Decon Assistants provide instructions and assistance to contaminated evacuees in the process of bagging contaminated clothing showering and donning temporary clothing.

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2.2.10 **Vehicle Monitoring Leader (VML)** – The VML is responsible for ensuring that the vehicle monitoring station is set up. The VML supervises the operation of vehicle monitoring and decontamination. Reporting the number of vehicles requiring decontamination to the . Also supervises the deactivation of the monitoring and decontamination areas. (Checklist 10 Vehicle Monitoring Leader Checklist)

2.2.11 **Vehicle Monitoring Recorder (VMR)** – The VMR records the results vehicle monitoring surveys of vehicles as appropriate. (Checklist 12 Vehicle Monitoring Recorder Checklist)

2.2.12 **KI Distribution Team (KIDT)** – The KIDT canvases all vehicles prior to entering the Reception Center will ask the evacuees if they have taken KI and distribute KI to those who have not already taken KI. (Checklist 13 KI Distribution Team Checklist)

3.0 Concept of Operations

3.1 Westchester County has identified six reception centers to support evacuation of the ten mile area around the Indian Point Energy Center.

3.2 The White Plains, Harrison High School and Westchester Community College reception centers will be activated as early as a Site Area Emergency. All others would be placed on standby. Activation of additional reception centers would depend upon the potential areas impacted by protective actions.

3.3 The first three Reception Centers shall be activated at the Site Area Emergency by the County Commissioner of Social Services and can be activated sooner if deemed necessary. The primary purpose is to register, monitor and, if necessary, decontaminate personnel evacuating from the affected areas of the EPZ. KI can also be provided to evacuees needing it. Following successful completion of processing, evacuees who have requested assistance will be provided maps and directions to Congregate Care Centers that have been activated. If further medical treatment is required, arrangements will be made to transport any evacuee to an appropriate medical facility. Vehicles will be monitored but will not be decontaminated. Vehicle decontamination will be conducted at a later date when additional state and federal resources are available. Appropriate data concerning numbers of persons and vehicles processed will be maintained by the Reception Center Management and forwarded to the County EOC.

3.4 Reception Center Supervisors will maintain communications with the County EOC to advise of issues and status of activities.

3.5 Reception center workers will receive dosimetry. Everyone receives a thermoluminescent dosimeter. In addition, personnel will either have a low range dosimeter or an individual on their team and in their general proximity will have an electronic dosimeter to provide low range dose information.

3.6 Portal monitors will be used to monitor the general public at reception centers.

IPEC00200500

Checklist 1
Reception Center Supervisor
Checklist

____ Assure adequate staffing for center positions and vehicle monitoring have been filled and appropriate equipment is available for operational readiness. If there are any unfilled positions notify the EOC to call out the appropriate personnel to fill those positions.

EOC contact Information: Health Desk - 864-5295
OEM - 813-4173

____ Prior to distributing dosimetry to female emergency workers inquire to see if they are pregnant. If so, provide Form 9 which describes the regulatory requirements for pregnant women and provide Form 10 for the worker to declare their pregnancy.

____ If a female emergency worker has indicated they are pregnant and have read and understood the regulatory requirements and are willing to perform their duties at the reception center then, have them sign Form 10 Declaration of Pregnancy and report to their assignment.

If a pregnant female emergency worker has read the regulatory requirements and does not wish to perform the duties in the reception center, notify the EOC Health representative, release the person and call out another person to fill the position.

____ Handicapped evacuees in wheel chairs will be escorted to another location within the reception center for detailed scanning. If the evacuee is contaminated, the Reception Center Supervisor will contact the EOC for resolution and possible referral to a hospital for decontamination.

____ Direct the staff to obtain and don their thermoluminscent dosimeter (TLD). In addition, one member of each team in each area shall receive an electronic dosimeter to measure low and high range exposures.

____ Ensure an electronic dosimeter is assigned to the following teams/areas:

- Portal monitoring area
- Male decontamination area
- Female decontamination area
- Vehicle monitoring area

____ Direct the staff to set the center up in accordance with center specific layout (See appropriate Attachment for the center you are in) and take their center positions.

____ Confirm portal monitors and survey instruments are all operational.

____ Following activation, notify the County EOC that the reception center is activated and obtain a briefing on the status of the emergency, i.e. plant status, ECL, wind direction and protective actions if any. Also report any center needs to the EOC.

IPEC00200501

____ Assure the staff are monitoring and recording readings at proper intervals from their direct reading or electronic dosimeters.

____ The Reception Center Supervisor will monitor and evaluate trends at the portal monitors, if there are intermittent contaminated evacuees, the supervisor has the option to direct the decon monitors to conduct scanning prior to a full shower and pin point contamination for specific area decon.

____ Following the briefing from the County EOC, give an initial briefing to the Reception Center staff.

____ Conduct follow up briefings as appropriate or when there is a change in classification.

____ When notified of a declaration of a General Emergency by the County Commissioner of Health with a recommendation to take KI, direct the KI Distribution Team to distribute KI to arriving evacuees as per their checklist 13.

____ Periodically report the number of evacuees processed at the center to the EOC.

____ Ensure staff does NOT exceed their 1 REM dose limit in the center and in vehicle monitoring areas.

____ Review center paper work flow and provide guidance as appropriate regarding the arrival of evacuees and volume.

____ Provide periodic updates to the County EOC and obtain any special information or guidance related to the operation of the center.

____ If operations are expected to extend beyond 12 hours coordinate shift assignments with the EOC.

____ When notified by the County EOC to deactivate the center, inform the staff to return the equipment and supplies to the appropriate staging area and return the center to its original condition.

____ Upon termination of the emergency, direct the staff to return the center to its original condition, inspect all areas to ensure equipment is put away and provide a list of required stock replenishment to the Department of Emergency Services for replacement. Collect all TLD's, electronic and self-read dosimeters, paperwork and provide to the EOC. Take pictures of any damage.

IPEC00200502

Checklist 2
Assistant Reception Center Supervisor
Checklist

____ Report to the Reception Center Supervisor (RCS) upon arrival.

____ Issue personal protective equipment and dosimetry and take attendance of all reception center positions.

____ Assure the Vehicle Monitoring Leader or designee is providing the Evacuation Information Handout (Attachment "J" and "J.1" to those Spanish speaking evacuees).

____ Assist the supervisor and coordinate with the staff to set up the center.

____ Verify center layout is accordance with center specific diagrams.

____ Verify appropriate signs are placed in accordance with center specific diagram.

____ Handicapped evacuees in wheel chairs will be escorted to another location within the reception center other than the monitoring/decon area for detailed scanning. If the evacuee is contaminated the Reception Center Supervisor will contact the EOC for resolution and possible referral to a hospital for decon.

____ Set up 24-hour shift staffing schedule.

____ Assure staff is monitoring their dose and recording it.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to your Supervisor immediately.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200503

Checklist 3
Roving Monitor
Checklist

____ Report to the Reception Center Supervisor (RCS) upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Assist with setup of area between portal monitors and decon area.

____ Assure monitoring equipment for detection of radiological contamination is available. Report any needs to the supervisor.

____ Take baseline background readings inside and outside the center and record on Form-1 Background Radiation Readings.

____ Take periodic background readings to assure readings do not rise above portal monitor background settings and record on Form-1 Background Radiation Readings.

____ Obtain protective clothing for potential deconing of the center as appropriate.

____ Assist with escorting contaminated evacuees to decon area.

____ Handicapped evacuees in wheel chairs will be escorted to another location within the reception center other than the decon area for detailed scanning. If the evacuee is contaminated the Reception Center Supervisor will contact the EOC resolution and possible referral to a hospital for decon.

____ Monitor and maintain the clean areas in the center.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to your Supervisor at the Reception Center immediately.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200504

Checklist 4
Portal Monitor Team Lead
Checklist

____ Report to the RCS upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Obtain appropriate supplies for set up of portal monitoring area. Report any needs to the supervisor.

a) Portal monitors
b) Paper rolls for contamination control
c) Duct tape and Masking tape
d) Pens and makers
e) Clip boards
f) Contamination referral sheets
g) Extension cords
h) Plastic tape for contamination barriers
i) Traffic cones for contamination barriers
j) Trash receptacles for contaminated and clean material
k) Signage for direction of evacuees
l) Plastic wrap to protect portal monitors form contamination

____ Confirm the proper staffing levels for portal monitoring have arrived at the center and notify the Reception Center Manager if staffing levels are inadequate.

____ Direct and assist the portal monitor operators to set up the lay out area for the portal monitors in accordance with the center specific layout diagram. (See appropriate Attachment "I" for the center you are in)

____ Direct the portal monitor operators to set up the portal monitors and source check them.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to your Reception Center supervisor immediately.

____ Notify the Reception Center Supervisor when portal monitoring capabilities are operational and report any issues. If a portal monitor does not pass the operability checks notify the RCS to call the EOC for a replacement monitor and to initiate a call to Atlantic Nuclear for immediate repair or replacement.

IPEC00200505

Checklist 4
Portal Monitor Team Lead
Checklist
(continued)

____ Handicapped evacuees in wheel chairs will be escorted to another location within the reception center other than the decon area for detailed scanning. If the evacuee is contaminated the Reception Center Supervisor will contact the EOC resolution and possible referral to a hospital for decon.

____ Coordinate with the portal monitor operators to queue and move evacuees through the monitoring area in a timely manner, estimated target is 20 seconds per person.

____ Periodically report status of queuing to RCS and evaluate timeliness of monitoring operation.

____ Confirm 24 hour shift staffing has been arranged.

____ Brief the next shift upon arrival.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200506

Checklist 5
Portal Monitor Team
Checklist

____ Report to the RCS upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Set up portal monitor area and portal monitors in accordance with center specific diagram. (See appropriate Attachment "I" for the center you are in) Note: Install batteries in the portal monitors in case of a power failure.

____ Source check portal monitors. Use the 1uCi, Cs-137 check source.

- First location for side detectors is approximately six inches from the bottom, in the center of the portal with a flat side facing towards the side detectors,
- The second location for the side detectors is approximately five feet from the bottom of the portal in the center of portal with flat sides of source facing towards the side detectors.
- For the foot detectors hold the source flat side down on top of the detectors.

NOTE: If the portal monitor does not alarm, remove the instrument from service and report any malfunctions to the PMTL. The PMTL will arrange for alternate means to monitor and as time permits arrange for additional portal monitors.

____ Wrap the portal monitors with thin plastic wrap to protect portals from contamination.

____ Place a piece of paper over the portal monitor footpads to prevent contamination.

____ Obtain protective clothing for potential deconing of the monitoring area as appropriate.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the RCS immediately.

____ Conduct portal monitoring of evacuees in accordance with the requirements in Attachment "C". (Target timeframe of 20 seconds per person).

____ Change out foot paper periodically to assure background reading does not increase.

IPEC00200507

Checklist 5
Portal Monitor Team
Checklist
(continued)

____ As evacuees pass through the portals make sure they do not touch monitor except with their feet. If a contaminated evacuee has come in contact with the portal monitor surface, rewrap or replace foot paper in the area that alarmed.

____ Once evacuee is determined to be "CONTAMINATED" the evacuee will step backwards out of the portal monitor and be escorted to the locker room entrance by the Portal Escort.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200508

Checklist 6
Portal Escort
Checklist

____ Report to the RCS upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Set up area from portal monitors to the locker room entrances in accordance with center specific diagram. (See appropriate Attachment "I" for the center you are in).

