



Department of Health
Emergency Preparedness and Response Branch

**PROVINCIAL HEALTH NUCLEAR
EMERGENCY PLAN
for the Point Lepreau Nuclear
Generating Station**

FINAL Version 3.3: May 2021

A publication of the New Brunswick Department of Health

Responsibility for production, distribution, review and amendment of the Provincial Health Nuclear Emergency Plan for the Point Lepreau Nuclear Generating Station is the responsibility of the Director, Emergency Preparedness and Response Branch of the Department of Health:

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- Horizon Health Network –Vitalité Health Network
- EM/ANB
- NB Power, Point Lepreau Nuclear Generating Station
- WorkSafe NB
- NB Trauma Program
- NB Funeral Directors and Embalmers Association
- RCMP
- Canadian Red Cross
- New Brunswick College of Pharmacists

RECORD OF REVISIONS

Amend. No.	Revisions (Include Page No.)	Date Amended (D/M/Y)	Entered By (Please print name)
1	Original Document	Adopted Sept. 29, 2011	DH HEM Unit
2	Version 2.0	March 21, 2013	DH HEM Unit
3	Version 2.1 Update to dosimetry (Section 3.3.2-3, 6.3.2, 6.5, 13.2-13.3); NB Trauma Program (Section 1.6.5, 6.1.2); Registration (Section 6, Figure 6) and; bracelet protocol (Section 4.4.4)	February 2014	DH EPR Branch (formerly NB HEM Unit)
4	Version 2.2 Public Health Brochures added with references to the brochure added throughout the plan (Section 6.2.7, 7.2.1 and 12.0); Roles and responsibilities for the health sector (Section 12) – emergency response structures content was updated;	February 2015	DH EPR Branch
5	Version 2.3 Figure 4 was updated to reflect the recent addition of ANB as a PEOC member; Figure 2 Alert Notification protocol – ANB was added to PLNGS Shift Supervisor alerts. Health Canada was added to DH EPR Branch alerts.	February 2015	DH EPR Branch
6	Updated Figure 1: NBHEOC Organization chart	April 14, 2015	DH EPR Branch
7	Version 2.5 Updated Figures 1, 2, 4, 5, 6 to reflect updates made in preparation for Exercise INTREPID 2015. ANB post-decontamination triage role removed and replaced with 'health checks' for only those with orange bracelets and health concerns. Editorial changes throughout. PLNGS hotline removed from Tele-Care 811 referrals	February 2016	DH EPR Branch
8	Version 3.0 Integration of recommendations from Exercise INTREPID 2015: <ul style="list-style-type: none"> • Additions made to planning assumptions (Section 1.5); • Removed Charlotte County Hospital as a designated hospital (Fig. 2, 3, 4; Part I, Sections 1.5, 1.6, 3.5, 4.4, 4.7; Part II, Sections 7.0 and 13.0); • Identification of resource requirements for health physicist and radiation protection certified staff (3.3.2; 3.5.1; 4.7; 4.13); • Protocol added for the management of the 'worried-well' and those who bypass the Monitoring and Decontamination Centres (Section 4.6); • Process added for accessing radiation expertise in health (4.7.3); • Laboratory radiation level limits set for protective 	March 2017	DH EPR Branch

	<p>actions and process identified for labeling contaminated specimens going to hospital laboratory. Access to cytogenetic analysis clarified (Section 4.7.3);</p> <ul style="list-style-type: none"> • Roles for Horizon Health in monitoring and decontamination centres revised (Sections 4.4, 7.0, 13.0); • Process identified for the distribution of public health brochures (Sections 4.5.7, 4.7.7); • Process identified for registering evacuees who bypass Red Cross registration due to urgent transport to hospital (Section 4.13.3); • A concept developed for the Management of Decedents Contaminated with Radioactive Material (Section 4.11); • A Canadian Red Cross Control Centre concept included with Health roles and responsibilities identified (Section 4.5); • Staff deployment triggers for reception centres and the monitoring and decontamination centres clarified (Sections 4.4.5, 4.5); • Process for evacuee access prescription medications, rehabilitative equipment and medical services clarified (Section 4.5.6); • Part II reformatted with information on health system function moved to Part I. • PPE protocol removed from section 3 • Clinical Care integrated into Part I; • Formatting and editorial changes made throughout the document. 		
9	<p>Version 3.0: Section 1.6.4 – inserted criteria for the designation of the SJRH as the sole designated hospital for the treatment of radiation related injury and for receiving contaminated casualties for an emergency at PNLGS.</p>	May 2017	DH EPR Branch
10	<p>Version 3.1</p> <ul style="list-style-type: none"> • Section 1.3 – added description of Radiation Medical Advisor and Technical Advisory Group roles for Health. • Section 1.3.5 - added PLNGS Emergency Classifications. • Section 3.3 - aligned Dose Limits with 2015 IAEA guidelines. • Section 5.7.3 – added information on medical management, pointing to detailed Canadian and American resources. • Minor editorial changes throughout document. • Part III, References – updated references to resources and repaired broken links. 	August 2017	DH EPR Branch
11	<p>Version 3.2:</p> <ul style="list-style-type: none"> • Text throughout the document, including Section 1.6.5, Section 5.7.6 and Section 14 as well as Figures 1, 2, 3, 4, 5, 6, 7 and 8 - updated to reflect health system structural changes, i.e. amalgamation of ambulance and extra-mural services into new 	August 2018	DH EPR Branch

	<p>organization, EM/ANB. New Section 5.8 added for Extra-Mural Program.</p> <ul style="list-style-type: none"> • Text throughout document – updated to reflect reference to new Health Canada intervention guidelines, “Generic Criteria and Operational Intervention Levels for Planning and Response”. • Section 1.6.6 – updated to reflect Vitalité’s role in providing community-level psycho-social services. • Section 4.2 – updated to reflect PLNGS and Health Canada radiation detection and monitoring roles, procedures and protocols. • Section 4.5 – updated to reflect new PPE guidelines. • Text throughout document, including Section 5.5.4, Section 5.10 and Section 9.1.2 – updated to reflect organizational and structural changes to the Office of the Chief Medical Officer of Health, i.e. ordering of health inspections. • Section 5.5.5 – updated to include new reception centre prescribing protocol for provincial radiation medical advisor; clarification also provided on pharmacists’ role in prescribing in emergency. • Section 5.16.1 – updated to include further definition and breakdown on recovery phase and sub-phases. • Section 8 – added reference to Extra-Mural Program role and command, control and coordination structure • Section 10 – added reference to Mental Health’s role via Town Hall sessions as well as added reference to Vitalité Health’s role in providing psycho-social services to the community. • Formatting and editorial changes made throughout the document. 		
12	<p>Version 3.2</p> <ul style="list-style-type: none"> • Section 5.14 - added community / town hall protocol • Section 5.16.1 - added phases of recovery • Section 5.13 - expanded public communications section: Public Communications. 	August 2018	DH EPR Branch
13	<p>Version 3.3</p> <ul style="list-style-type: none"> • Title Page – updated plan title • Page 2 – updated contact information • Section 1.1.1 – added reference to ‘recovery’ as part of the overall aim of plan • Section 1.3.3 – added ‘sequence of nuclear emergency phases and categories of exposure situations’ definitions • Section 1.3.4 (formerly 1.3.3) – removed Figure 3 - health system involvement in PLNGS emergencies • Section 1.3.5 – added ‘PLNGS security alert levels’ definitions • Section 1.5.1 (Bullets # 4, 5, 13) – updated demographic data • Section 1.5.4 (Bullet #1) - updated percentages and demographic data • Section 1.7 – added reference to Vitalité Health 	May 2021	DH EPR Branch

