Personal Protective Equipment Protocol and Procedure Guideline for First Responders, First Receivers and Emergency Workers in a Nuclear Emergency at Point Lepreau Nuclear Generating Station

FINAL VERSION 2.1

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Acronyms

DAAF	Department of Agriculture, Aquaculture and Fisheries
DELG	Department of Environment and Local Government
DNRED	Department of Natural Resources and Energy Development
EM/ANB	Extra-Mural/Ambulance NB
EMO	Emergency Measures Organization
EPZ	Emergency Planning Zone
MDC	Monitoring and Decontamination Centre
µSv/h	Microsieverts per hour
mSv/h	Millisieverts per hour
NB	New Brunswick
NRCAN	Natural Resources Canada
PLNGS	Point Lepreau Nuclear Generating Station
PPE	Personal Protective Equipment
RCMP	Royal Canadian Mounted Police
SJRH	Saint John Regional Hospital

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1 Introduction

1.1 Purpose and Scope

The purpose of this document is to provide guidance on personal protective equipment (PPE) for New Brunswick first responders, first receivers, and designated emergency workers in settings where there is potential risk of radiation contamination in the course of carrying out their duties during a nuclear emergency event at the Point Lepreau Nuclear Generating Station (PLNGS). HazMat, PLNGS and federal workers (with the exception of RCMP) are excluded from the scope of these guidelines as these organizations have existing guidelines in place for their particular roles. This document includes donning and doffing procedures for field and hospital settings; however, specific procedures, training and educational material are the responsibility of implementing organizations.

1.2 Background/Context

In the event of an emergency at PLNGS where there has been a release of radioactive material into the atmosphere, a 20km Emergency Planning Zone (EPZ) will be secured around the station with traffic control points established on both the east and west sides of NB Highway 1 and on both sides of the zone. If radioactive material is released before or during an evacuation of the 20km secured perimeter, workers and residents are at risk of becoming externally contaminated in the form of dust, powder, or liquid on skin, hair, or clothing. There is also a risk of internal contamination if radioactive material gets into the body through ingestion, inhalation or through a wound.

Secondary contamination may occur when externally contaminated people and vehicles exiting the 20km EPZ contaminate other people or surfaces that they touch or by disturbing deposited radioactive material, by walking through a contaminated area, for example. Monitoring and decontamination centres (MDCs) will be established on each side of the area to be evacuated, the 20km emergency planning zone (EPZ), on the east side and west side of Highway 1 to detect and remove radioactive material.

Paramedics and hospital emergency departments may be required to transport, receive and/or administer care to externally and/or internally contaminated casualties as those requiring urgent care will not be decontaminated prior to transport. Where practical, PLNGS emergency response team will escort on-site casualties to a lower hazard area to meet paramedics to avoid undue exposure or contamination and paramedics will be escorted from on-site to the hospital by radiation trained PLNGS personnel to provide safety guidance. PLNGS will provide paramedics responding to an on-site casualty with required PPE.

Further background information can be found in the following nuclear emergency management plans:

- NB EMO/PLNGS Nuclear Off-site Emergency Plan, available at: http://www2.gnb.ca/content/dam/gnb/Departments/ps-sp/pdf/emo/Nuclear/PointLepreau-NOEM.pdf

- Provincial Health Nuclear Emergency Plan for the Point Lepreau Nuclear Generating Station, available at: http://www2.gnb.ca/content/dam/gnb/Departments/h-s/pdf/en/Publications/ProvincialHealthNuclearEmergencyPlan.pdf

1.3 Radiation Exposure

PPE does not provide protection against high energy, highly penetrating forms of ionizing radiation. Factors that help decrease radiation dose from exposure include minimizing time spent near a radiation source, maximizing distance from a radiation source and increasing the physical shielding between a person and a radiation source.

1.4 Occupational Health and Safety

In accordance with the NB Occupational Health and Safety Act, employees exposed to environments with potential for radiation contamination must be provided with appropriate training, equipment and fit-testing (where a respirator is required). PPE is the last line of defense; proper procedures and administrative controls to minimize risk of radiation contamination should precede reliance on PPE. Employees should understand and recognize the hazard, receive training in the use of PPE (donning and doffing/removing, understanding limitations and safe disposal) and know what to do in case of radiation contamination. Each organization subject to these guidelines is responsible to ensure their respective employees receive PPE education and training for radiation safety.

General Regulation 91-191 of the *Occupational Health and Safety Act* requires employers with staff that may require the use of a respirator to develop and implement a Code of Practice for respirator use and care (Gen. Reg. 91-191 S. 45-47). A resource document to assist in the development of the Code of Practice is available using the following link: http://www.worksafenb.ca/docs/COP-RespiratoryProtection_e.pdf.