____ Escort contaminated evacuees from the portal monitors to the male or female locker rooms and hand them off to the Decon Escort for decon processing.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the RCS immediately.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200509

Checklist 7
Decon Monitor
Checklist

____ Report to the RCS upon arrival.

____ Obtain personal dosimetry and don personal protective equipment. **Workers in decon areas will wear paper or cloth coveralls, booties taped closed, Gloves taped closed, and hood.**

____ Obtain appropriate supplies and equipment for radiological monitoring and decontamination of personnel. Report any needs to the RCS.

a) 2104P survey instruments
b) Paper towels for contamination control
c) Duct tape and Masking tape
d) Pens and makers
e) Clip boards
f) Contamination referral sheets
g) Plastic tape for contamination barriers
h) Traffic cones for contamination barriers
i) Trash receptacles for contaminated and clean material
k) Signage for direction of evacuees

____ Set up decon area in accordance with center specific diagram. (See appropriate Attachment "I" for the center you are in)

____ Obtain monitoring equipment and perform operational and response checks:

Operational Checks

a) Push the mode selector to the "Bat Check" position to verify that the battery is OK.

b) Push the mode selector to the "Normal" position. You should begin to hear an audible response, i.e. a beeping sound.

Response Checks

a) Place the range selector in the X10 position.

b) Place the instrument in the check source fixture with the detector over the source.

c) Within 30 seconds, the meter should read between 1 and 3 mr/hr on the lower scale.

IPEC00200510

Checklist 7
Decon Monitor
Checklist
(continued)

d) Remove from source and place the range selector in the X1 position.

e) If the reading on the upper scale goes off scale then switch the range selector to the X10 or X100 range to obtain a readable scale.

_____ Cover monitoring equipment with plastic to prevent contamination of the probe.

_____ Notify the RCS of operational readiness.

_____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the RCS immediately.

_____ Direct all contaminated evacuees to remove all clothing, jewelry etc. and take a shower. Bag and tag all clothing, jewelry etc. (valuables will be bagged and tagged separately for decontamination at an approved facility.) Provide receipt to evacuee for each item bagged, once the evacuee has been processed and decontaminated.

**** NOTE: The Reception Center Supervisor will monitor and evaluate trends at the portal monitors, if the there are intermittent contaminated evacuees, the supervisor has the option to direct the decon monitors to conduct scanning prior to a full shower and pin point contamination for specific area decon.**

**_____ If the supervisor has determined that there is intermittent contaminated evacuees then the automatic showers will be stopped until further notice from the supervisor and evacuees will be scanned with clothing on to pin point affected areas Have Decon Recorder document in the computer data base.

**_____ If contamination is discovered on outer clothing, the contaminated article must be removed, bag and tagged as above and the evacuee will then be scanned to determine what part of the body needs to be decontaminated.

**_____ Attempt decontamination on the affected area by using mild soap and warm water. Rinse thoroughly. DO NOT SCRUB WITH A BRUSH. Be careful not to scratch or erode the skin. Repeat until contamination is removed. If contamination is wide spread the evacuee will take a shower for removal of contamination.

IPEC00200511

Checklist 7
Decon Monitor Checklist
(continued)

_____ When the supervisor has determined contaminated evacuees are numerous continue with automatic showering.

_____ After evacuee takes a shower or has been decontaminated on a specific area, scan them one inch from surface, approximately one inch per second, to assure they are clean or below contamination limits (0 .1mRhr) Have Decon Recorder document in the computer data base.

_____ If evacuee is still contaminated after showering or specific area decon, document affected areas.

If contamination is isolated to one or two spots, then decon only those areas.

If the contamination is widespread have evacuee shower again up to two more times for a total of three showers. Scan evacuee after each shower and document.

_____ Once the evacuee has completed the decon process they will be considered clean if the reading is < 0.1 mRhr above background. Issue a tyvek suit and have evacuee report to social services for registration.

_____ Readings between 0.1 mRhr but < 1 mRhr above background will be considered non-removable contamination. Issue a tyvek suit have evacuee report to social services for registration. The RCDS will be notified to document the case for follow up.

_____ If the evacuee is above 1mRhr background after three showers or specific decon, issue a tyvek suit have the evacuee remain in the controlled area. Notify the RCDS, who will in turn refer the case to the EOC for evaluation and determination for possible referral to a hospital for further decontamination.

_____ Direct the Decon Recorder to enter the results of the decontamination process on the computer. Note in the event of a computer failure, notify supervisor and use paper backup contamination referral sheets.

____ Take periodic background readings in the decon area and record on Form-1 Background Radiation Readings.

____ At shift change brief the oncoming shift on the status of decon area, provide all documentation.

____ Have the new shift, monitor the out-going shift for potential contamination and decon if appropriate.

IPEC00200512

_____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

Checklist 8
Decon Recorder Checklist

____ Report to the RCS upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Assure supplies and equipment are available for radiological monitoring and decontamination of personnel. Report any needs to the

____ Set up decon area in accordance with center specific diagram. (See appropriate Attachment "I" for the center you are in)

____ Enter the results of the decontamination process on the computer and provide instructions to evacuee for further processing, i.e. direct to Social Services or possible medical surveillance.

____ Have the new shift monitor the out-going shift for potential contamination and decon if appropriate.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200514

Checklist 9
Decon Escort
Checklist

____ Report to the Reception Center Supervisor upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Escort contaminated evacuees into the appropriate decon area and advise them on the process they will go through for decontamination and registering afterwards.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200515

Checklist 10
Vehicle Monitoring Leader
Checklist

____ Report to the Reception Center Supervisor (RCS) upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the RCS immediately.

____ Assure supplies and equipment are available for radiological monitoring of vehicles. Report any needs to the RCS.

____ Set up area in accordance with center specific diagram. (See appropriate Attachment "I" for the center you are in)

____ Obtain monitoring equipment and perform operational and response checks:

Operational Checks

a) Push the mode selector to the "Bat Check" position to verify that the battery is OK.

c) Push the mode selector to the "Normal" position. You should begin to hear an audible response, i.e. a beeping sound.

Response Checks

f) Place the range selector in the X10 position.

g) Place the instrument in the check source fixture with the detector over the source.

h) Within 30 seconds, the meter should read between 1 and 3 mr/hr on the lower scale.

i) Remove from source and place the range selector in the X1 position. If the reading on the upper scale goes off scale then switch the range selector to the X10 or X100 range to obtain a readable scale.

____ Cover monitoring equipment with plastic to prevent contamination of the probe.

____ Have passengers exit vehicle and direct them to the reception center entrance for processing. Note: The driver stays with the vehicle.

_____ Assure the vehicle monitoring staff is providing the Evacuee Information Handout to the evacuees. (Attachment "J").

IPEC00200516

Checklist 10
Vehicle Monitoring Leader
Checklist
(continued)

____ Monitor vehicles externally with driver inside. Hold the probe, with the window open towards the vehicle surface at a distance of 1 inch, systematically move along the vehicle. Pay special attention to windshield edges, wheel housings, front grill, front bumper, the four wheel wells, the rear bumper and the flatbed in a pickup truck.

____ With the driver's door open and the driver still seated, monitor the steering wheel, seat and floor area.

____ If survey meter readings do not indicate contamination, then the vehicle driver will be asked to drive the vehicle to a designated clean parking lot and proceed to the personnel monitoring and decontamination area.

____ If survey meter readings are more than 0.1 mR/hr above background, then the vehicle driver shall drive the vehicle along a directed path to a designated Contaminated Parking Area.

____ Periodically brief the RCS on monitoring results and number of contaminated vehicles.

____ Assure vehicle monitoring results are being recorded on Form-3 Vehicle and Equipment Decontamination Sheet.

____ At shift change brief the oncoming shift on the status of decon area, provide all documentation.

____ Have the new shift monitor the out-going shift for potential contamination and decon if appropriate.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200517

Checklist 11
Vehicle Monitor Recorder Checklist

____ Report to the RCS upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the RCS immediately.

____ Record vehicles and equipment monitored on Form-5 Vehicle and Equipment Decontamination Sheet.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200518

Checklist 13
KI Distribution Team
Checklist

____ Report to the Reception Center Supervisor upon arrival.

____ Obtain personal dosimetry and don reflective safety vest.

____ Obtain a supply of KI from the supply room. (Inquire with the supervisor for location)

____ Canvas all vehicles prior the access point to the Reception Center and ask the evacuees if they have taken KI and distribute KI to those who have not already taken KI.

____ Also provide KI instructional sheet.

IPEC00200519

Attachment "A"
Reception Center Positions

Reception Center Positions	Westchester County Reception Centers								
	Ardsley Middle		Fox Lane High	Harrison High	H.C Crittenden		Westchester College	White Plains High	
Reception Center Supervisor	1		1	1	1		1	1	
Assist. Reception Center Supervisor	1		1	1	1		1	1	
Roving Monitor	2		2	2	2		2	2	
Portal Monitor Team Lead	1		1	1	1		1	1	
Portal Monitor Team	3		4	4	3		5	5	
Portal Escort	1		1	1	1		1	1	
Male Decon/Monitor	1		1	1	1		1	1	
Male Decon/Recorder	1		1	1	1		1	1	
Female Decon/Monitor	1		1	1	1		1	1	
Female Decon/Recorder	1		1	1	1		1	1	
Decon Escort	2		2	2	2		2	2	
Vehicle Monitor Leader	1		1	1	1		1	1	
Vehicle Monitor	1		1	1	1		1	1	
Vehicle Monitor Recorder	2		2	2	2		2	2	
KI Distribution Staff	4		4	4	4		4	4	

Attachment "B"
Monitoring Time Assumptions

The following assumptions pertain:

1. Hand-held instruments

   90 seconds to monitor each person
   Within 12 hours (10 minutes break each hour), each monitor will process approximately 400 people

2. Portal monitors

   There will be portal monitors available.
   20 seconds to monitor each person*
   Each portal monitor to be operated by one (1) person,
   Within 12 hours, each portal monitor will process 2160 people

   *Verified capabilities through exercise demonstration

3. In addition to personnel required for monitoring of evacuees, each reception center will have the following personnel assigned, per shift, as a minimum.