	<ul style="list-style-type: none"> • Section 5.1.1 – added contingency EPZ reference and definition and changed ingestion exposure EPZ definition • Section 5.1.1 – updated Figure 4 - off-site concept to include contingency EPZ and change of Ingestion Exposure EPZ boundary • Section 5.16.1 – updated Health System Recovery (Transition) definition to include reference and relationship to ‘categories of exposure situations’ • Section 5.16.2 – ‘Deactivation’ separated from Health System Recovery under its own heading and section • All references to ‘emergency planning distance’ removed throughout document • All references to ‘ingestion pathway monitoring zone’ replaced with ‘ingestion planning zone’ • All references to ‘recovery phase’ replaced with ‘recovery (transition) phase’ throughout document • All references to the ‘Office of the Chief Medical Officer of Health’ replaced with ‘Public Health New Brunswick’ throughout document • Formatting and editorial changes made throughout document. 		
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ACRONYMS AND ABBREVIATIONS

ALARA	As Low as Reasonably Achievable
EM/ANB	Extra-Mural/Ambulance New Brunswick
CMOH	Chief Medical Officer of Health
cps	Counts per second
MOH	Medical Officer of Health
DH	Department of Health (New Brunswick)
EMP	Extra-Mural Program
EMS	Emergency Medical Services
EOC	Emergency Operations Centre
EPR Branch	Emergency Preparedness and Response Branch (Department of Health)
EPZ	Emergency Planning Zone
IAEA	International Atomic Energy Agency
KI	Potassium Iodide
METER	Medical Emergency Treatment for Exposures to Radiation
mSv	Millisievert (unit of radiation exposure)
NESS	National Emergency Strategic Stockpile
NB	New Brunswick
NB EMO	New Brunswick Emergency Measures Organization
NBHEOC	New Brunswick Health Emergency Operations Centre
PHNB	Public Health New Brunswick (formerly the Office of the Chief Medical Officer of Health)
PEOC	Provincial Emergency Operations Centre
PLNGS	Point Lepreau Nuclear Generating Station
REAC	Regional Emergency Action Committee
RCMP	Royal Canadian Mounted Police
RMOH	Regional Medical Officer of Health
SJRH	Saint John Regional Hospital

PART I

PRINCIPLES, POLICIES AND PROCEDURES

1. OVERVIEW

1.1 Objectives

1.1.1 Aim

The aim of this plan is to promulgate the organization, responsibilities and actions necessary for an effective health system response and recovery to a nuclear emergency at the Point Lepreau Nuclear Generating Station (PLNGS) with impacts beyond the confines of the facility, which would pose danger to the general public.

1.1.2 Purpose

This plan supplements the all-hazards Provincial Health Emergency Management Plan as well as the Health Emergency Management Plans for Horizon Health Network (Horizon Health), Vitalité Health Network and Extra-Mural Program / Ambulance NB (EM/ANB), by providing information specific to nuclear hazards at PLNGS. Part I (Overview) is authoritative and provides policy direction for all health system partners under the jurisdiction of the Department of Health (DH). Parts II (Health System Partners) and III (Reference Information) are informative and provide all stakeholders with an understanding of the roles of the health partners in nuclear emergency response and recovery. Part IV (Appendices) provides a location in which to file sub-plans produced by individual health system partners for their own internal use. Not all holders of this document will necessarily hold all sub-plans.

1.1.3 Goals of Health Nuclear Emergency Response

This plan enables the New Brunswick health system to achieve the International Atomic Energy Agency (IAEA) goals for medical response to nuclear or radiological emergency, which are to:

- save lives and perform required emergency medical procedures;
- treat radiation injuries and injuries resulting from an emergency situation; and
- perform required public health actions, including public advice and counselling.¹

1.2 Scope

1.2.1 Applicability

The primary focus of this plan is on health system responsibilities in the event of an off-site nuclear emergency at PLNGS with some discussion of health roles in an on-site emergency at PLNGS (see section 1.3.2 for details of an on-site versus an off-site emergency). Nonetheless, these principles, policies and procedures may be adapted if required for other potential nuclear emergencies such as the following.

- **Deliberate release of nuclear material** (e.g., a “dirty bomb” detonated by ideological extremists). The principles of health system response would be the same but circumstances might be different. For example, the scale of the problem might be greater; the geographical area may be other than southwest New Brunswick; health care facilities and sites might themselves be impacted; or first responders

¹ International Atomic Energy Agency. *Generic procedures for medical response during a nuclear or radiological emergency*. (see References - Section 16)

may face additional complications from being deliberately targeted themselves or constrained by law-enforcement considerations.

- **Accident during transport** (e.g., a road or rail accident involving transported nuclear material). Such an event would probably be localized in nature but could be complex if it occurred either in a population centre or remote area with difficult access.
- **Crash of airborne nuclear material** (e.g., uncontrolled re-entry of a nuclear-powered satellite or crash of an aircraft carrying nuclear cargo). For example, the 1977 re-entry of the nuclear-powered satellite Cosmos 954 scattered small but highly radioactive particles over 47,000 square kms of the Northwest Territories which, fortunately, is sparsely populated.

1.2.2 Interprovincial and International Support

If a nuclear accident occurs in an adjoining Canadian province or U.S. state, the New Brunswick Emergency Measures Organization (NB EMO) may request the DH to provide expert augmentation. Any such arrangements involving health professionals from New Brunswick would be made under the provisions of the *New Brunswick Annex to the Federal Nuclear Emergency Plan* and would not require implementation of this plan.

1.3 Concept

1.3.1 Activation, Implementation and Deactivation

This document supplements the all-hazards emergency management plans of its participating organizations by addressing issues specific to a health nuclear emergency at the PLNGS. Activation, implementation and deactivation of this plan are therefore concurrent with, and subordinate to, procedures defined by the respective all-hazards emergency management plans.