1.5 Planning Assumptions

- In the event of a radioactive release from PLNGS, the EPZ will be defined as the 20km perimeter around PLNGS and the Ingestion Exposure EPZ as the 57km perimeter around PLNGS, until each has been otherwise defined based on actual measurements and computer modeling.
- In the event of a release of radioactive material from PLNGS:
    - all evacuees, their vehicles and pets will be considered contaminated until assessed otherwise at the initial MDC radiation monitoring post;
    - all emergency workers, first responders/first receivers, their vehicles and equipment will be considered contaminated until assessed otherwise at the initial MDC radiation monitoring post; however, ambulances will be assessed for contamination only once reaching the hospital.
- The inside of vehicles used to transport externally contaminated people, supplies or equipment will be considered contaminated.
- Sampling activities in the 20km EPZ or 57km Ingestion Exposure EPZ will be restricted to PLNGS personnel until hot spots (areas measuring elevated levels of radioactivity) have been defined or ruled out.

2 Radiation Control Zones

2.1 Ingestion Exposure EPZ

For planning purposes, the Ingestion Exposure EPZ is an 57km radius around PLNGS where measures may be required to protect the health and safety of the general public by preventing the ingestion of radioactive material from the environment (water sources, agricultural products, etc.). If hot spots (areas measuring elevated radioactivity) are found, these will be defined and cordoned off and access will be restricted. Otherwise, PPE is not required in the area outside of the 20km EPZ and defined hot spots, if any, between the 20km and 57km areas.

2.2 Hot Zone

The hot zone is the area within the 20km EPZ where there is potential for exposure due to a release of radioactive material from PLNGS. In this area there may be: (1) exposure to gamma radiation or deposited radioactive material from the passing plume, (2) exposure to thyroid gland or other organs through inhalation. PPE is required and dose levels are closely monitored (US Department of Health and Human Services, n.d.). This zone includes the following areas:

- PLNGS
- Traffic control points inside the 20 km EPZ;
- Vehicles (internal and external surfaces) originating from the 20km EPZ or used for transportation within this area;
- Evacuee vehicles from hot zone and designated parking area;
- Provincial Off-site Emergency Operations Centre;
- Sampling activities in 20 km EPZ;
- Temporary morgues containing contaminated decedents: There may be temporary morgues located at PLNGS, in the field in proximity to MDCs and on SJRH hospital grounds. PPE will be required to prevent secondary contamination however depending on levels of radioactivity, it will be designated as a warm or hot zone. These sites will be managed by PLNGS staff.

2.3 Warm Zone

The warm zone is the area outside the hot zone where contamination is being controlled. In this area, there is potential for secondary contamination due to the presence of potentially contaminated evacuees, casualties, emergency workers, first responders/first receivers and vehicles used for transportation of externally contaminated individuals or equipment. Hot spots in the Ingestion Exposure EPZ, as described in Section 2.1 are also considered part of the Warm Zone. Activities in the warm zone include radiation monitoring, decontamination and emergency medical treatment. PPE is required for emergency workers and first responders/first receivers in this area. Dose levels are monitored in this environment and the time each worker is spending in the warm zone is being tracked to ensure it remains below acceptable limits. This zone includes the following areas:

2.3.1 Field Settings

- MDCs – pre-decontamination waiting area, radiation monitoring posts and areas for disrobing, showering and dressing;
- The inside of vehicles used for transportation of externally contaminated individuals or equipment;
- Hot spots within the 57km Ingestion Exposure EPZ but outside of the 20km Hot Zone;
- Direct contact with evacuees from the 20km EPZ who bypassed the MDC;
- Active waste containers used to discard evacuee clothing and PPE.

2.3.2 Hospital Settings

- Areas of hospital where contaminated patients are being managed including pre-decontamination and decontamination areas, including the decontamination tent (in ambulance bay);
- Radioactive shrapnel removed from wounds, body fluids, laboratory samples, supplies and equipment used in the treatment of contaminated casualties;
- Although contaminated casualties will be decontaminated wherever possible, any corridors designated for the transfer of contaminated casualties to others areas of the hospital will be considered as warm zones;
- Inside of vehicles and ambulances used to transport externally contaminated casualties;
- Active waste containers for discarded PPE and medical supplies used in the treatment of a contaminated casualty.

2.4 Cold Zone

The cold zone is represented by all areas outside of the warm and hot zones where there is no risk of external contamination so as not to be considered hazardous. The cold zone may however be inside the Ingestion Exposure EPZ where precautions are required to prevent the ingestion of radioactive material that may have been deposited in the environment. Cold zones within the MDCs include: Traffic control points outside of the 20km EPZ, Assembly Area, Command Post, Red Cross Registration, Psychosocial and Public Health Information posts, EM/ANB (Extra-Mural/Ambulance NB) first aid and triage post, transportation waiting area and vehicles on route to reception centres or non-urgent hospital transport (buses and vans). Cold zones within the hospital setting are all areas outside of defined warm zones.