   Inside reception center:

   Personnel decontamination - 2

   Outside reception center (Fire personnel):

   Vehicle monitoring - 2

   Recorders - 2

IPEC00200521

Attachment "C"
Evacuee Processing Capabilities
For Portal Monitoring

Reception Center	Proposed Number of Evacuees	Minimum Portals Needed	Resulting Capacity	Portals Provided
White Plains	6592	3	6480	5
WCC	5847	3	6480	5
Harrison	5212	3	6480	4
Ardsley	6139	3	6480	4
Crittenden	4583	3	6480	3
Fox Lane	6993	4	8640	4
EWPMC				1
Total	34632	19	41040	26

IPEC00200522

Attachment "D" Reception Center Inventories

Reception Center Equipment	PMC	Westchester County Reception Centers								
	Westchester County Fire Training center	Ardsley Middle		Fox Lane High	Harrison High	H. C. Critteenden		Westchester College	White Plains High	
Monitoring Equipment										
Portal Monitors	0	2		4	3	2		4	3	
Hand Held 2401-P	12	10		10	10	10		10	10	
Dosimeters 0-5 R	50	50		50	50	50		50	50	
Dosimeter Chargers	6	10		10	10	10		10	10	
TLD's	75	50		50	50	50		50	50	
Protective Clothing										
Tyvex Suits	2 cases	16		50	2 cases	2 cases		2 cases	2 cases	
Booties	1 box	1 box		4 cases	1 box	1 box		1 box	1 box	
Rubber Gloves	200 pr	200 pr		200 pr	200 pr	200 pr		200 pr	200 pr	
Caps	1 case	1 case		1 case	1 case	1 case		1 case	1 case	
Yellow coveralls	4 Boxes	4 Boxes		4 Boxes	4 Boxes	4 Boxes		4 Boxes	4 Boxes	
Decon Materials										
Towels Paper	2 cases	30 rolls		2 cases	2 cases	2 cases		2 cases	2 cases	
Towels Dry ups	2 cases	2 cases		2 cases	2 cases	2 cases		2 cases	2 cases	
Privacy Screens	1	1		1	1	1		2	1	
Shampoo	100	100		100	100	100		100	100	
Brushes	50	50		50	50	50		50	50	
Soap	100	100		100	100	100		100	100	
Cotton swabs	500	500		500	500	500		500	500	
Duct Tape	10	10		1 case	10	10		10	10	

Attachment "D" Reception Center Inventories

Reception Center Equipment	PMC	Westchester County Reception Centers								
	Westchester County Fire Training center	Ardsley Middle	Eastchester Middle	Fox Lane High	Harrison High	H. C. Crittenden	Valhalla Middle/High	Westchester College	White Plains High	Woodlands Middle/High
Center Set Up Materials										
Road Cones	24	24	24	24	24	24	24	20	30	12
Floor Paper	2 Rolls	2 Rolls	2 Rolls	2 Rolls	2 Rolls	2 Rolls	3 Rolls	2 Rolls	2 Rolls	2 Rolls
Plastic wrap	4 rolls	4 rolls	4 rolls	4 rolls	4 rolls	4 rolls	4 rolls	4 rolls	4 rolls	4 rolls
Plastic Bags small	1 Case	1 Case	1 Case	1 Case	1 Case	1 Case	1 Case	1 Case	1 Case	1 Case
Plastic Bags large	1 Case	1 Case	1 Case	1 Case	1 Case	1 Case	1 Case	3 Boxes	1 Case	1 Case
Extension cords	4	4	4	4	4	4	4	4	4	4
Yellow or Orange scene tape	5 rolls	5 rolls	5 rolls	5 rolls	5 rolls	5 rolls	5 rolls	5 rolls	5 rolls	5 rolls
Stanchions	10	10	10	10	10	10	10	10	10	10
Rope	500 Ft.	500 Ft.	500 Ft.	500 Ft.	500 Ft.	500 Ft.	500 Ft.	500 Ft.	500 Ft.	500 Ft.
Saw Horses	10	17	18	22	24	10	10	10	24	10
Clock	1	1	1	1	1	1	1	1	1	1
Signage	Various	Various	Various	Various	Various	Various	Various	Various	Various	Various
Miscellaneous Supplies										
"D" Cell batteries	12	12	12	12	12	12	12	12	12	12
Blankets	6	6	6	6	6	6	6	6	6	6
33 gallon barrels	12	15	8	12	12	12	12	2	12	12
Push brooms	2	2	2	2	2	2	2	2	2	2
Dust Pans	3	3	3	3	3	3	3	3	3	3
Garden hose	1	1	1	1	1	1	1	1	1	1
Clipboards	6	6	6	6	6	6	6	6	6	6
Scissors	2	2	2	2	2	2	2	2	2	2
Step Ladders	1	1	1	1	1	1	1	1	1	1

Attachment "D" Reception Center Inventories

Reception Center Equipment	PMC	Westchester County Reception Centers								
	Westchester County Fire Training center	Ardsley Middle	Eastchester Middle	Fox Lane High	Harrison High	H. C Crittenden	Valhalla Middle/High	Westchester College	White Plains High	Woodlands Middle/High
Documentation										
Rad Exposure Cards	200	200	200	200	200	200	200	200	200	200
Contamination Referral Sheets	100	100	100	100	100	100	100	100	100	100
Vehicle/Equipment Decontamination Sheets	100	100	100	100	100		100	100	100	100
SOP for PMC's	2	2	2	2	2	2	2	2	2	2
First Aid Supplies										
Cots	10	10	10	1	1	1	1	17	20	2
First Aid Kits	2	4	2	2	2	2	2	1	2	2
Potassium Iodide (KI)										

Attachment "E"
Suggested Personnel Decontamination Methods

METHOD	SURFACE	ACTION	TECHNIQUE	ADVANTAGES	DISADVANTAGES
Soap and Water	Skin and hands	Emulsifies and dissolves contaminant	Wash 2-3 minutes and monitor Do not wash more than 3-4 times	Readily available and effective for most radioactive contamination	Continued washing will defat the skin Indiscriminate washing or other than affected parts may spread contamination
Soap and Water	Hair	Same as above	Wash several times If contamination is not lowered to acceptable limits, shave the head and perform skin decontamination methods		
Lava soap, soft brush and water	Skin and hands	Emulsifies, dissolves and erodes	Use light pressure with heavy lather Wash for 2 minutes, 3 times Rinse and monitor Use care not to scratch or erode the skin	Same as above	Continued washing will abrade the skin
Lanolin hand cream	Affected areas	Use between washes Apply to prevent skin irritation from heavy scrubbing			
Waterless hand-cleaning cream	Skin and hands	Emulsifies and dissolves contaminant	Wash several times	Good for grease Less irritating than scrubbing methods	
Tide or other plain detergent	Same as above	Emulsifies and dissolves contaminant	Make into a paste Use with additional water with a mild scrubbing action Use care not to erode the skin	Slightly more effective than washing with soap	Will defat and abrade skin and must be used with care
Mixture of 50% Tide and 50% cornmeal	Same as above	Emulsifies, dissolves and erodes	Same as above	Same as above	Same as above
5% water solution of a mixture of 50% Tide, 65% Calgon and 5% Carbose (carboxymethyl cellulose)	Same as above	Same as above	Use with water Rub for a minute and rinse	Same as above	Same as above
A preparation of 8% Carbose, 3% Tide, 1% Versene and 88% water homogenized into a cream	Same as above	Same as above	Use with additional water Rub 1 minute and wipe off Follow with lanolin or hand cream	Same as above	Same as above

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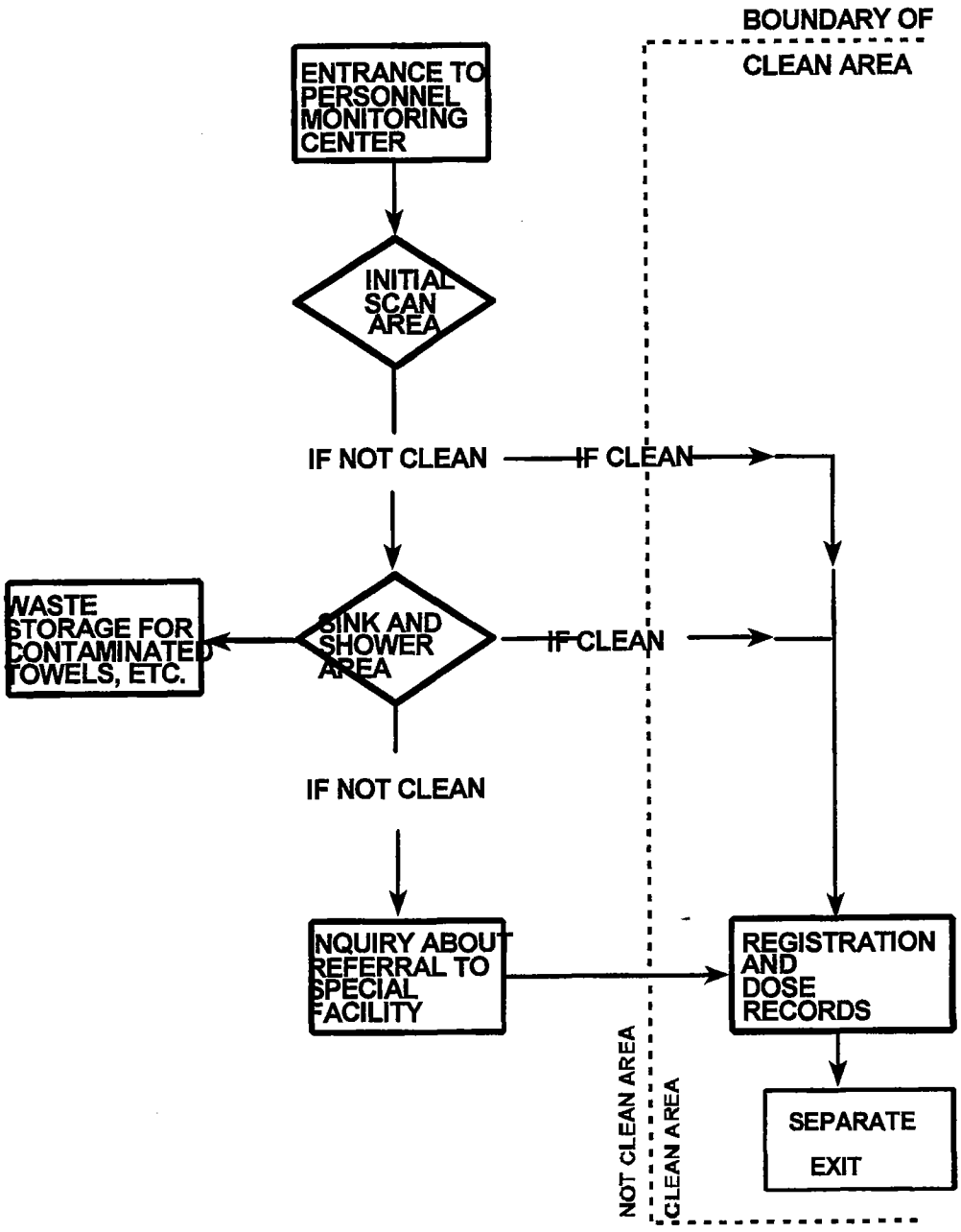
Attachment "F"
Typical Flow Diagram For
Personnel Monitoring and Decontamination