- **New Brunswick Health Emergency Operations Centre (NBHEOC) Organization.** The following schematic (Figure 1) depicts the modifications made to the all-hazards NBHEOC organization, specific to a nuclear emergency at PLNGS with off-site implications: Liaison officers will include a link to the Provincial Emergency Operations Centre (PEOC) and to federal/provincial governments. The operations group will reflect the functional areas implicated in this *Provincial Health Nuclear Emergency Plan*, including a position unique to a nuclear emergency response, the Provincial Radiation Medical Advisor.

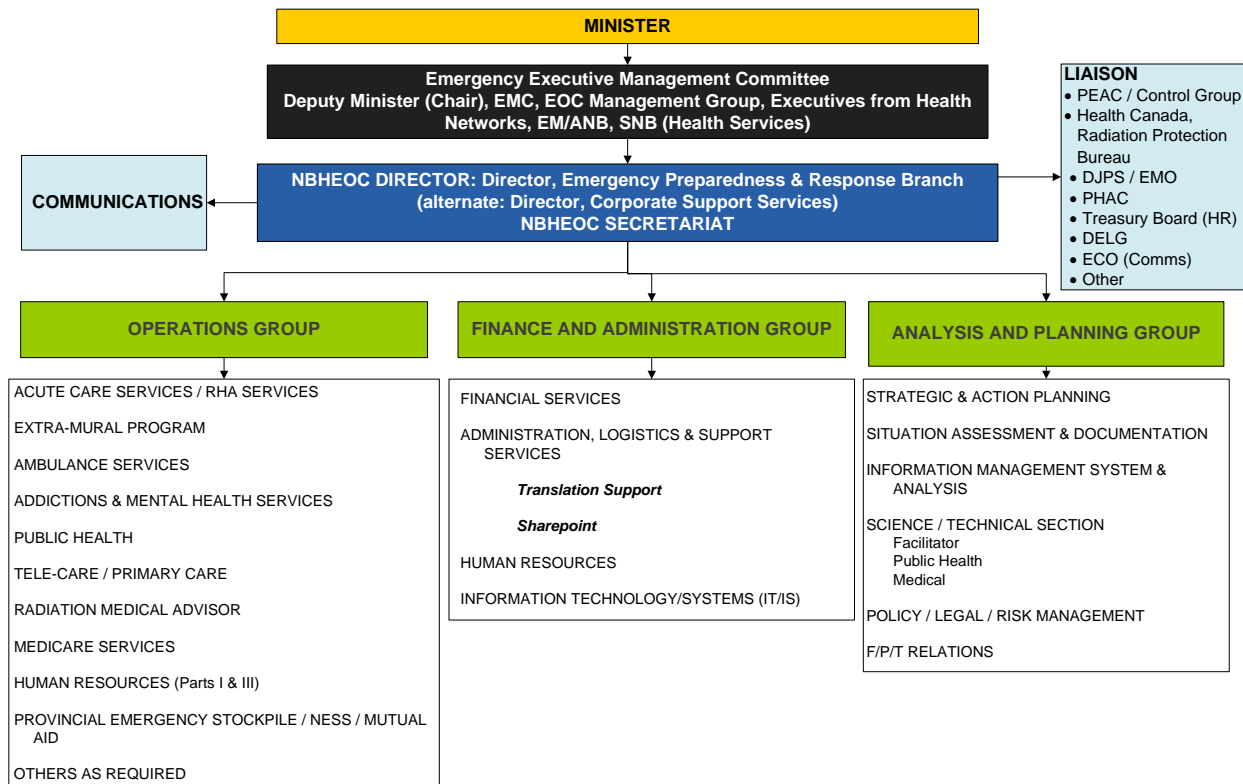
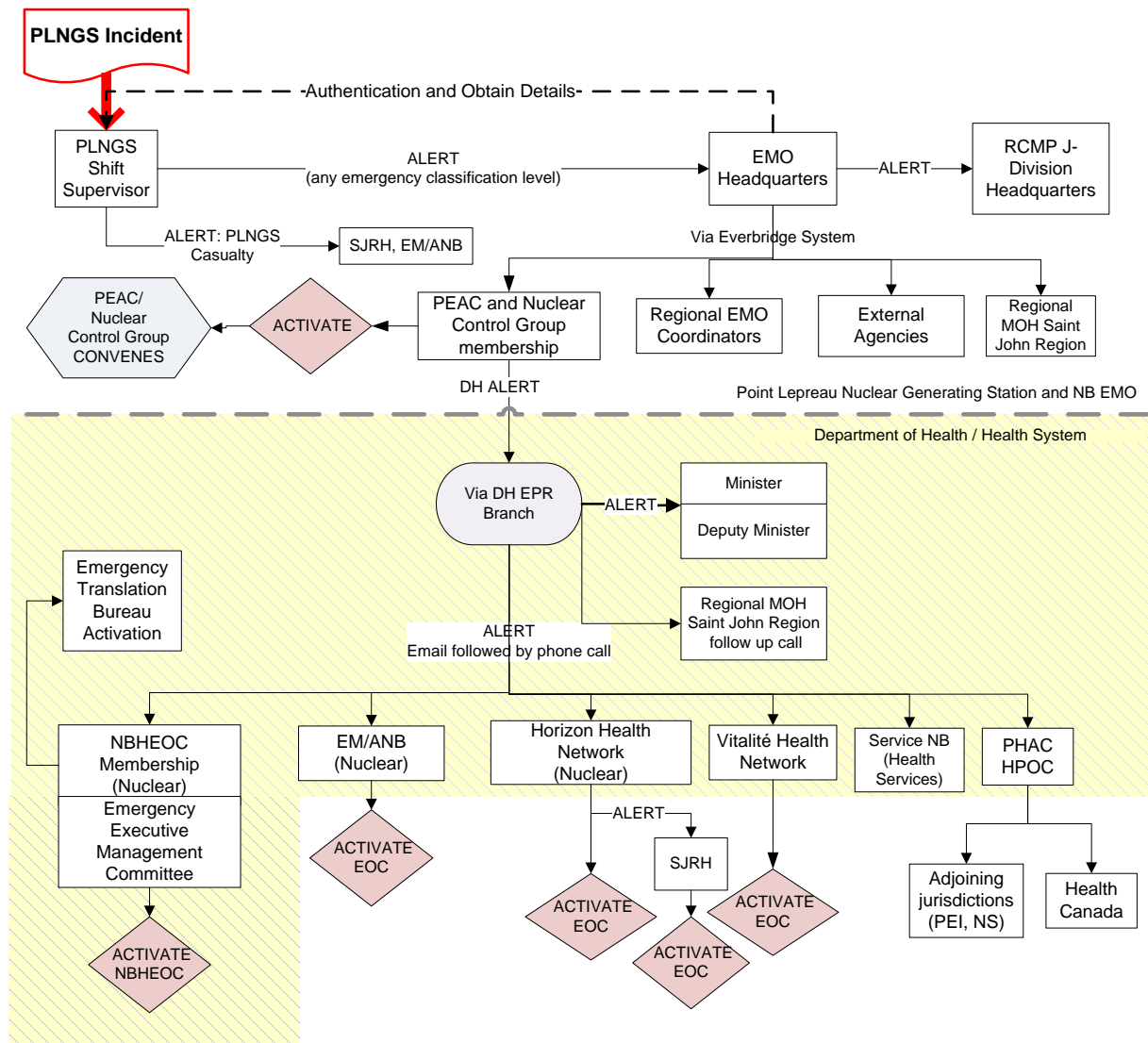