3 Target Groups for Personal Protective Equipment Guidelines

3.1 First Responders

First Responders[1] are defined as trained and officially mandated responders involved in a response to the scene of an accident or an emergency. Examples of first responders are police, firefighters, search and rescue, and emergency medical service personnel (paramedics). In the context of a nuclear emergency at PLNGS, first responders may be working in designated cold, warm and/or hot zones.

3.2 First Receivers

First receivers are defined as health care workers who receive casualties for treatment or provide supportive care in the hospital and/or field settings. Examples of first receivers are physicians, nurses, licensed practical nurses, personal care assistants, addictions and mental health workers, and public health personnel. In the context of a nuclear emergency at PLNGS, first receivers may be working in designated cold and/or warm zones.

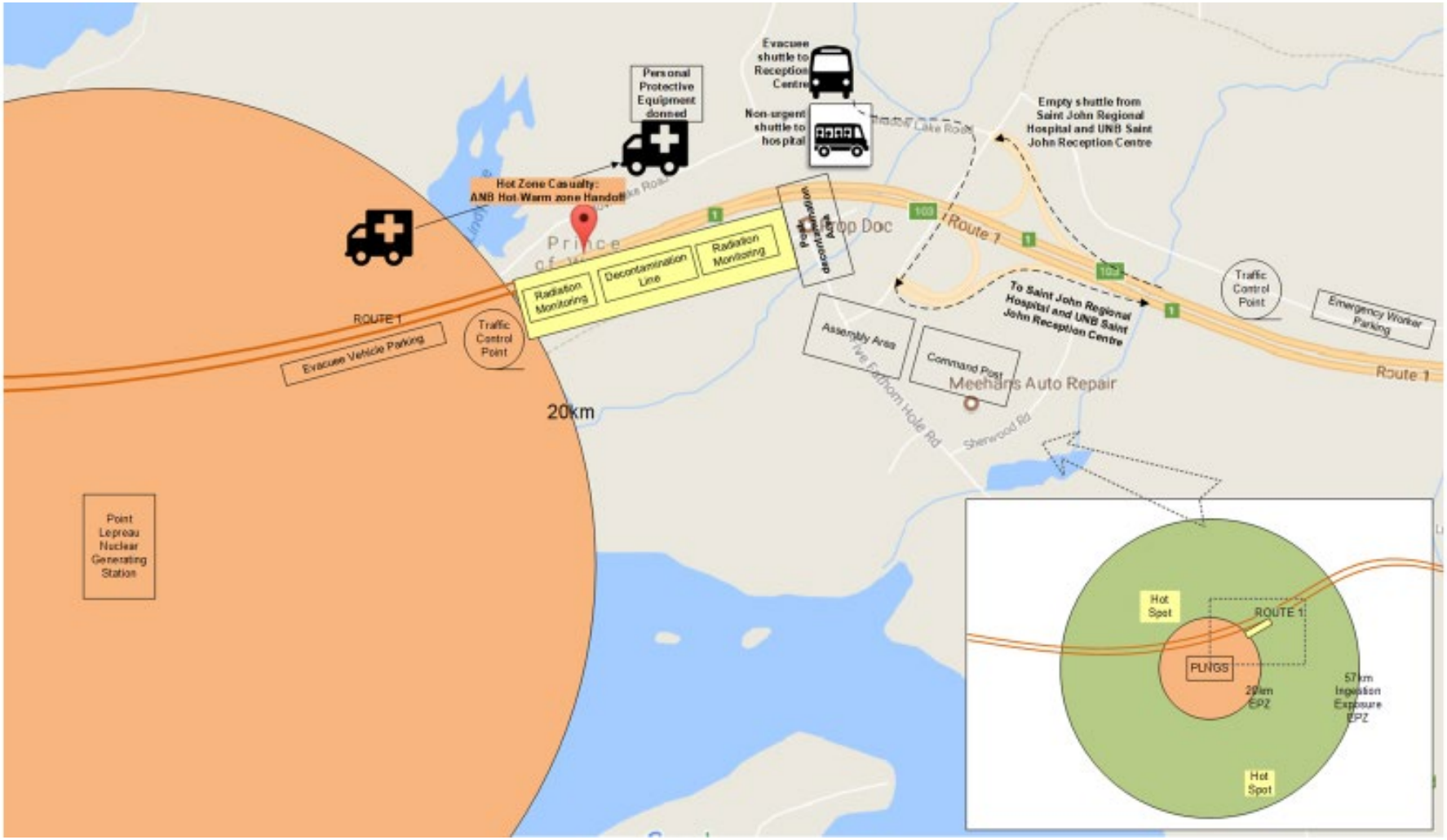
3.3 Emergency Workers

Emergency workers[1] are defined as persons having specified and designated duties as response workers operating in field settings other than first responders and first receivers. Examples of emergency workers are personnel of response organizations, such as: Department of Justice and Public Safety, Department of Environment and Local Government, Department of Natural Resources and Energy Development, Department of Agriculture, Aquaculture and Fisheries, Department of Transportation and Infrastructure, Department of Education and Early Childhood Development and the Canadian Red Cross, HAM Radio Operators, drivers and crews of vehicles used for evacuation or transport of evacuees. In the context of a nuclear emergency at PLNGS, emergency workers may be working in designated cold, warm and/or hot zones.

Refer to Appendix B for a list of first responders, first receivers and emergency workers subject to these PPE guidelines in a nuclear emergency response.

[1] HazMat, PLNGS, federal workers (with the exception of RCMP) and Musquash Fire Services (who have a Memorandum of Understanding with PLNGS for assistance with on-site fire response) are excluded from the scope of these guidelines.

Figure 1: Radiation Control Zones in Field Setting



Hot Zone = **Warm Zone** = (includes potential hot spots in Ingestion EPZ) **Cold Zone** = and any area outside of Hot or Warm Zones