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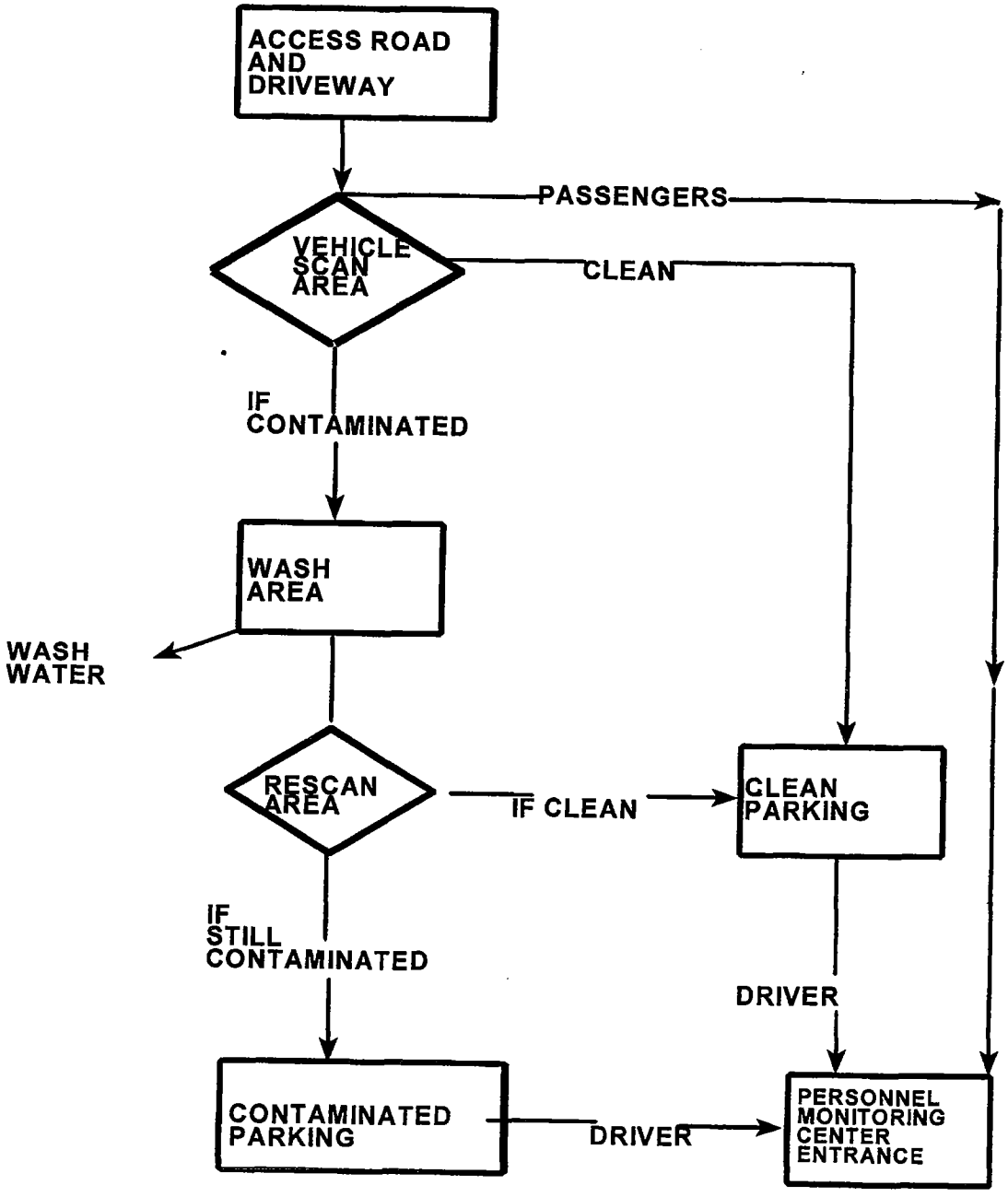
Attachment "G"
Typical Flow Diagram For
Vehicle and Equipment Decontamination



Attachment H.1
Ardsley Middle School
Layout

LAYOUTS WILL BE PLACED
INTO PROCEDURE
ONCE FINALIZED

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IPEC00200531

Attachment H.2
Fox Lane High School
Layout

LAYOUTS WILL BE PLACED
INTO PROCEDURE
ONCE FINALIZED

IPEC00200532

Attachment H.3
Harrison High School
Layout

LAYOUTS WILL BE PLACED
INTO PROCEDURE
ONCE FINALIZED

IPEC00200533

Attachment H.4
H.C. Crittenden School
Layout

LAYOUTS WILL BE PLACED
INTO PROCEDURE
ONCE FINALIZED

IPEC00200534

Attachment H.5
Westchester Community College
Layout

LAYOUTS WILL BE PLACED
INTO PROCEDURE
ONCE FINALIZED

IPEC00200535

Attachment H.6
White Plains High School
Layout

LAYOUTS WILL BE PLACED
INTO PROCEDURE
ONCE FINALIZED

IPEC00200536

IPEC00200537

Attachment H.7
Westchester Fire Training Center Layout
Layout

LAYOUTS WILL BE PLACED
INTO PROCEDURE
ONCE FINALIZED

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Attachment I
EVACUEE INFORMATION HANDOUT

The following is a brief description of what will occur while you are here at this facility.

Checking your vehicle

1. Passengers in the car will be directed to the Personnel Monitoring Center (PMC) and the driver will be asked to remain with the car.
2. The Fire Department will scan your vehicle for radiological contamination.
3. If none is found, the driver will be directed to "CLEAN PARKING" where the car may be parked and locked until your departure.
4. The driver may then proceed to the PMC.

B. Checking your vehicle (CONTAMINATED)

Do not be alarmed by the contamination discovered following the monitoring of your vehicle. You will be directed to follow the signs to the "Contaminated Vehicle Parking Lot."

- Leave all personal property in your car
- Leave car key in car-security will be provided
- The driver may then follow signs to the Monitoring and Decontamination Center
- Vehicles will be decontaminated at a later time, after consultation with state and federal authorities.

C. Personal Monitoring

- Monitoring and Decontamination Center, additional monitoring checks of your exposed skin and clothing will be performed. You will simply walk through a detector (looks similar to the metal detectors at the airports) however this instrument is used to detect radiation and is calibrated to give a positive indication at levels only slightly above background.
- If no contamination is found you will be directed to the Reception Center area where staff will assist you with any further issues or needs (lodging, food, location of family members etc).
- **NOTE: IF YOU HAVE RECENTLY UNDERGONE A MEDICAL PROCEDURE INVOLVING NUCLEAR MEDICINE, FOR EXAMPLE THYROID SCAN OR NUCLEAR CARDIAC TEST, PLEASE NOTIFY RECEPTION CENTER STAFF PRIOR TO BEING MONITORED FOR RADIATION EXPOSURE.**

D. Personal Monitoring (CONTAMINATED)

- If contamination is detected, simple showering and changing clothes can remove most radioactive contamination.
- You will be directed to a Decontamination Area located in the locker room of the school's gym. There staff may perform a more detailed scanning with a hand-held survey meter to pinpoint the location(s) and degree of this contamination and best assist you with its removal.
- You may asked to change clothing which will be provided to you, to wash your hands or shower- depending on the situation. All are effective means of removing radioactive contamination.
- After the contamination is removed, you will be monitored again before leaving to ensure that the decontamination is complete. You will then be directed to a reception registration station, and if additional assistance is needed to the American Red Cross Congregate Care station.

IF YOU HAVE ANY QUESTIONS, PLEASE FEEL FREE TO ASK THE STAFF OF THIS CENTER AS WE ARE HERE TO ASSIST YOU

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Attachment I.1
FOLLETO DE INFORMACIÓN PARA PERSONAS EVACUADAS

Lo que sigue es una breve descripción de lo que ocurrirá mientras usted esté aquí.

A. Revisión de su vehículo (LIMPIO)Los pasajeros del auto serán dirigidos al Centro de Personal de Supervisión (PMC por sus siglas en inglés) y se le pedirá al conductor que permanezca con el auto.
   1. El cuerpo de bomberos examinará su vehículo para detectar cualquier contaminación radiológica.
   2. Si no se encuentra ninguna, el conductor será dirigido al estacionamiento de autos limpios (Clean Parking) donde el auto puede ser estacionado y serrado hasta su partida.
   3. El conductor puede entonces proceder al PMC.

B. Revisión de su vehículo (CONTAMINADO)
   No se alarme si se descubre contaminación durante la revisión de su vehículo. Si hay suficiente tiempo, el cuerpo de bomberos puede rociar su auto con agua y jabón y descontaminarlo. Si no hay tiempo, se le ordenará que siga los letreros al estacionamiento de autos contaminados. (Contaminated Parking)
   - Deje todos sus efectos particulares dentro del auto.
   - Deje la llave de su auto adentro del auto. Se proveerá seguridad.
   - El conductor puede entonces seguir los letreros al centro de revisión y descontaminación.

C. Revisión de Personas (LIMPIO)
   - El personal del centro llevará a cabo revisiones adicionales de su persona examinando las áreas expuestas de su piel y su ropa. Simplemente caminará a través de un detector (similar a los detectores de metal en los aeropuertos) pero este instrumento se utiliza para detectar la radiación y está calibrado para dar una indicación positiva aún cuando los niveles son levemente más altos que lo normal.
   - Si no se encuentra ninguna contaminación, se le dirigirá al área de recepción donde el personal le asistirá con cualquier problema o necesidad que tenga como alojamiento, alimentos, localización de miembros de la familia, etc.
   - **NOTA: SI RECIENTEMENTE USTED HA RECIBIDO ALGÚN TRATAMIENTO QUE UTILIZA LA MEDICINA NUCLEAR, POR EJEMPLO UNA EXPLORACIÓN DE LA TIROIDES O UNA PRUEBA CARDIACA NUCLEAR, POR FAVOR, NOTIFIQUE AL PERSONAL DE LA RECEPCIÓN DEL CENTRO DE REVISIÓN DE LA EXPOSICIÓN A LA RADIACIÓN.**

D. Revisión de Personas (CONTAMINADO)
   - Si se detecta cualquier contaminación, el simplemente darse una ducha (baño) y cambiarse de ropa puede quitar la mayoría de la contaminación.
   - Usted será dirigido al área de descontaminación situada en el cuarto de roperos del gimnasio de la escuela. Allí el personal realizará una exploración más detallada con un medidor de mano para establecer exactamente dónde y a qué grado existe contaminación y para mejor ayudarle con la eliminación de esta.
   - Usted puede pedir un cambio de ropa que le será proporcionada, lavarse las manos o ducharse dependiendo de la situación específica. Todos son medios eficaces de quitar contaminación radioactiva.
   - Después de que se quite la contaminación será revisado otra vez antes de irse para asegurarse que la descontaminación ha sido completa. Luego lo dirigirán a la estación de inscripción si es necesario a la Cruz Roja (American Red Cross Congregate Care Station)

SI USTED TIENE CUALQUIER PREGUNTA, POR FAVOR SIÉNTASE LIBRE DE PREGUNTARLE AL PERSONAL DE ESTE CENTRO PORQUE ESTAMOS AQUÍ PARA ASISTIRLO.

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Form-1
Radiological Background Readings

Area	Baseline Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr

Form-2
Contamination Referral Sheet

PMC LOCATION: _____ **BACKGROUND:**_____

Date ___/___/___

Name: _____ DOB _____

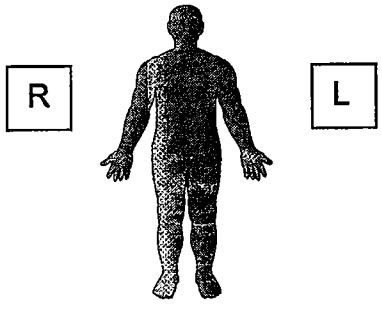
Address: _____ Telephone _____

Location (where they have traveled from) _____

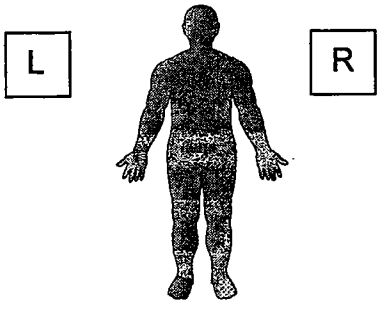
INITIAL DETAILED SURVEY

Contamination Diagram. Mark all contaminated body areas and radiation readings.

FRONT



BACK



First Decon CLEAN ____ CONTAMINATED ____

Second Decon CLEAN ____ CONTAMINATED ____

Third Decon CLEAN ____ CONTAMINATED ____

If evacuee is still contaminated after third decon attempt, notify supervisor who will notify the EOC for possible referral to a hospital decon facility.

If evacuee is clean or below 0.1 mRhr send them to social services for further processing.