Figure 1. NBHEOC organization in a nuclear emergency at PLNGS with off-site implications

- **Notification Alert Protocol for an Off-site Nuclear Emergency.** Figure 2 depicts the modifications made to the all-hazards alert notification protocol, specific to a nuclear emergency at PLNGS with off-site implications. The DH Provincial Emergency Action Committee member, members of the Nuclear Control Group and the Regional Medical Officer of Health for the Saint John Region will receive a direct notification alert from NB EMO. NBHEOC notification alerts will include additional members, specific to a nuclear emergency, as reflected in Figure 1, above. The fan-out is depicted as being more elaborate in Horizon Health and EM/ANB than for other health system partners, due to their substantial involvement in the response. The Public Agency of Canada (PHAC) Health Portfolio Operations Centre will be part of the initial alert to ensure adjoining jurisdictions are notified. Notification alert protocol for an on-site emergency at PLNGS is described in Section 1.3.2.



ACRONYMS

DH EPR	Department of Health, Emergency Preparedness and Response Branch	NBHEOC	NB Health Emergency Operations Centre
EOC	Emergency Operations Centre	PEAC	Provincial Emergency Action Committee (all provincial government departments)
EMO	Emergency Measures Organization	PHAC	Public Health Agency of Canada
MOH	Medical Officer of Health	PLNGS	Point Lepreau Nuclear Generating Station
HPOC	Health Portfolio Operations Centre	SJRH	Saint John Regional Hospital

Figure 2. Alert Notification protocol in a nuclear emergency at the PLNGS with imminent or actual off-site implications

1.3.2 Categories of Nuclear Emergency

Health nuclear emergency planning for an incident at PLNGS is based on two broad categories of events defined by the *Federal Nuclear Emergency Plan* and associated federal regulations as **on-site** and **off-site** emergencies.

- **On-site Emergency**

If the impact of an incident can be contained within the Point Lepreau site, then PLNGS is accountable for response in accordance with NB Power's internal *On-Site Contingency Plan*.

- **Health System Functions in an On-site Emergency.** If injuries from an on-site emergency do not involve radiation exposure or contamination (defined in Section 2.1), normal EM/ANB procedures will apply. If casualties have been exposed or are contaminated and require hospital services, they will be transferred to Saint John Regional Hospital (SJRH), in accordance with EM/ANB procedures (see Section 11 – *Emergency Medical Services*) and the current *Cooperation Agreement between Horizon Health Network and PLNGS*. The SJRH will receive a call directly from the PLNGS shift supervisor to the SJRH Emergency Department Nursing Team Leader providing an alert notification of an incoming patient with potential contamination. EM/ANB will also alert the SJRH emergency department per established protocols. This will allow adequate time for the preparation of staff, treatment areas, equipment and supplies, including department lock-down, placement of signage, set up of care area, radiation detectors, decontamination equipment, personal protective equipment and waste disposal.

- **Off-site Emergency**

If the impact of an incident extends beyond the confines of the Point Lepreau site and presents a danger to the general public, the off-site response becomes the responsibility of federal, provincial and municipal levels of government, in accordance with the *Federal Nuclear Emergency Plan*. The province assumes primary responsibility through the Provincial Nuclear Control Group, as detailed in the province's *Point Lepreau Nuclear Off-Site Emergency Plan*.

1.3.3 Sequence of Nuclear Emergency Phases and Exposure Situations

Nuclear Emergency Phases:

- **Emergency Response Phase** – Primary focus is on public protection and bringing the situation under control. A declaration of an emergency PLNGS classification is triggered in this phase (see Section 1.3.4) and prompts the changeover from a 'planned exposure situation' to an 'emergency exposure situation'.
 - **Urgent Response Phase:** The period from the detection of conditions warranting emergency response and protective actions (e.g. evacuation, iodine thyroid blocking, sheltering) that must be taken promptly to be effective until the completion of all such actions. The duration of this phase could be hours to days.
 - **Early Response Phase:** The period from which a radiological situation is already characterized sufficiently well that a need for taking early protective and other response actions (e.g. relocation, decontamination, food and water restrictions) can be identified, until the completion of all such actions. The duration of this phase could be days to weeks.

Transition (Recovery) Phase – Primary focus is on preparing for the resumption of normal social and economic activity and to enable transitioning to either a ‘planned exposure situation’ or an ‘existing exposure situation’. The period after the emergency response phase when the situation is under control, detailed characterization of the radiological situation has been carried out and activities are planned and implemented to enable the emergency to be declared terminated. The duration of this phase could be days to a year.

Categories of Exposure Situations:

Three categories of exposure situations², as defined below, can be applied to any situation of radiation exposure.

- **Planned exposure situations** involve the planned operation of a source (e.g., the operation of nuclear reactors) or planned activities that result in an exposure from a source (e.g., disposal of radioactive waste). The annual dose limit for members of the public is 1 millisievert (mSv) in a planned exposure situation.
- **Emergency exposure situations** arise because of an accident, a malicious act or other unexpected event, and require prompt action to avoid or to reduce adverse consequences. The International Commission on Radiological Protection recommends a reference level between 20-100 mSv for emergency exposure situations.
- **Existing exposure situations** already exist when a decision on control must be taken, including prolonged exposure situations after emergencies. These situations include exposure to natural background, exposure due to residual radioactive material that derive from past practices that were never subject to regulatory control, and exposure due to the residual radioactive material deriving from a nuclear emergency. The International Commission on Radiological Protection recommends a reference level between 1-20 mSv for existing exposure situations.