Figure 2: Radiation Control Zones in Monitoring and Decontamination Centres

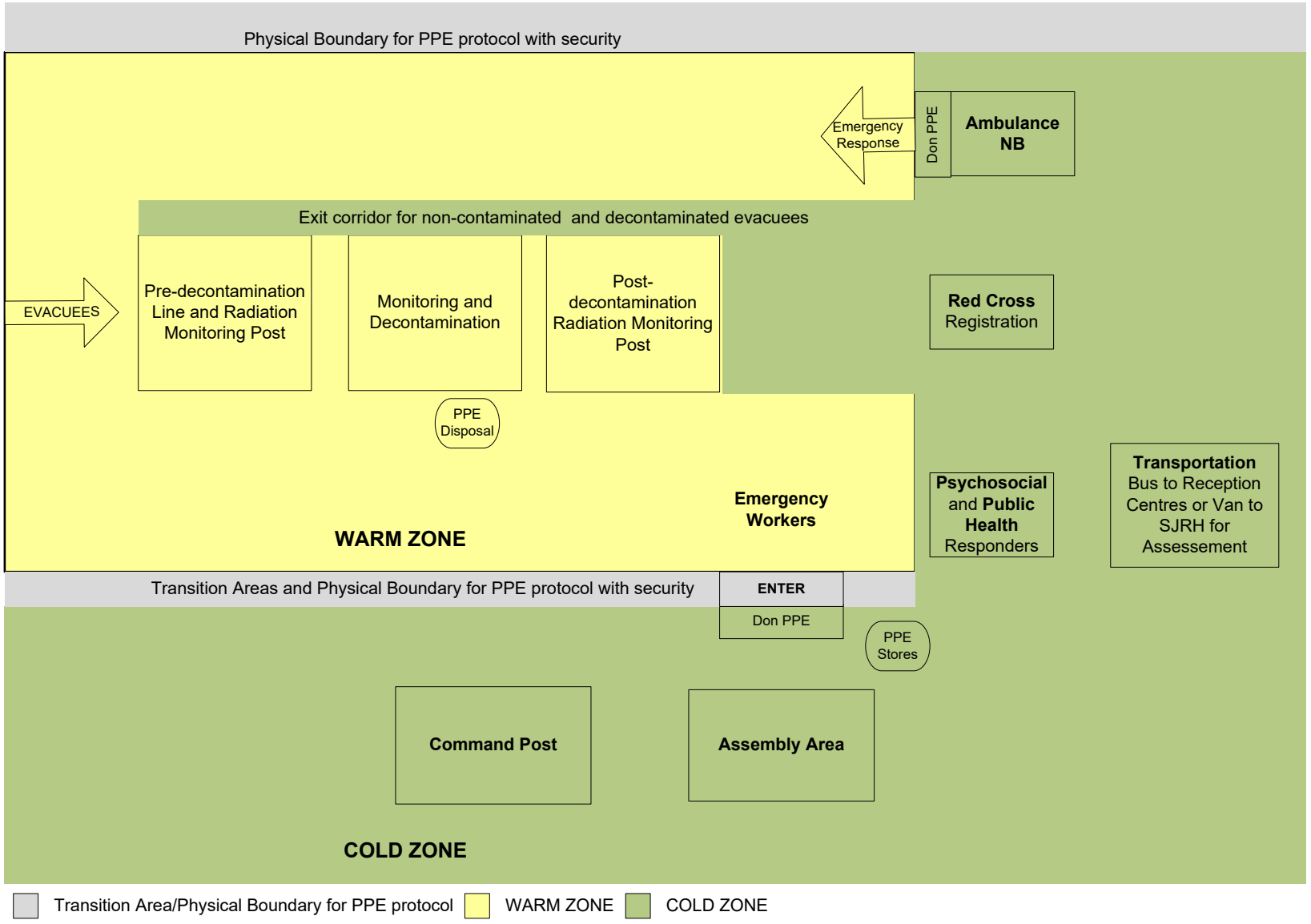
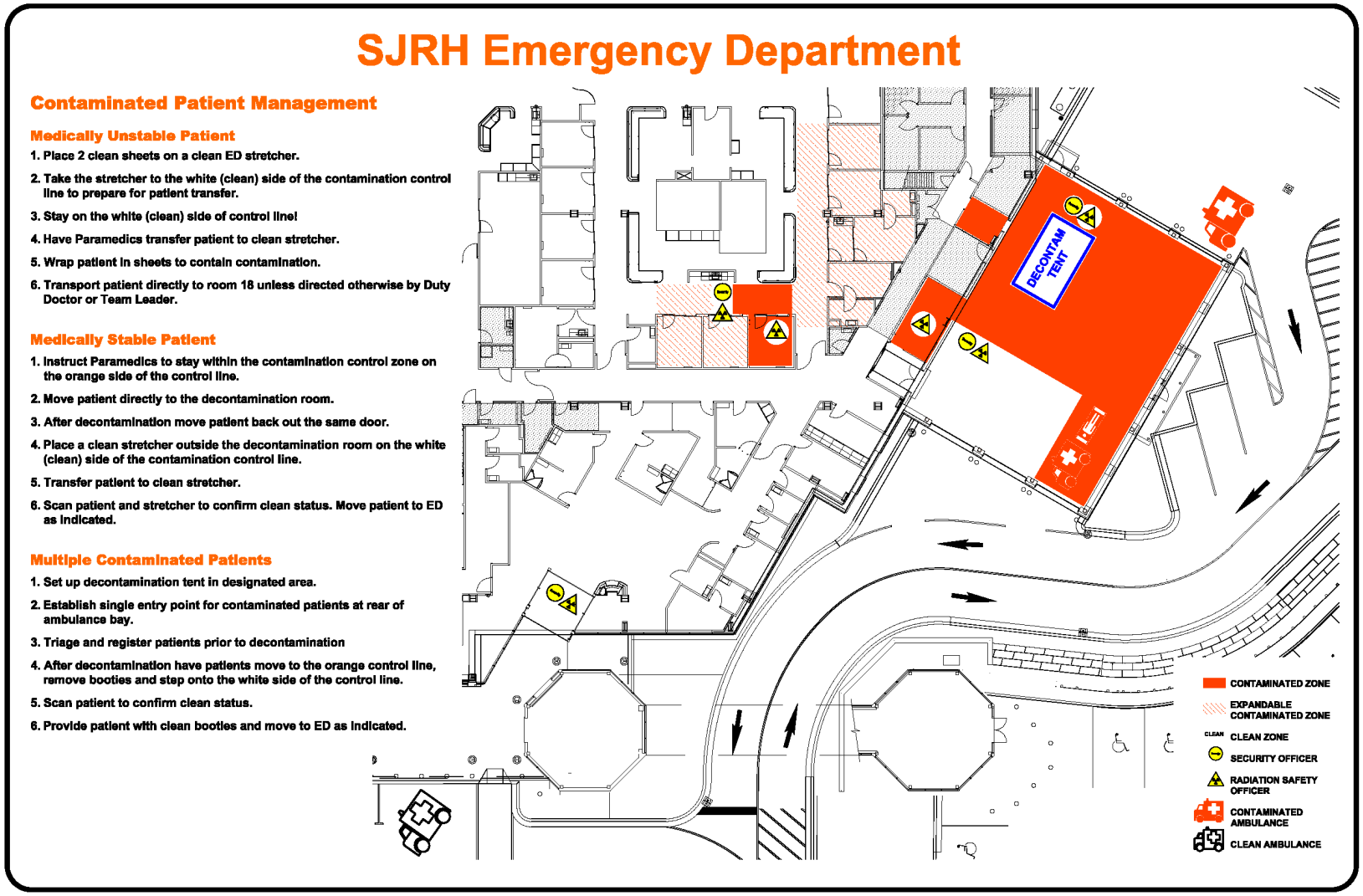


Figure 3: Radiation Control Zones in the Saint John Regional Hospital[2]



[2] Courtesy of Horizon Health Network, Saint John Regional Hospital.
NOTE: Contaminated Zones = Warm or Hot Zones; Clean Zones = Cold Zones

4 Personal Protective Equipment Recommendations[3,4] for Protection from Radiation Contamination

The recommendations below are minimum requirements; however standardizing PPE is a best practice and policy. In addition to these recommendations, health care workers should continue to apply routine practices and additional precautions for infection prevention and control purposes. Similarly, first responders and other emergency workers should apply PPE as per their organizations' standard operating procedures for additional non-radiological hazards.