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Form-2
Contamination Referral Sheet
(continued)

DECON MONITOR DECONTAMINATION RESULTS (indicate mR/Hr above background)

BACKGROUND: _____

Decontamination Actions Taken:

Body Area		1st DECON	2nd DECON	3rd DECON
Hair				
Head/Neck				
Shoulder	R			
Shoulder	L			
Arms	R			
Arms	L			
Hands	R			
Hands	L			
Chest				
Back				
Stomach				
Legs	R			
Legs	L			
Feet	R			
Feet	L			

1 Decon #1
List of clothing or personal items requiring decontamination Rescan and record results in column # 1

_____

1.CLEAN ☐ DECON EFFORTS SUCCESSFUL

DECON MONITOR SIGNATURE: _____

1. ☐ DECON Partially Successful – Supervisor Notified
2. ☐ DECON Unsuccessful – Supervisor Notified

SUPERVISOR STATEMENT:

3. ☐ Discharge Pending Follow-up by Health Department.
4. ☐ Referred to Emergency Room at _____

Comments: _____

_____

SUPERVISORS SIGNATURE: _____

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Form-3
Vehicle and Equipment
Decontamination Sheet

Date:_____Time:_____

Location: _____

Owners Name & Address:

_____

_____

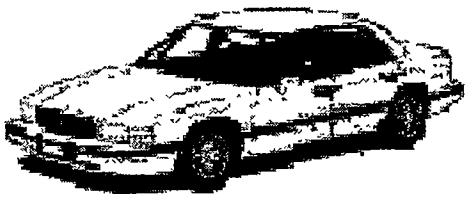
Vehicle: Year _____, Make _____ License # _____ and Color _____

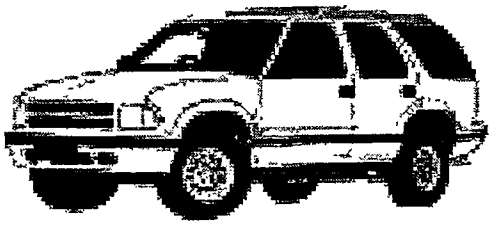
Equipment Description:

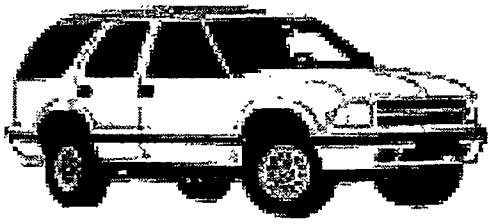
_____

Describe Location of Contamination and circle on vehicle below:

_____







Action Taken: (check one)

_____ Item is contaminated and placed in storage parking lot.

Vehicle Monitoring Lead Signature: _____

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Form-4
Register of PMC Staff

Reception Center_____ Date_____ Page_____

Please Print

Name	Agency	Work Phone	Time In	Time Out

Form-5
Dosimeter and TLD Log

Reception Center_____ Date_____ Page_____

Please Print

Name	Dosimeter Serial Number	TLD	Final DRD Reading	Exposure (r or mr)

Form-6
Register of Emergency Workers Processed at PMC

ReceptionCenter_____ Date_____ Page_____

Please Print

Name	Agency	Work Phone	Time Out

Form-7
24 Hour Shift Staffing Schedule
Complete this form for each shift

Reception Center_____ Date_____
Shift Start Time_____ Shift End Time_____

Note: Refer to Attachment "A" Reception Center Positions for required numbers in each center.

Reception Center Position	Number Required	Name	
Reception Center Supervisor	1	1.	
Assist. Reception Center Supervisor	1	1.	
Roving Monitor	2	1.	2.
Portal Monitor Operator Lead	1	1.	
Portal Monitor Operator		1.	2.
		3.	4.
Male Decon/Monitor	1	1.	
Male Decon/Recorder	1	1.	
Female Decon/Monitor	1	1.	
Female Decon/Monitor	1	1.	
Vehicle Monitor Lead	1	1.	
Vehicle Monitor	1	1.	
Vehicle Monitor Recorder	2	1.	2.
KI Distribution Team	4	1. 3.	2. 4.

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Form-8
Property Receipt

Date_____ Time_____

Name of Reception Center_____

Owner Information: Name_____

Address_____

Telephone Number_____

Type of property other than clothing

_____
_____
_____
_____
_____

Contact information for owner to inquire about resolution of impounded property:

Call: Westchester County Office of Emergency Management (914)-231-1850

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Form 9
NRC REGULATORY GUIDE 8.13

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 Section 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 uniform 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.

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

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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.

The magnitude of risk of childhood cancer following in utero exposure is uncertain 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

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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 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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A. IMPLEMENTATION

The purpose of this section is to provide information to licensees and applicants regarding the NRC staff's 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.

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 informed 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 I declare my pregnancy in writing, what happens?

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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.

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

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occupational radiation dose, but your employer is not obligated to provide you with a job 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.

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.

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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 declare in writing that you are already pregnant.

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.

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.

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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.*

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.

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.

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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.

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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.

10. National Radiological Protection Board, *Advice on Exposure to Ionising Radiation During Pregnancy*, National Radiological Protection Board, Chilton, Didcot, UK, 1998.

11. M.L. Thomas and D. Hagemeyer, "Occupational Radiation Exposure at Commercial Nuclear Power Reactors and Other Facilities, 1996," Twenty-Ninth Annual Report, NUREG-0713, Vol. 18, USNRC, 1998.[2]

IPEC00200558

Form 10

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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APPROVED BY	Westchester County	IP-3.5
DOH:_____ Date:_____ DES:_____ Date:_____	DEPARTMENT OF EMERGENCY SERVICES	

INDIAN POINT ENERGY CENTER
IMPLEMENTING PROCEDURE

EMERGENCY WORKER PERSONNEL MONITORING CENTER OPERATIONS

IPEC00200561

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IPEC00200563

1.0 Purpose

1.1. This procedure provides the guidance for Emergency worker personnel monitoring center activation and operation during an emergency at the Indian Point Energy Center. The major responsibilities of the Emergency worker personnel monitoring center are to monitor, register, provide KI, and if necessary decontaminate emergency workers prior to directing them to congregate care shelters or other suitable locations.

2.0 Responsibilities

2.1County EOC

2.1.1 **County Commissioner of Health (CCOH)**-The CCOH has overall responsibility for making public health decisions to protect the citizens and emergency workers of Westchester County in a radiological emergency. The CCOH will direct departmental resources in support of monitoring and decon at the emergency worker personnel monitoring center; and coordinates with the Department of Emergency Services and other agencies involved in emergency worker personnel monitoring center operations.

2.1.2 **County Fire Services Coordinator (Department of Emergency Services)-** The County Fire Services Coordinator is responsible for notifying and requesting mobilization of fire services to support emergency worker personnel monitoring center operations.

2.2 Emergency Worker Personnel Monitoring Center Staff

2.2.1 **Emergency Worker Personnel Monitoring Center Supervisor** - The EWPMC Supervisor is responsible for the overall management and supervision of all activities with the center. These include ensuring that the center is properly staffed and equipped, that the assigned personnel have been correctly trained, work schedules are established and the center is properly set up. Upon termination of the emergency, the Supervisor will inspect all areas for damage and ensure that the equipment is put away and that all required stock replenishment is identified for replacement by the Department of Emergency Services.

2.2.2 **Assistant Emergency Worker Personnel Monitoring Center Supervisor** - The Assistant Supervisor takes direction from Supervisor and initially will issue personal protective equipment and dosimetry and take attendance of all emergency worker personnel monitoring center positions. Assists in setup, operation, and deactivation of the emergency worker personnel monitoring center.

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2.2.3 **Roving Monitor (RM)** - The RM is responsible for monitoring and maintaining the separation of clean and contaminated monitoring areas in the emergency worker personnel monitoring center and taking background measurements.

2.2.4 **Portal Monitor Team (PMT)** - The PMT takes direction from the EWPMC Supervisor and operates the portal monitor.

2.2.5 **Decon Monitor (DM)** - The DM is responsible for set up and conduct of the decontamination area.

2.2.6 **Decon Recorder (DR)** - The DR assists the DM in monitoring and documenting individual emergency worker contamination.

2.2.7 **Decon Escort (DE)** – The DE is stationed at the entrance to the male and female decon areas. They escort contaminated emergency workers into the appropriate decon area and advise them on the process they will go through for decontamination.

2.2.8 **Decon Assistants** – Decon Assistants provide instructions and assistance to contaminated emergency workers in the process of bagging contaminated clothing showering and donning temporary clothing.

2.2.9 **Vehicle Monitoring Leader (VML)** – The VML is responsible for ensuring that the vehicle monitoring station is set up. The VML supervises the operation of vehicle monitoring and decontamination. Reporting the number of vehicles requiring decontamination to the Supervisor. Also supervises the deactivation of the vehicle monitoring and decontamination areas.

2.2.10 **Vehicle Monitoring Recorder (VMR)** – The VMR records the results vehicle monitoring surveys of vehicles, as appropriate.

3.0 Concept of Operations

3.1 Westchester County has designated the Fire Training Center in Valhalla as the Emergency Worker Personnel Monitoring Center, the facility to be used to monitor and decontaminate emergency workers leaving assignments in the ten mile emergency planning zone around Indian Point.

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3.2 The Emergency Worker Personnel Monitoring Center Supervisor will maintain communications with the County EOC to advise of issues and status of activities.

3.3 All emergency worker personnel monitoring center staff will receive dosimetry. Everyone receives a thermoluminescent dosimeter. In addition, personnel will either have a low range dosimeter or an individual on their team and in their general proximity will have an electronic dosimeter to provide low range dose information.

3.4 Potassium Iodide (KI) is available in storage at the PMC. However, evacuating emergency workers have had KI assigned to their jurisdictions and should have taken it, if directed by the County Health Commissioner. In the event that emergency workers do not have KI, it can be provided by EWPMC staff.

3.5 It is not expected that EWPMC staff will be required to take KI. KI is generally reserved for workers assigned within the ten mile EPZ. However, supplies are available at the EWPMC should the Health Commissioner make such a recommendation.

3.6 Portal monitors will be used to monitor at emergency worker personnel at the entrance to the EWPMC.

3.7 Personnel and equipment will be monitored and decontaminated.

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Checklist 1

Emergency Worker Personnel Monitoring Center Supervisor Checklist

____ Assure adequate staffing for center positions and vehicle monitoring have been filled and appropriate equipment is available for operational readiness. If there are any unfilled positions notify the EOC to call out the appropriate personnel to fill those positions.

EOC contact Information: Health Desk - 864-5295
OEM - 813-4173

____ Confirm with the EOC EMS Rep that an Emergency Medical Services unit has been assigned to the EWPMC.

____ Prior to distributing dosimetry to female emergency workers, inquire to see if they are pregnant. If so, provide Form 9 which describes the regulatory requirements for pregnant women and provide Form 10 for the worker to declare their pregnancy.

____ If a female emergency worker has indicated they are pregnant and have read and understood the regulatory requirements and are willing to perform their duties at the emergency worker personnel monitoring center then, have them sign Form 10 Declaration of Pregnancy and report to their assignment.

If a pregnant female emergency worker has read the regulatory requirements and does not wish to perform the duties in the emergency worker personnel monitoring center, notify the EOC Health representative, release the person and call out another person to fill the position.

____ Direct the staff to obtain and don their thermoluminscent dosimeter (TLD). In addition, one member of each team in each area shall receive an electronic or self-reading dosimeter to measure low range exposures.

____ Ensure an electronic dosimeter (if available) is assigned to the following teams/areas:

- Portal monitoring area
- Male decontamination area
- Female decontamination area
- Vehicle monitoring area
- Vehicle decontamination area

____ Direct the staff to set the center up in accordance with center specific layout
____ Confirm portal monitors and survey instruments are all operational.