1.3.4 PLNGS Emergency Classifications

PLNGS emergencies will be classified according to the following:

- Radiation Alert - An event has occurred leading to higher than normal radiation levels, limited to the Point Lepreau property perimeter. At this emergency classification level, the DH will be monitoring with no active response required.
- Site Area Radiation Emergency - An event that affects territory within the PLNGS property perimeter only. Preparations shall be made to take protective actions off site, should they be required. At this emergency classification level, the DH will fully activate the health system emergency response structure.
- General Radiation Emergency - An event involving an actual or substantial risk of release of radioactive material or radiation exposure that warrants taking urgent

² International Commission for Radiation Protection 103 (2007).

protective actions outside the boundary of the Point Lepreau site. At this emergency classification level, the DH health system emergency response structure remains fully activated.

1.3.5 PLNGS Security Alert Levels

PLNGS Standard Operating Procedures define the following Security Levels:

- Threat Level 1 – Active attacker inside the protected area, explosive confirmed inside the Protected Area, hostile takeover of Main Control Room, Secondary Control Room or Security Monitoring room, or potential aircraft impact in less than 60 minutes.
- Threat Level 2 – Confirmed security threat to station, suspicion of explosives device inside the Protected Area, active attacker inside the Controlled Area, or potential aircraft impact in 60 minutes or more.
- Threat Level 3 - Credible threat developing or bomb threat.

1.3.6 Health Services Command and Control

Command and control of health services will be exercised as follows and as illustrated in Figure 3.

- **Strategic Command, Control and Coordination.** Strategic command, control and coordination of the provincial response will be directed through the PEOC Nuclear Control Group. Strategic command, control and coordination of the provincial health system response will be directed through the NBHEOC in close collaboration with the PEOC Nuclear Control Group, Horizon Health EOC, and EM/ANB EOC. Regional health operational response command, control and coordination will be directed by Horizon Health and EM/ANB through the SJRH EOC and EM/ANB EOC, respectively. The EOCs for Vitalité Health and Service NB (Health Services) may activate, as required (see Section 1.6.6 and 1.6.7 for details).

The Technical Advisory Group (TAG) is part of the PEOC. The primary mission of the TAG is to guide the overall analysis and technical assessment of the response, including the coordination of radiation monitoring and surveillance activities, analysis of the results of monitoring efforts, and providing recommendations on the adoption of emergency protective actions, i.e. countermeasures that must be taken promptly, in order to be effective. Health is represented in the TAG through the Chief Medical Officer of Health and the Provincial Radiation Medical Advisor.

In the field setting, command and control of health services will be exercised as follows, and as illustrated in Figure 3. Depending on the circumstances, health system responders may be required to deploy to Monitoring and Decontamination Centres (MDCs), reception centres (see Sections 5.4 to 5.5).

- **Field Command, Control and Coordination.** Health personnel with roles in the MDCs will report to an assembly area established by NB EMO, which will include the Command Post, Personal Protective Equipment trailer and tent, and an administrative tent with food and water supplies. In this assembly area, health personnel will be registered, briefed and provided with Personal Protective Equipment (PPE). Shift changes will occur in this area.

Horizon Health services operations will be coordinated through a Horizon Health Services Coordinator located at each of the two MDC Field Command Posts established in the assembly areas of the MDCs, outside the Emergency Planning Zone (Emergency Evacuation Zone)) (see Section 5.1.1 for definition) by NB EMO. The Coordinator's role is to represent the various health services roles in the field to coordinate operational activities, relay tactical issues, as well as access and communicate information and expertise from the SJRH EOC such as changes in clinical guidelines and advice required by field health workers. Field health workers will communicate to the Horizon Health Coordinator in the Command Post via NB EMO staff positioned at each station in the field. SJRH EOC will remotely provide tactical support, guidance, direction and coordination for each of health services in the field through the Health Services Coordinators in the two Field Command Posts. Similarly, EM/ANB field operations coordination will be provided through a single EM/ANB Operational Support Unit responsible for both MDC Field Command Posts. The EM/ANB coordinator will also communicate with the EM/ANB EOC situated in Moncton.

A Canadian Red Cross Control Centre will be established at each primary reception centre, established on either side of the area being evacuated. A Red Cross Site Manager will be assigned to each to provide oversight and may also have responsibility for secondary reception centres, if activated. Each health organization will each assign a lead while they are on-site and report to the Control Centre, to ensure a liaison function within the Red Cross Control Centre. Health system organizational leads are not necessarily dedicated positions i.e. the roles may be assigned to individuals fulfilling a specific Health role in the reception centre.