Respiratory Protection	Fit-tested N95 Respirator
Clothing	Chemical-resistant coveralls with hood (Tyvek or other). For first receivers working as personal care assistants in the MDC decontamination area (showers) water proof coveralls with hood are worn over Tyvek chemical-resistant coveralls where there is a risk of PPE getting wet.
Eye Protection	Goggles (type that fit over eye glasses)
Gloves	Inner and outer chemical-resistant gloves (Nitrile). – Tape inner pair of gloves to sleeves of coveralls; outer pair of gloves should not be taped; – Frequent changing of outer pair of gloves to reduce spread of contamination to other providers or victims / evacuees.
Cap and Boots	Cap or hood (as part of Tyvek Coveralls); Inner disposable chemical-resistant boot covers (Tyvek booties) and an outer pair of waterproof boot covers.
Operational Requirements	– PPE must be donned and removed according to procedure outlined in Appendix A; – Radiation surveys must be conducted at completion of shift or before exiting radiation contamination controlled areas to clean areas; – Consult qualified PLNGS Radiation Protection Trained personnel (in hospital or field settings) for guidance; – In all cases where radiation is suspected, emergency workers, first responders/first receivers will be monitored by PLNGS Radiation Protection Trained Personnel for radiation contamination, in accordance with established protocols and procedures described in the Point Lepreau Nuclear Off-site Emergency Plan.

[3] Adapted from Health Canada, Medical Emergency Treatment for Exposures to Radiation (METER) Training Course, PPE Guidelines (2012) and Point Lepreau Nuclear Generating Station guidelines (2017).

[4] Adapted from the US Dept of Health and Human Services, Radiation Emergency Medical Management (2017).

5 Procedures for Donning and Removing PPE

Entry to and exit from a warm or hot zone must be carried out in a manner that prevents the spread of contamination. This is accomplished by setting up clear boundary lines delineating hot, warm and cold zones in field and hospital settings. Donning and doffing procedures are described in detail in Appendix A.

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Health Canada, *Medical Emergency Treatment for Exposures to Radiation. Personal Protective Equipment Guidelines*. 2012.

International Atomic Energy Agency, *General Safety Requirements, Part 7*, 2015.

Appendix A: Procedures for Donning and Doffing PPE

A-1 Hospital Setting

A-1.1 Donning PPE

Before entering the contaminated zones in the hospital setting, don appropriate PPE, described in Section 4. Every step in this procedure is performed with the help of a knowledgeable assistant wearing PPE:

1. Remove all watches, jewellery, rings, etc.
2. Wear scrubs or appropriate clothing.
3. Select and inspect equipment – dosimeter with plastic bag, inner booties and outer booties or outer boots, Tyvek coveralls, nitrile gloves (2 pairs), fit-tested N95 respirator, goggles, marker, tape (type that won't tear PPE e.g. 3M 3903 2" general purpose vinyl duct tape - yellow).
4. Put on inner booties.
5. Put on coveralls (select a generous size) and tuck booties into coveralls.
6. Tape the bottom of each coverall leg to booties, sealing completely with one rotation and leaving a pull tab for easy removal.
7. Put on outer booties or outer boots (if working in a wet environment).
8. Tape the zipper of the coveralls and leaving 1 inch excess at the top to fold inside the coveralls. Leave a pull tab for easy removal.
9. Wear thermoluminescent dosimeter (TLD) and/or pocket alarming dosimeter (PAD) on the upper arm in a sealed plastic bag by taping it with one rotation and leaving a pull tab for easy removal.
10. With assistance, write name and role or position on the back of coveralls on a strip of tape, using the marker.
11. Put on first layer of nitrile gloves and tuck into coveralls.
12. With assistance, tape coveralls to gloves. Seal completely with one rotation leaving a pull tab for easy removal.
13. Put on a second pair of nitrile gloves, without taping.
14. Put on a fit-tested N95 respirator, by placing the mask over the mouth and nose, ensuring a complete seal and stretching elastics over the head.
15. Put on goggles. If you wear eye glasses, ensure goggles cover eye glasses.
16. Put on coverall hood. With assistance, use a strip of tape to hold the hood in position, away from face, but still covering forehead to top of goggles.