____ Following activation, notify the County EOC that the emergency worker personnel monitoring center is activated and obtain a briefing on the status of the emergency, i.e. plant status, ECL, wind direction and protective actions if any. Also report any center needs to the EOC.

____ Assure the staff are monitoring and recording readings at proper intervals from their direct reading or electronic dosimeters.

____ Following the briefing from the County EOC, give an initial briefing to the Emergency worker personnel monitoring center staff.

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____ Conduct follow up briefings, as appropriate, or when there is a change in classification.

____ Periodically report the number of emergency workers processed at the center to the EOC.

____ Ensure staff does NOT exceed their 1 REM dose limit in the center and in vehicle monitoring areas.

____ Review center paper work flow and provide guidance as appropriate regarding the arrival of emergency workers and volume.

____ Provide periodic updates to the County EOC and obtain any special information or guidance related to the operation of the center.

____ If operations are expected to extend beyond 12 hours coordinate shift assignments with the EOC.

____ When notified by the County EOC to deactivate the center, inform the staff to return the equipment and supplies to the appropriate staging area and return the center to its original condition.

____ Upon termination of the emergency, direct the staff to return the center to its original condition, inspect all areas to ensure equipment is put away and provide a list of required stock replenishment to the Department of Emergency Services for replacement. Collect all TLD's, electronic and self-read dosimeters, paperwork and provide to the EOC. Take pictures of any facility damage.

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Checklist 2
Assistant Emergency Worker Personnel Monitoring Center Supervisor Checklist

____ Report to the Emergency Worker Personnel Monitoring Center Supervisor upon arrival.

____ Issue personal protective equipment and dosimetry and take attendance of all emergency worker personnel monitoring center positions.

____ Assist the supervisor and coordinate with the staff to set up the center.

____ Verify center layout is accordance with center specific diagrams.

____ Verify appropriate signs are placed in accordance with center specific diagram.

____ Set up 24-hour shift staffing schedule.

____ Assure staff is monitoring their dose and recording it.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to your Supervisor immediately.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

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Checklist 3
Roving Monitor
Checklist

____ Report to the Emergency Worker Personnel Monitoring Center Supervisor upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Assist with setup of area between portal monitors and decon area.

____ Assure monitoring equipment for detection of radiological contamination is available. Report any needs to the supervisor.

____ Take baseline background readings inside and outside the center and record on Form-1 Background Radiation Readings.

____ Take periodic background readings to assure readings do not rise above portal monitor background settings and record on Form-1 Background Radiation Readings.

____ Assist with escorting contaminated emergency workers to decon area.

____ Monitor and maintain the clean areas in the center.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to your Supervisor at the Emergency worker personnel monitoring center immediately.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

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Checklist 4
Portal Monitor Team
Checklist

____ Report to the EWPMC Supervisor upon arrival.

_____ Obtain personal dosimetry and don personal protective equipment.

____ Obtain appropriate supplies for set up of portal monitoring area. Report any needs to the supervisor.

a) Portal monitors
b) Paper rolls for contamination control
c) Duct tape and Masking tape
d) Pens and makers
e) Clip boards
f) Contamination referral sheets
g) Extension cords
h) Plastic tape for contamination barriers
i) Traffic cones for contamination barriers
j) Trash receptacles for contaminated and clean material
k) Signage for direction of emergency workers
l) Plastic wrap to protect portal monitors form contamination

____ Setup portal monitor area and portal monitor in accordance with center specific diagram. (See Attachment F) Note: Install batteries in the portal monitors in case of a power failure.

____ Source check portal monitors. Use the 1uCi, Cs-137 check source.

- First location for side detectors is approximately six inches from the bottom, in the center of the portal with a flat side facing towards the side detectors,
- The second location for the side detectors is approximately five feet from the bottom of the portal in the center of portal with flat sides of source facing towards the side detectors.
- For the foot detectors hold the source flat side down on top of the detectors.

NOTE: If the portal monitor does not alarm, remove the instrument from service and report any malfunctions to the Supervisor. The will arrange for alternate means to monitor and as time permits arrange for additional portal monitors.

____ Wrap the portal monitors with thin plastic wrap to protect portals from contamination.

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____ Place a piece of paper over the portal monitor footpads to prevent contamination.

____ Obtain protective clothing for potential deconing of the monitoring area as appropriate.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the EWPMC SUPERVISOR immediately.

____ Conduct portal monitoring of emergency workers in accordance with the requirements in Attachment "C". (Target timeframe of 20 seconds per person).

____ Change out foot paper periodically to assure background reading does not increase.

____ As emergency workers pass through the portals make sure they do not touch monitor except with their feet. If a contaminated emergency worker has come in contact with the portal monitor surface, rewrap or replace foot paper in the area that alarmed.

____ Once emergency worker is determined to be "CONTAMINATED" the emergency worker will step backwards out of the portal monitor and be escorted to the locker room entrance by the Portal Escort.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200572

Checklist 5
Decon Monitor
Checklist

____ Report to the EWPMC Supervisor upon arrival.

____ Obtain personal dosimetry and don personal protective equipment. **Workers in decon areas will wear paper or cloth coveralls, booties taped closed, Gloves taped closed, and hood.**

____ Obtain appropriate supplies and equipment for radiological monitoring and decontamination of personnel. Report any needs to the EWPMC Supervisor.

a) 2104P survey instruments
b) Paper towels for contamination control
c) Duct tape and Masking tape
d) Pens and makers
e) Clip boards
f) Contamination referral sheets
g) Plastic tape for contamination barriers
h) Traffic cones for contamination barriers
i) Trash receptacles for contaminated and clean material
j) Signage for direction of emergency workers
k) Bar soap and shampoo
l) Towels for showered workers
m) Hazardous materials bags for clothing and contaminated waste
n) Coverall for decontaminated workers
o) Booties for decontaminated workers
p) Plastic bags to cover survey meters
q) Plastic bags for personal items such as wallet, keys, jewelry, and some cases service revolvers
r) Receipt books used to keep track of and identify contaminated clothing and other work possessions
s) Rolls of brown paper to cover heavily used areas and reduce likelihood of contamination
t) Gloves and gowns to provide DECON staff with protection

____ Set up decon area in accordance with center specific diagram.

____ Obtain monitoring equipment and perform operational and response checks:

<u>Operational Checks</u>

a) Push the mode selector to the "Bat Check" position to verify that the battery is OK.

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b) Push the mode selector to the "Normal" position. You should begin to hear an audible response, i.e. a beeping sound.

Response Checks

a) Place the range selector in the X10 position.

b) Place the instrument in the check source fixture with the detector over the source.

c) Within 30 seconds, the meter should read between 1 and 3 mr/hr on the lower scale.

d) Remove from source and place the range selector in the X1 position.

e) If the reading on the upper scale goes off scale then switch the range selector to the X10 or X100 range to obtain a readable scale.

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Checklist 5
Decon Monitor Checklist
(continued)

_____ Cover monitoring equipment with plastic to prevent contamination of the probe.

_____ Notify the Supervisor of operational readiness.

_____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the Supervisor immediately.

_____ Direct all contaminated emergency workers to remove all clothing, jewelry etc. and take a shower. Bag and tag all clothing, jewelry etc. (valuables will be bagged and tagged separately for decontamination at an approved facility.) Provide receipt to emergency worker for each item bagged, once the emergency worker has been processed and decontaminated.

_____ Direct Emergency Worker to take shower.

Note: At the discretion of the Supervisor, you may attempt decontamination on the affected area only, by using mild soap and warm water. Rinse thoroughly. DO NOT SCRUB WITH A BRUSH. Be careful not to scratch or erode the skin. Repeat until contamination is removed.

_____ After emergency worker takes a shower or has been decontaminated on a specific area, scan them one inch from surface, approximately one inch per second, to assure they are clean or below contamination limits (0 .1mRhr) Have Decon Recorder document in the computer data base or Form 2.

_____ If emergency worker is still contaminated after showering or specific area decon, document affected areas.

If contamination is isolated to one or two spots, then decon only those areas.

If the contamination is widespread have emergency worker shower again up to two more times for a total of three showers. Scan emergency worker after each shower and document.

_____ Once the emergency worker has completed the decon process they will be considered clean if the reading is < 0.1 mRhr above background. Issue a tyvek suit until appropriate replacement turnout gear or uniforms can be provided.

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_____ Readings between 0.1 mRhr but < 1 mRhr above background will be considered non-removable contamination. The EWPMC Supervisor will be notified to document the case for follow up.

_____ If the emergency worker is above 1mRhr background after three showers or specific decon, issue a tyvek suit have the emergency worker remain in the controlled area. Notify the EWPMC Supervisor, who will in turn refer the case to the EOC for evaluation and determination for possible referral to a hospital for further decontamination.

_____ Direct the Decon Recorder to enter the results of the decontamination process on Form 2 if no computer is available.

_____ Take periodic background readings in the decon area and record on Form-2 Background Radiation Readings.

_____ At shift change brief the oncoming shift on the status of decon area, provide all documentation.

_____ Have the new shift, monitor the out-going shift for potential contamination and decon if appropriate.

_____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

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Checklist 6
Decon Recorder
Checklist

____ Report to the EWPMC upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Assure supplies and equipment are available for radiological monitoring and decontamination of personnel. Report any needs to the Supervisor.

____ Set up decon area in accordance with center specific diagram.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the EWPMC SUPERVISOR immediately.

____ Enter the results of the decontamination process on Form 2 if no computer is available.

____ Have the new shift monitor the out-going shift for potential contamination and decon if appropriate.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200577

Checklist 7
Decon Escort
Checklist

____ Report to the EWPMC Supervisor upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the EWPMC SUPERVISOR immediately.

____ Escort contaminated emergency workers into the appropriate decon area and advise them on the process they will go through for decontamination and registering afterwards.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

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Checklist 8
Vehicle Monitoring Leader
Checklist

____ Report to the EWPMC Supervisor upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the EWPMC SUPERVISOR immediately.

____ Assure supplies and equipment are available for radiological monitoring and decontamination of vehicles. Report any needs to the Supervisor.

____ Set up area in accordance with center specific diagram.

____ Obtain monitoring equipment and perform operational and response checks:

Operational Checks

a) Push the mode selector to the "Bat Check" position to verify that the battery is OK.

c) Push the mode selector to the "Normal" position. You should begin to hear an audible response, i.e. a beeping sound.

Response Checks

f) Place the range selector in the X10 position.

g) Place the instrument in the check source fixture with the detector over the source.

h) Within 30 seconds, the meter should read between 1 and 3 mr/hr on the lower scale.

i) Remove from source and place the range selector in the X1 position.
If the reading on the upper scale goes off scale then switch the range selector to the X10 or X100 range to obtain a readable scale.

____ Cover monitoring equipment with plastic to prevent contamination of the probe.

____ Have vehicle passengers exit vehicle and direct them to the emergency worker personnel monitoring center entrance for processing.

IPEC00200579

Checklist 8
Vehicle Monitoring Leader
Checklist
(continued)

____ Monitor vehicles externally with driver inside. Hold the probe, with the window open towards the vehicle surface at a distance of 1 inch, systematically move along the vehicle. Pay special attention to windshield edges, wheel housings, front grill, front bumper, the four wheel wells, the rear bumper and the flatbed in a pickup truck.

____ With the driver's door open and the driver still seated, monitor the steering wheel, seat and floor area.

____ If survey meter readings do not indicate contamination, then the vehicle driver will be asked to drive the vehicle to a designated clean parking lot and proceed to the personnel monitoring and decontamination area.