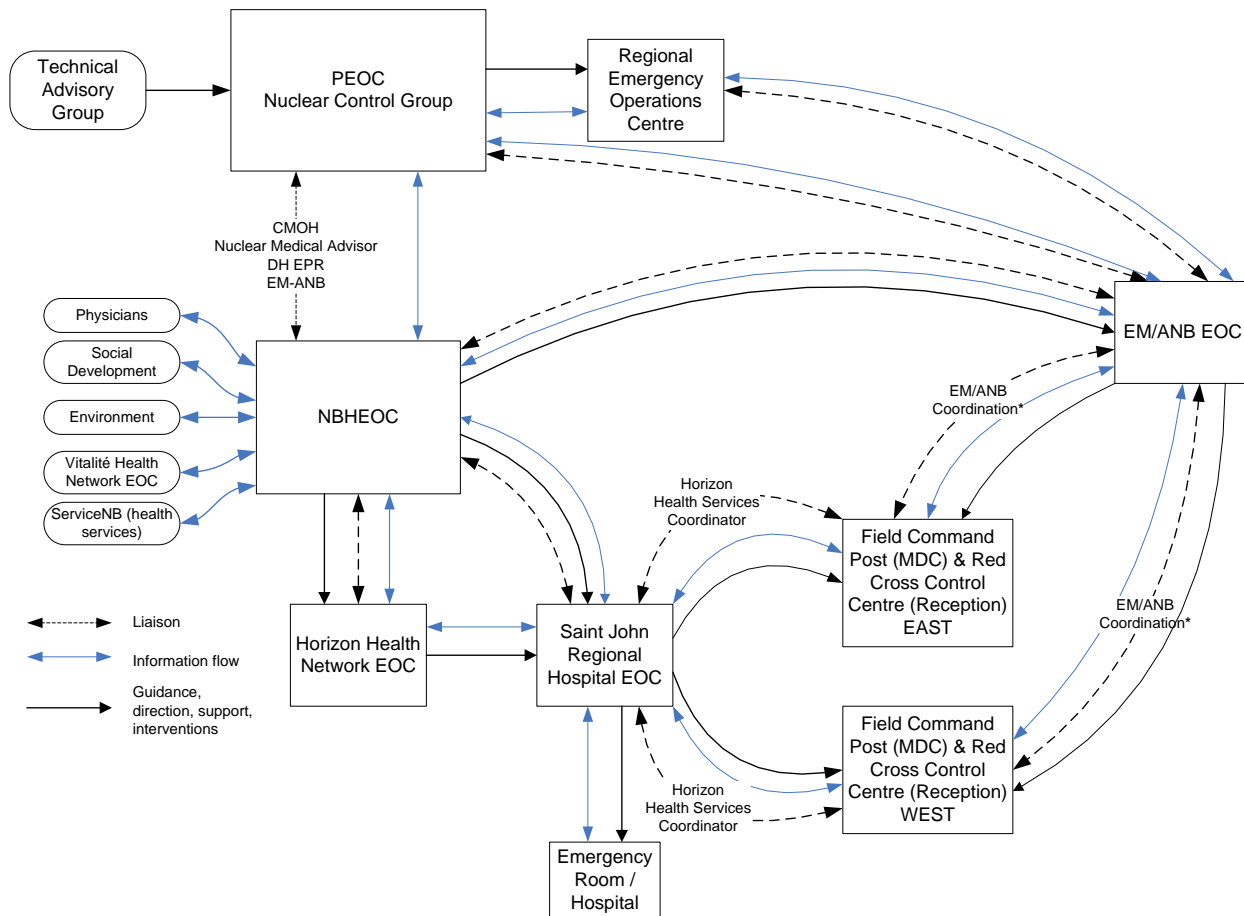


Figure 3. Provincial Off-site Emergency Response Structure

*EM/ANB will assign one operational support unit to provide coordination at both the easterly and westerly Field Command Posts in the assembly area of the MDCs.

1.4 Guiding Principles

The following guiding principles govern health system response to any nuclear incident.³

- **Contamination with radioactive materials is not immediately life-threatening.** Decontamination procedures are straightforward; removing clothing and washing the body thoroughly with soap and water will eliminate most external contamination (see Box 3).
- **Treatment of traumatic injuries takes precedence over decontamination.** The radiation precautions defined in this plan are generally adequate to provide protection for first responders, emergency medical personnel, and clinicians.
- **Fear of radiation may be a greater hazard than radiation itself.** Unfamiliarity with radiation can breed unwarranted fear of the unknown. Accurate and timely

³ Adapted from *Population Monitoring in Radiation Emergencies: a Guide for State and Local Public Health Planners* (see References – Section 16).

information, clearly communicated, are vital. Well-managed communication prior to and during an incident will help to lessen public fear and allow people to make informed decisions.

- **Inter-agency and multi-jurisdictional coordination and partnership.** The NB Annex to the *Federal Nuclear Emergency Plan* states that a nuclear emergency “will require a coordinated response at all levels; federal, provincial and regional in accordance with, and respect of, the authorities and jurisdictions of each order of government, and in accordance with relevant federal and provincial agreements.” In addition, there may be private sector resources within the region (e.g., radiation specialists) that could augment health system capabilities.
- **Initial off-site monitoring focus is on preventing acute radiation health effects.** Initial population monitoring activities should focus on preventing acute radiation health effects. Cross-contamination issues (spreading of radioactive materials from one person, object or place to another) are a secondary concern, especially if the contaminated area or the affected population are large.
- **Scalability and flexibility.** Scalability and flexibility are important considerations in response. Two examples will illustrate. First, unless the emergency is clearly under control and unlikely to escalate, everyone who may be required to respond should report for duty unless otherwise instructed. It is simpler to stand down those not required than to scale up if the situation deteriorates quickly. Second, in an off-site emergency, the radiation survey methods or screening criteria for initial monitoring may have to be adapted to the severity and magnitude of the incident and availability of resources.

1.5 Planning Assumptions

****Planning assumptions ending with an asterisk indicate a policy decision as well as a planning assumption.***

1.5.1 General

- Because of the safety features of the PLNGS, any accident at the plant is likely to provide some warning time before any release of radiation occurs.
- A nuclear event at PLNGS may result in a nuclear emergency with widespread distribution of radioactive material, potentially resulting in injuries to workers and requiring a 20 km evacuation of the area around the station.*
- The general public within the 20km evacuation planning zone could be externally contaminated by the release of radioactive material dispersed widely in a plume.⁴
- The 20km Emergency Planning Zone (Emergency Evacuation Zone) consists of:
 - approximately 3,117 residents, including seasonal residents;
 - 600 PLNGS plant workers;
 - transient residents, such as patrons of the New River Beach provincial park could bring the number of residents to as high as 5,000 (this number includes PLNGS

⁴ *Radiation Event Medical Management (REMM) website. www.remm.nlm.gov (see Section 16 – References)*

- employees, permanent residents, transient residents and extra PLNGS workers that would be expected to be on-site during a plant maintenance closure);
- 20 to 40 Extra-Mural Program patients (some expected to be non-ambulatory);
 - one special care home (10 beds, level 1 & 2 residents) and zero nursing homes.
- PLNGS will be able to manage the decontamination and transportation of their approximately 300 employees out of the contaminated area.
 - The scale of the morbidity and mortality attributable to a particular radiation emergency may be unclear for a prolonged period.⁵
 - When radioactive material has been released by PLNGS, there is a 99% probability that the risk of deterministic (morbidity or mortality) effects will be zero beyond approximately 1 km from PLNGS. Beyond 3 km there is a 99.4% probability that the risk of deterministic effects will be zero.⁶
 - Where PLNGS declares a General Radiation Emergency, there will also be a provincial “Declaration of a State of Emergency” by the Minister of Justice and Public Safety.
 - The consequences of a nuclear event at the PLNGS will implicate multiple jurisdictions, departments/agencies and orders of government.
 - A nuclear emergency will likely have a major effect on the well-being of New Brunswickers; the psychological and social implications on individuals and communities may be severe and could potentially outweigh the medical implications. In particular, evacuees will be distressed for a number of reasons such as having to leave their homes, fear of radiation, uncertainty about the future and the invasiveness of the decontamination process. There will be a need for information and psychosocial support. Access to mental health services and public health information will be required.
 - Where there has been a release of radioactive material, affected residents within the 20km evacuation planning zone may not be able to return to their homes for a period of time, until risk assessment and remediation activities have been completed.
 - There may be circumstances under which residents will be asked to shelter-in-place. This may be the most appropriate option if the safety risk to evacuate is too high or the risk of exposure during evacuation outweighs the utility of attempting to evacuate.
 - Approximately 10% of the population in the 20km Emergency Planning Zone (Emergency Evacuation Zone) (312 people) will evacuate the area through unmonitored egress points, i.e. not through the established traffic control points on Highway 1. Those with a perceived risk of contamination may self-present at a location such as reception centres or emergency departments, seeking radiation monitoring.⁷
 - The recovery (transition) phase of the emergency response will be extensive and potentially of long duration.
 - Transition to the recovery (transition) phase will occur:
 - after the PLNGS radioactive plume release has ended;
 - PLNGS in a stable state with no further chance of another release; and

⁵ International Atomic Energy Agency. *International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources*. (see Section 16 – References)

⁶ Emergency Solutions International, International Safety Research, MacDonald HAZ-MAT CBRNE Consulting Inc. *NB EMO / NB Power Mass Decontamination Planning Basis*. (2002). p.22.