Enter the contaminated zone.

A-1.2 Doffing (Removing) PPE

Every step in this procedure is performed with the help of a knowledgeable assistant wearing PPE.

1. Inspect and note any deficiencies with PPE.

2. Remove TLD.
3. Remove outer booties or outer boots.
4. Remove outer gloves by pulling on outside of gloves, while taking care not to contaminate inner gloves.
5. Remove tape from inner gloves, inner booties and zipper of coveralls using easy pull tabs.
6. Unzip coveralls.
7. Carefully remove hood by pinching outside of hood and rolling inside out. Take care not to let the outside of the coverall hood touch the head.
8. With assistance, begin rolling the coveralls outwards rolling it down over the shoulders. Place both arms along your body while the assistant removes the coverall. The assistant must keep the hands on the outside of the coverall.
9. Continue removing the coverall down to the knees.
10. Sit on bench and continue removing the coverall to the ankles. Remove the inner booties with the coveralls and place 'clean' feet on the inside (clean side) of the coverall.
11. Swing feet one at a time to the clean, uncontaminated zone. Stand up and walk to the contaminated zone line, lean over the contaminated zone to remove respirator and inner gloves.
12. Remove inner gloves over the active waste container, using surgical technique: Grasp outside edge near the wrist and peel away, rolling the glove inside out. Reach under the glove on the other hand and peel away.
13. Remove goggles (pull off by straps), then N95 respirator (pull off by the straps) over the active waste container.
14. PLNGS Radiation Protection Trained Personnel will check for contamination. If a first receiver remains contaminated after removing PPE, he/she will require decontamination and will be re-checked for contamination before exiting the contaminated zone.

NOTE:

PLNGS Radiation Protection Trained Personnel should periodically monitor active waste containers with a gamma meter. Waste should be removed if the contact gamma reading exceeds 2 mSv/h.

A-2 Field Setting

A-2.1 Donning PPE

Before entering the hot or warm zone in the field setting, don appropriate PPE, described in Section 4. Every step in this procedure is performed with the help of a knowledgeable assistant wearing PPE:

1. Remove all watches, jewellery, rings, etc.
2. Select and inspect equipment – black storage bag, outer MALO rubber boots, inner booties, Tyvek coveralls, Cotton Gloves, Nitrile gloves (2 pairs), goggles, fit-tested N95 Respirator, marker, tape (type that won't tear PPE e.g. 3M 3903 2" general purpose vinyl duct tape - yellow).
3. Wear seasonally appropriate clothing.
4. Put on inner booties.
5. Put on coveralls (select a generous size) and tuck booties into coveralls.

6. Tape the bottom of each coverall leg to booties, sealing completely with one rotation and leaving a pull tab for easy removal.
7. Put on MALO rubber boot.
8. Tape the zipper of the coveralls and leaving 1 inch excess at the top to fold inside the coveralls. Leave a pull tab for easy removal.
9. Wear thermoluminescent dosimeter (TLD) and/or pocket alarming dosimeter (PAD)on the upper arm in a sealed plastic bag by taping it with one rotation and leaving a pull tab for easy removal.
10. With assistance, write name and organization on the back of coveralls on a strip of tape, using the marker.
11. If a duty belt is required, it should be worn on the outside of PPE. For EM/ANB and RCMP, radios are worn on the inside of PPE. For others working in the MDC, handheld radios are used outside of PPE.
12. Put on cotton gloves if needed for warmth.
13. Put on first layer of nitrile gloves and tuck into coveralls.
14. With assistance, tape coveralls to gloves. Seal completely with one rotation leaving a pull tab for easy removal.
15. Put on a second pair of nitrile gloves, without taping.
16. Put on a fit-tested N95 respirator, by placing the mask over the mouth and nose, ensuring a complete seal and stretching elastics over the head.
17. Put on goggles. If you wear eye glasses, ensure goggles cover eye glasses.
18. Put on coverall hood. Use a strip of tape to hold the hood in position, away from face, but still covering forehead to top of goggles.
19. Return black storage bag to PPE storage in the MDC Assembly Area.

A-2.2 Doffing (Removing) PPE

Every step in this procedure is performed with the help of a knowledgeable assistant, wearing PPE.

<u>For workers leaving the hot zone or the warm zone:</u>

Without doffing PPE, proceed directly to the radiation monitoring post designated for emergency workers/first responders/first receivers within the Monitoring and Decontamination Centre (MDC) (warm zone), where a PLNGS Radiation Protection Trained personnel will check for contamination.

If no contamination is detected, proceed through the designated entry/exit corridor in full PPE to the MDC Assembly Area (cold zone). Complete doffing procedure in PPE tent in the MDC Assembly Area.