____ If survey meter readings are more than 0.1 mR/hr above background, then the vehicle driver shall drive the vehicle along a directed path to a designated Contaminated Parking Area.

____ Periodically brief the Supervisor on monitoring results and number of contaminated vehicles.

____ Assure vehicle monitoring results are being recorded on Form-3 Vehicle and Equipment Decontamination Sheet.

____ At shift change brief the oncoming shift on the status of decon area, provide all documentation.

____ Have the new shift monitor the out-going shift for potential contamination and decon if appropriate.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

IPEC00200580

Checklist 9
Vehicle Monitoring Decon
Checklist

____ Report to the EWPMC Supervisor upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Check your dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the immediately.

____ Monitor all vehicles as they enter the EWPMC parking lot. Clean vehicles will be directed to the clean lot and contaminated vehicles will be directed to the decontamination area for decon.

____ Refer to Form 5 Vehicle and Equipment Decontamination Sheet , for areas to be decontaminated. Decontaminate vehicle(s) exteriors using the following methods:

Hosing with water or soapy water followed by rinse water. Keep people away from runoff water. Decontamination operations on a hard surface are recommended. The runoff water should be directed towards a soil. Keep runoff water from entering streams and storm sewers which may directly feed drinking water supplies. Liquid waste (water, soap, and/or detergent and water solutions) can be discharged into the sanitary system.

____ Decontaminate vehicle(s) interior using the following methods:

Washing, hosing, sweeping, brushing, etc., vacuuming should only be used if the facility is equipped with approve hepa filter vacuums.

____ Vehicles are considered decontaminated when the readings are less than 0.1 mR/hr above background.

____ Non- essential vehicles that can NOT be decontaminated under the methods above will be impounded for further decontamination using other methods such as vacuuming, removal of paint or equipment or referral to an industry expert in decontamination. Provide owner with property receipt (Form-8)

____ Essential vehicles that can NOT be decontaminated will receive three additional sprayings or scrubbings at the discretion of the EWPMC Supervisor. If the vehicle is not successfully decontaminated after three attempts, it will be directed to the contaminated lot and referred to the County EOC Radiological Officer for disposition.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

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Checklist 10
Vehicle Monitor Recorder Checklist

____ Report to the EWPMC Supervisor upon arrival.

____ Obtain personal dosimetry and don personal protective equipment.

____ Check dosimeter readings every 30 minutes and record readings on your Radiation Exposure Record. Dosimeter readings of 1R, 3R, and 5R shall be reported to the Supervisor immediately.

____ Record vehicles and equipment monitored on Form-5 Vehicle and Equipment Decontamination Sheet.

____ Assist in the deactivation of the center and return of equipment, supplies and all documentation.

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Checklist 11
Principal Recorder Checklist

FUNCTIONS AND DUTIES:
Located at the Record Keeping Station at the exit of the PMC outside of the Decon area.

A. For the Public

1. Receives the Contamination Referral Sheets from the decontaminated clients or the Decon monitors and keeps these for HD file of all clients scanned at this PMC location.
2. Initiates and completes the Decon Center Referral Sheet for all clients coming to the recording station, gives client a copy of the clothing receipt as necessary. Hands client the Decon Referral Sheet and directs to DSS Reception Area.
3. Keeps a log of all clients requiring follow-up (readings between 0.1 mR/hr and 1.0 mR/hr.
4. If decon is unsuccessful, with residual reading at or over 1 mR/hr and client to be transferred for further medical care, make a copy of the Contamination Referral Sheet and give to Supervisor. The original goes to the hospital with the client.

B. For the Staff
1. Maintains attendance log
2. Assists Supervisor with distributing personal protection equipment (usually kept in individual packets or baggies and includes dosimeters, record card and KI) to each worker as they sign in.
3. Records information on TLD log sheet before giving each worker a badge.
4. Designates a "control" TLD and places this in the lead envelop for later pickup.
5. When staff leaves the area or during a change of shift, collects personnel protective packet and removes exposure card. All TLDs for the shift are placed in a brown manila folder and marked TLD- SITE-SHIFT-#'s-DATE. This is given to the Supervisor.
6. Reviews the exposure cards and reports to the Supervisor any exposure at or greater than 1R for the day, 3R since the beginning of the accident for PMC workers.
7. Announce or call out the time every 15 minutes to remind staff to check and record their direct reading dosimeters.

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Attachment A
Monitoring Time Assumptions

The following assumptions pertain:

1. Hand-held instruments

   Four to Five minutes to monitor each person

2. Portal monitors

   There will be portal monitors available.
   20 seconds to monitor each person*
   Each portal monitor to be operated by one (1) person,

   *Verified capabilities through exercise demonstration

3. In addition to personnel required for monitoring of emergency workers, each emergency worker personnel monitoring center will have the following personnel assigned, per shift, as a minimum.

   Inside emergency worker personnel monitoring center:

   Personnel decontamination - 2

   Outside emergency worker personnel monitoring center (Fire personnel):

   Vehicle monitoring - 2 -

   Recorders - 2

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Attachment B
Emergency Worker Personnel Monitoring Center Inventories

Emergency worker personnel monitoring center Equipment	PMC
	Westchester County Fire Training
Portal Monitors	1
Hand Held 2401-P	12
Dosimeters 0-5 R	50
Dosimeter Chargers	6
TLD's	75
Tyvex Suits	2 cases
Booties	1 box
Rubber Gloves	200 pr
Caps	1 case
Yellow coveralls	4 Boxes
Towels Paper	2 cases
Towels Dry ups	2 cases
Privacy Screens	1
Shampoo	100
Brushes	50
Soap	100
Cotton swabs	500
Vehicle Decon Brush	6
Duct Tape	10-
Pails	10

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Attachment B
Emergency Worker Personnel Monitoring Center Inventories

Emergency worker personnel monitoring center Equipment	PMC
	Westchester County Fire Training center
Road Cones	24
Floor Paper	2 Rolls
Plastic wrap	4 rolls
Plastic Bags small	1 Case
Plastic Bags large	1 Case
Extension cords	4
Yellow or Orange scene tape	5 rolls
Stanchions	10
Rope	500 Ft.
Saw Horses	10
Clock	1
Signage	Various
"D" Cell batteries	12
Blankets	6
33 gallon barrels/trash cans	12
Push brooms	2
Dust Pans	3
Garden hose	1
Clipboards	6
Scissors	2
Step Ladders	1

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Attachment B
Emergency Worker Personnel Monitoring Center Inventories

Emergency worker personnel monitoring center Equipment	PMC
	Westchester County Fire Training center
Rad Exposure Cards	200
Contamination Referral Sheets	100
Vehicle/Equipment Decontamination Sheets	100
SOP for EWPMC's	5
Cots	10
First Aid Kits	2
Potassium Iodide (KI)	1400

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Attachment C
Suggested Personnel Decontamination Methods

METHOD	SURFACE	ACTION	TECHNIQUE	ADVANTAGES	DISADVANTAGES
Soap and Water	Skin and hands	Emulsifies and dissolves contaminant	Wash 2-3 minutes and monitor Do not wash more than 3-4 times	Readily available and effective for most radioactive contamination	Continued washing will defat the skin Indiscriminate washing or other than affected parts may spread contamination
Soap and Water	Hair	Same as above	Wash several times If contamination is not lowered to acceptable limits, shave the head and perform skin decontamination methods		
Lava soap, soft brush and water	Skin and hands	Emulsifies, dissolves and erodes	Use light pressure with heavy lather Wash for 2 minutes, 3 times Rinse and monitor Use care not to scratch or erode the skin	Same as above	Continued washing will abrade the skin
Lanolin hand cream	Affected areas	Use between washes Apply to prevent skin irritation from heavy scrubbing			
Waterless hand-cleaning cream	Skin and hands	Emulsifies and dissolves contaminant	Wash several times	Good for grease Less irritating than scrubbing methods	
Tide or other plain detergent	Same as above	Emulsifies and dissolves contaminant	Make into a paste Use with additional water with a mild scrubbing action Use care not to erode the skin	Slightly more effective than washing with soap	Will defat and abrade skin and must be used with care
Mixture of 50% Tide and 50% cornmeal	Same as above	Emulsifies, dissolves and erodes	Same as above	Same as above	Same as above
5% water solution of a mixture of 50% Tide, 65% Calgon and 5% Carbose (carboxymethyl cellulose)	Same as above	Same as above	Use with water Rub for a minute and rinse	Same as above	Same as above
A preparation of 8% Carbose, 3% Tide, 1% Versene and 88% water homogenized into a cream	Same as above	Same as above	Use with additional water Rub 1 minute and wipe off Follow with lanolin or hand cream	Same as above	Same as above

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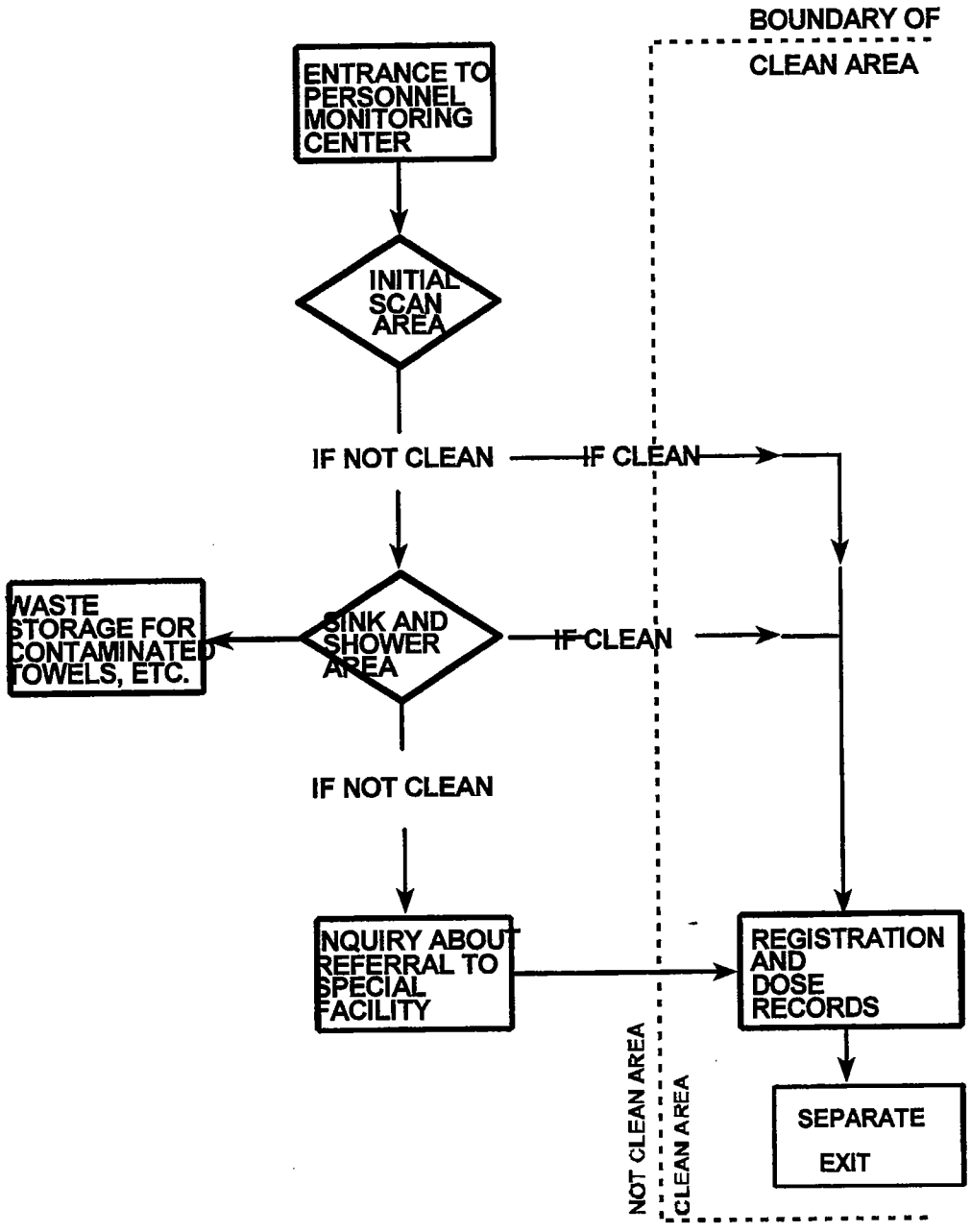
Attachment D
Typical Flow Diagram For
Personnel Monitoring and Decontamination