⁷ Emergency Solutions International, International Safety Research, MacDonald HAZ-MAT CBRNE Consulting Inc. *NB EMO / NB Power Mass Decontamination Planning Basis*. (2002).

- when all necessary protective actions have been executed in the 20km Emergency Planning Zone.
- A provincial state of emergency will remain in effect following transition to the recovery (transition) phase.

1.5.2 Evacuation and Decontamination

- In the event of a precautionary evacuation, evacuees will have the choice to egress to either the east or west of the 20km evacuation planning zone, through the established traffic control points on Highway 1 (Prince of Wales interchange to the east and Pennfield Ridge to the west). Evacuees will egress east and west in equal numbers.
- If an evacuation occurs after or during a release of radioactive material, authorities will direct evacuees to egress east or west only if it is deemed necessary for safety reasons by the Nuclear Control Group i.e. depending on the direction of the plume.*
- Only those (2,500 residents and PLNGS workers) within the 12km radius of PLNGS will be at risk of contamination. After a release of radioactive material, 1 in 5⁸ evacuees will be contaminated (500 contaminated; 2,000 uncontaminated).
- The decontamination process through the MDC will take 10 to 15 minutes per evacuee.
- The decontamination process (excluding non-contaminated evacuees, radiation monitoring and registration) based on a full evacuation scenario of the 20km Emergency Planning Zone (or EPD - (Emergency Evacuation Zone)) will be completed within 24 to 48 hours.⁹
- During the decontamination process at the MDC, the removal of all clothing will reduce contamination on the evacuee up to 90% and rapid washing of exposed skin and hair will remove an additional 5%, for a total of 95% reduction in contamination¹⁰.
- If there has been a release of radioactive material, no privately-owned vehicles from the Emergency Evacuation Zone will be permitted past the traffic control points.*
- Evacuees may experience long wait times in the pre-decontamination area.
- Up to five portal monitors will be added to each MDC in the pre-decontamination area, as required to relieve wait times for evacuees.
- No privately owned vehicles (from evacuees) will proceed from the Emergency Evacuation Zone.*
- School buses will be used to transport non-contaminated and decontaminated evacuees to reception centres. At any given time there will be a bus on route to reception centres, one returning from reception centres, and another remaining at the MDC for boarding.*
- Some evacuees will be non-compliant with the monitoring and decontamination process. Non-compliant evacuees will be quarantined to protect public safety and limit the spread of contamination.*

⁸ Emergency Solutions International, International Safety Research, MacDonald HAZ-MAT CBRNE Consulting Inc. *NB EMO / NB Power Mass Decontamination Planning Basis*. (2002). p.22.

⁹ Assuming 1 in 5 are contaminated (500), 2 decontaminated sites activated, 2 lines within each site, 10 minute lag between evacuees; 6 decontaminated per hour: $500 \div 4 \text{ lines} = 125$; $125 \div 6 \text{ per hour} = 21 \text{ hours}$ (conservative estimate without any contingency factored in).

¹⁰ Kumar V., Goel R., Chawla R., Silambarasan M., Sharma R.K. *Chemical, biological, radiological, and nuclear decontamination: Recent trends and future perspective*. J Pharm Bioallied Sci. 2010 Jul-Sep; 2(3): 220-238. Retrieved August 31, 2016 from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3148627/>

- PLNGS will manage on-site decontamination and transportation of on-site employees. If PLNGS employees are egressing after a release of radioactive material however, they will need to be screened and if necessary, decontaminated via the MDC. Health personnel within the MDC will not be required in this instance.*

1.5.3 Pre-hospital (excluding MDC and reception centres) and Hospital Services

- The SJRH will serve as the designated hospital for receiving contaminated casualties.*
- There will be a need for staff redeployment from within Horizon Health and EM/ANB based on identification of essential services and prioritization of services.
- Support from Vitalité Health as mutual aid for human resources, will be provided if required, to create surge capacity for Horizon Health.
- A large surge of inpatients will not be as a result of the emergency, although the specialized needs of contaminated casualties and potential cases of acute radiation syndrome will place significant strain on the SJRH.
- For the first 24-48 hours after the media announces a release of radioactive material from PLNGS and a declaration of a provincial state of emergency, there will be a surge in 'worried-well' visits to the Charlotte County Hospital (CCH), SJRH and St. Joseph's Hospital. Other facilities in the region, such as Sussex Health Centre, Deer Island Health Centre, Campobello Health Centre, Grand Manan Hospital will experience a lesser surge in 'worried-well' visits.
- Requests for Potassium iodide (KI) and reassurance monitoring (for contamination) will be the biggest factors influencing the number of 'worried well', particularly where there has been a release of radioactive material prior to evacuation. Specifically, approximately 10% of the population in the surrounding area (12,500 in the Greater Saint John Area and 2,655 in Charlotte County) will present as 'worried well' for radiation monitoring, regardless of whether or not they have been exposed.¹¹
- Mass Casualty protocols may be activated by the SJRH to manage the surge in 'worried well' and/or casualties related to the emergency.*
- The response time for accessing radiological de-corporating agents from NESS (Ottawa) to NB, as requested through the DH in the event of a nuclear emergency, will be a minimum of 5-6 hours and up to 24 hours.
- The SJRH decontamination system has the capacity to decontaminate 9 to 18 people before the cistern capturing waste water would need to be emptied.
- Upon request, NB Power laboratory services can provide personnel and portable equipment to the SJRH for identifying isotopes from human samples and for obtaining whole body radiation measurements, to support physicians in the treatment of acute radiation syndrome.
- Those from the 20km Emergency Evacuation Zone who bypass traffic control points and the MDC will:
 - present for emergency department and/or emergency social services within 24 hours of the evacuation order, once they realize they may be contaminated;
 - require registration with Red Cross, as they will be considered evacuees.

¹¹ International Atomic Energy Agency, 2006. *Manual for First Responders to a Radiological Emergency*. IAEA EPR-First Responders.