If contamination is detected, proceed to the designated disrobing area and doff PPE according to the following procedure:

1. Inspect and note any deficiencies with PPE.
2. Remove TLD.
3. Remove outer MALO rubber boots.
4. Remove outer glove by pulling on outside of gloves, while taking care not to contaminate inner gloves.
5. Remove tape from inner gloves, inner booties and zipper of coveralls using easy pull tabs.

6. Unzip coveralls.
7. Carefully remove hood by pinching outside of hood and rolling inside out. Take care not to let the outside of the coverall hood touch the head.
8. With assistance, begin rolling the coveralls outwards rolling it down over the shoulders. Place both arms along your body while the assistant removes the coverall. The assistant must keep the hands on the outside of the coverall.
9. Continue removing the coverall down to the knees.
10. Sit on bench and continue removing the coverall to the ankles. Remove the inner booties with the coveralls and place 'clean' feet on the inside (clean side) of the coverall.
11. Swing feet one at a time to the clean, uncontaminated zone. Stand up and walk to the contaminated zone line, lean over the contaminated zone to remove respirator and inner gloves.
12. Remove inner gloves over the active waste container, using surgical technique: Grasp outside edge near the wrist and peel away, rolling the glove inside out. Reach under the glove on the other hand and peel away.
13. Remove goggles (pull off by straps), then N95 respirator (pull off by the straps) over the active waste container.
14. PLNGS Radiation Protection Trained Personnel will re-check for contamination. If an emergency worker/first responder/first receiver remains contaminated after removing PPE, he/she will proceed through the same decontamination process as evacuees and re-checked for contamination.
15. Once cleared of contamination, proceed through the designated entry/exit corridor to the MDC Assembly Area (cold zone).

NOTE:

PLNGS Radiation Protection Trained Personnel should periodically monitor active waste containers with a gamma meter. Waste should be removed if the contact gamma reading exceeds 2 mSv/h.

Appendix B: Target Groups Subject to PPE Guidelines

Department or Agency	Personnel Implicated in Nuclear Emergency Response	PPE Zones
Department of Justice and Public Safety	Motor Vehicle Safety Enforcement Section (MVSES)	Warm Zone
	NB Emergency Measures Organization, Provincial Nuclear Preparedness	Hot Zone (off-site EOC) Warm Zone (MDC)
Department of Transportation and Infrastructure	Engineers	Warm zone, only if repairs are required
	Bridge Workers (district 4)	Warm zone, if repairs are required
	Highway Supervisors, Superintendents, Technicians	Warm zone, only if repairs, snow removal, maintenance or detours required
Department of Environment and Local Government[5]	Inspectors (including engineers)	Warm zone, only under exceptional circumstances, if specialized assistance is required for sampling in hot spots within the Ingestion Exposure EPZ
Department of the Natural Resources and Energy Development[5]	Geologists	Warm zone, only under exceptional circumstances, if specialized assistance is required for sampling in hot spots within the Ingestion Exposure EPZ
	Forest Rangers	Warm zone, only under exceptional circumstances, if specialized assistance is required for sampling and/or handling animal carcass (hot spots) within the Ingestion Exposure EPZ
EM/ANB	Paramedics	Hot zone, only if required to retrieve casualty; Warm zone for MDC roles and transportation of contaminated casualties
Horizon Health	Physicians	Warm zone - hospital
	Licensed Practical Nurses	Warm zone – hospital and/or MDC
	Registered Nurses	Warm zone – hospital
	Personal Care Workers	Warm zone – hospital and/or MDC
	Housekeeping	Warm zone – hospital
International Repeaters Group	Volunteer amateur HAM Radio operator	Hot zone, if stationed in Off-site EOC
RCMP	Police Officer	Hot and/or Warm zones
Department of Agriculture, Aquaculture and Fisheries[5]	Biologists, St. George NB Agrologists, St George NB	Warm zone, only under exceptional circumstances, if specialized assistance is required for sampling in hot spots within the Ingestion Exposure EPZ
HazMat	Fire Services	Not subject to these guidelines.
Point Lepreau Nuclear Generating Station (PLNGS)	Various	Not subject to these guidelines.
Musquash Fire Services	Firefighters	Not subject to these guidelines.

[5] Sampling activities by the Department of Environment and Local Government (DELG), Department of Agriculture, Aquaculture and Fisheries (DAAF) and the Department of Natural Resources and Energy Development (DNRED) will be restricted to the Ingestion Exposure EPZ, outside of the 20km EPZ. The role of DELG, DAAF and DNRED is monitoring to provide proof of safety. Any sampling in hot spots identified within the Ingestion Exposure EPZ (or within the 20km Hot Zone, as defined in Section 2.2) will be performed by PLNGS personnel.