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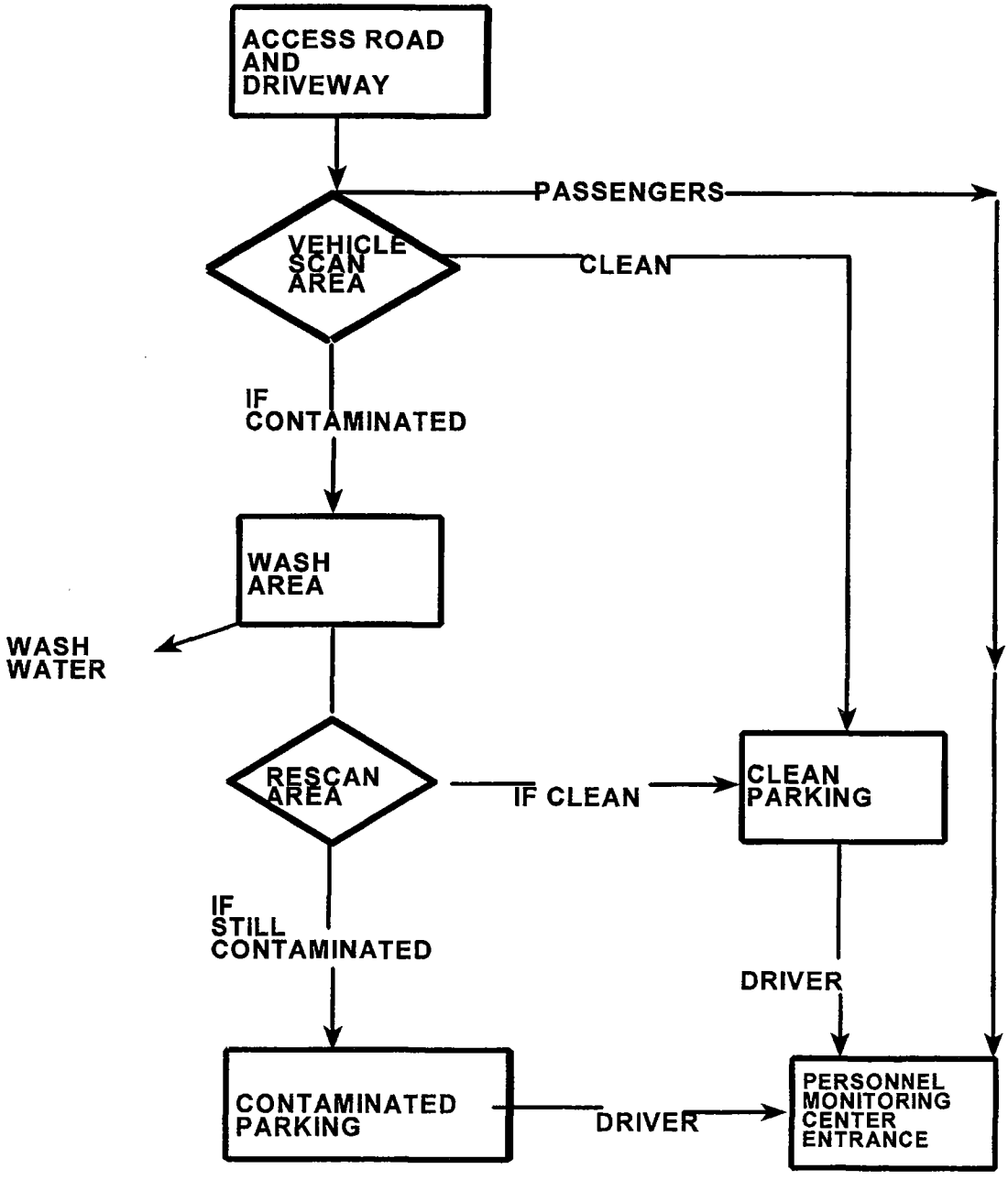
Attachment E
Typical Flow Diagram For
Vehicle and Equipment Decontamination



Attachment F
EWPMC LAYOUT

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Form-1
Radiological Background Readings

Area	Baseline Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr	Periodic Background Reading mR/hr

Form-2
Contamination Referral Sheet

PMC LOCATION: _____ **BACKGROUND:**_____

Date: ____/__/____

Name. _____ DOB _____

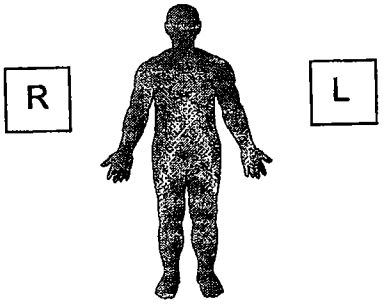
Address. _____ Telephone _____

Location (where they have traveled from) _____

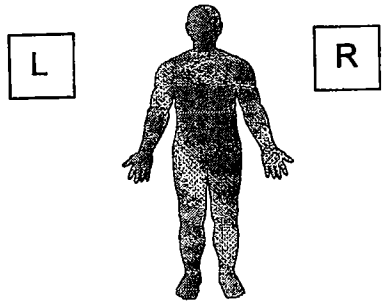
INITIAL DETAILED SURVEY

Contamination Diagram: Mark all contaminated body areas and radiation readings.

FRONT



BACK



First Decon CLEAN ____ CONTAMINATED ____

Second Decon CLEAN ____ CONTAMINATED ____

Third Decon CLEAN ____ CONTAMINATED ____

If emergency worker is still contaminated after third decon attempt, notify supervisor who will notify the EOC for possible referral to a hospital decon facility.

If emergency worker is clean or below 0.1 mRhr, release them.

Form-2
Contamination Referral Sheet
(continued)

DECON MONITOR DECONTAMINATION RESULTS (indicate mR/Hr above background)

BACKGROUND: _____

Decontamination Actions Taken:

Body Area		1st DECON	2nd DECON	3rd DECON
Hair				
Head/Neck				
Shoulder	R			
Shoulder	L			
Arms	R			
Arms	L			
Hands	R			
Hands	L			
Chest				
Back				
Stomach				
Legs	R			
Legs	L			
Feet	R			
Feet	L			

1. Decon #1

List of clothing or personal items requiring decontamination Rescan and record results in column # 1

_____

1.CLEAN ☐ DECON EFFORTS SUCCESSFUL

DECON MONITOR SIGNATURE: _____

1. ☐ DECON Partially Successful – Supervisor Notified
2. ☐ DECON Unsuccessful – Supervisor Notified

SUPERVISOR STATEMENT.

3. ☐ Discharge Pending Follow-up by Health Department
4 ☐ Referred to Emergency Room at _____

Comments:

_____

_____

SUPERVISORS SIGNATURE: _____

Form-3
Vehicle and Equipment
Decontamination Sheet

Date:_____ Time:_____

Location: _____

Owners Name & Address:

_____

_____

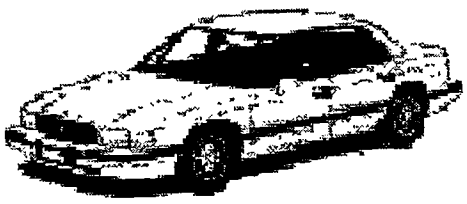
Vehicle: Year _____, Make _____ License # _____ and Color _____

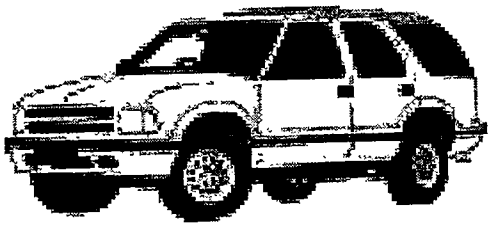
Equipment Description:

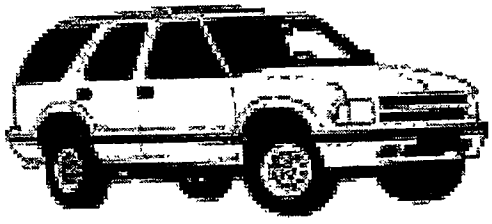
_____

Describe Location of Contamination and circle on vehicle below:

_____







Action Taken: (check one)

_____ Item is contaminated and placed in storage parking lot.

Vehicle Monitoring Lead Signature: _____

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Form-4
Register of PMC Staff

Emergency worker personnel monitoring center_____Date_____Page_____

Please Print

Name	Agency	Work Phone	Time In	Time Out

Form-5
Dosimeter and TLD Log

Emergency worker personnel monitoring center_____Date_____Page_____

Please Print

Name	Dosimeter Serial Number	TLD	Final DRD Reading	Exposure (r or mr)

Form-6
Register of Emergency Workers Processed at PMC

Date_____Page_____

Please Print

Name	Agency	Work Phone	Time Out

Form-7
PMC 24 Hour Shift Staffing Schedule
(Complete this form for each shift)

Date_____

Shift Start Time_____ Shift End Time_____

Emergency worker personnel monitoring center Position	Number Required	Name	
Emergency worker personnel monitoring center Supervisor	1	1.	
Assist. Emergency worker personnel monitoring center Supervisor	1	1.	
Portal Monitor Operator	2	1.	2.
Roving Monitor	1	1.	
Male Decon/Monitor	1	1.	
Male Decon/Recorder	1	1.	
Female Decon/Monitor	1	1.	
Female Decon/Recorder	1	1.	
Vehicle Monitor Lead	1	1.	
Vehicle Monitor	1	1.	
Vehicle Monitor Recorder	1	1.	
Vehicle Monitor Decon	2	1.	2.
Principle Recorder	1	1	

Form-8
Property Receipt

Date_____ Time_____

Name of Emergency worker personnel monitoring center:

_____

Owner Information: Name_____

Address_____

Telephone Number_____

Type of property other than clothing

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Contact information for owner to inquire about resolution of impounded property:

Call: Westchester County Office of Emergency Management (914)-231-1850

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Form 9
NRC REGULATORY GUIDE 8.13

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 Section 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 uniform 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.

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

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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.

The magnitude of risk of childhood cancer following in utero exposure is uncertain 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

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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 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

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rem (1 mSv) should be justified by the licensee.

A. IMPLEMENTATION

The purpose of this section is to provide information to licensees and applicants regarding the NRC staff's 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.

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 informed 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.

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3. If I 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.

   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?

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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 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.

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?

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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 declare in writing that you are already pregnant.

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.

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

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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*.

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.

REFERENCES FOR APPENDIX

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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.

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10. National Radiological Protection Board, *Advice on Exposure to Ionizing Radiation During Pregnancy*, National Radiological Protection Board, Chilton, Didcot, UK, 1998.

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