1.5.4 Reception Centres

- Twenty percent of evacuees (623 people) from the 20km Emergency Planning Zone (Emergency Evacuation Zone) will stay overnight in a reception centre.
- Sheltering of evacuees in a reception centre will not exceed seven days/nights before relocation to other suitable accommodations such as a hotel or with a family member. After 72 hours, the number of people remaining in reception centres will be close to zero.
- There will be an increased risk of communicable disease or illness in reception centres, with longer durations of stay.
- Some evacuees will not be able to access their family physician or prescription medications and may require these services while in reception centres, particularly for existing chronic health conditions.

1.5.5 Management of Contaminated Decedents

- Restrictions to cultural or spiritual practices may be required where there is risk of contamination or exposure to funeral home staff, family and friends of the deceased.¹²
- Radiation-specific precautions (such as special burial procedures or personal protective equipment) will not be required for decedents with exposure to radiation without contamination. Normal procedures can be followed and the decedent can be released to the funeral home (or SJRH if Coroner Services orders an autopsy).¹³
- Any deterministic effects resulting from a nuclear emergency at PLNGS will likely be an employee of PLNGS.
- It is plausible for a decedent to be contaminated if the death occurred at PLNGS, within the 20km Emergency Evacuation Zone, one of the MDCs or in hospital after having been transported from one of these three areas.
- A decedent may be contaminated with radioactive material but the contamination will not have been the cause of death.
- Internal contamination in a decedent is not volatile and will remain until natural radioactive decay is complete. The dose rate outside of a body with internal contamination will be small.⁹
- A radiological event at PLNGS leading to an injury to workers involving a radioactive embedded object will be an unlikely scenario; the probability of such an event however, will not be zero.
- Contaminated decedents will be transported and decontaminated only after the emergency has been contained and all live evacuees have been decontaminated and brought to safety.

1.5.6 Communications and Public Messaging

- A nuclear emergency will create intense public and media interest within the province, nationally and internationally;
- There will be widespread circulation of conflicting information misinformation and rumours;

¹² based on recommendations from the U.S. Department of Health & Human Services. *Radiation Emergency Medical Management, Management of the Deceased*. Retrieved August 25, 2016 from <https://www.remm.nlm.gov/deceased.htm>

¹³ U.S. Department of Health & Human Services. *Radiation Emergency Medical Management, Management of the Deceased*. Retrieved August 25, 2016 from <https://www.remm.nlm.gov/deceased.htm>

- Radiation concepts and terms are poorly understood by the public.
- Professional responders will have the same concerns as members of the public.
- Dissemination and coordination of consistent, accurate and timely messaging among key stakeholders will be one of the most important elements of the response and recovery;
- Spill over from media in other provinces and from across the United States border will affect New Brunswickers' perspective;
- Media and social media are essential partners in the delivery of relevant information to the public;
- Information will circulate rapidly through social media.
- Tele-Care 811 will experience an intense surge in call volumes largely related to general information inquiries, particularly in the first 24 to 48 hours and an increased demand will persist for a prolonged period of time.

1.6 Responsibilities

1.6.1 Federal Government

Overall responsibilities with respect to nuclear emergencies in Canada are defined by the *Federal Nuclear Emergency Plan*. The federal government is responsible for the development, control and regulation of peaceful uses of nuclear energy, manages nuclear liability, and coordinates with and provides support to provinces in their response to a nuclear emergency.

1.6.2 Provincial Government

Under the *Federal Nuclear Emergency Plan*, provincial governments have primary responsibility for protecting public health and safety, property and the environment within their borders. Accordingly, the Province of New Brunswick has issued the *Point Lepreau Nuclear Generating Station Off-site Emergency plan*, containing basic information, detailed responsibilities and immediate actions required as well as specific responses by relevant agencies. For purposes of health response, the following are the primary provincial government partners.

- **Department of Justice and Public Safety.** Responsibility for coordination of an off-site nuclear emergency rests with the provincial Nuclear Control Group (Control Group), normally established at the PEOC in Fredericton.
- **Department of Health.** Responsibility for the coordination and management of the health system response in an off-site nuclear emergency rests with the NBHEOC Management Group. This includes coordination of the delivery of medical, mental health, and public health services in or affecting the province (or any part of the province). Responsibilities include but are not limited to: the continuity of health services, supporting other provinces/adjointing US States and the federal government, and providing assistance to the RHAs and EM/ANB. The DH is also responsible for event-specific policy direction and authorizing extraordinary spending.
- **NB Power.** As the Nuclear Generating Station Operator, NB Power is responsible for on-site emergency planning, preparedness and response.

- In the event of an *on-site emergency*, the PLNGS Shift Supervisor will activate a Contingency Desk which will become the point of contact between the plant and external agencies.
- In the event of an *off-site emergency*, PLNGS will activate and then manage off-site aspects of the emergency from its Offsite Emergency Operations Centre located away from the plant, at 3 Magaguadavic Drive, St. George, NB. It will be used as a communications centre from which radiation surveys will be directed. Communication links with NB EMO are set up from this location.

1.6.3 Municipal Government

PLNGS is located in the County of Saint John but beyond the boundaries of the City of Saint John. Emergency management at the local level is therefore the responsibility of the municipality of Saint John. In event of a fire at PLNGS, the Musquash Volunteer Fire Department responds with the support of the Saint John Fire Department, which holds a contract with NB Power to provide fire suppression at the plant. Saint John Fire Department also operates a Hazardous Materials Emergency Response Service, one of two or three such teams in the province.

1.6.4 Horizon Health Network

The Horizon Health EOC Executive Management Group is responsible to the Minister of Health through the Deputy Minister for delivery of most (but not all) nuclear emergency health services to the affected population. Horizon Health will receive its policy direction from the DH through NBHEOC Management Group when activated. Horizon Health is also responsible for continuity of essential health services to the population within Horizon Health. At the corporate level this means responsibility for policy, planning and readiness, and coordination and oversight of response.

In an on-site or off-site emergency, the SJRH will be the designated medical facility for the treatment of radiation-related injuries and for receiving contaminated casualties requiring medical treatment from within the 20 km Emergency Evacuation Zone, PLNGS, and both MDCs. The SJRH designation is based on the following criteria:

- Level 1 trauma facility with the necessary infrastructure and 24/7 medical and surgical specialist coverage;
- Critical care capability, advanced laboratory, diagnostic imaging, pharmaceuticals, and other support that may be needed to care for a patient experiencing acute radiation syndrome;
- Availability of critical care specialists and a range of allied health professionals on a 24/7 basis;
- On-site Radiation Medicine and Nuclear Medicine specialists;
- Approximate location to PLNGS.

1.6.5 Extra-Mural Program / Ambulance NB (EM/ANB)

EM/ANB is responsible to the Minister of Health through the Deputy Minister for the delivery of ambulance services to the PLNGS as well as the provision of ambulance and extra-mural services, including at MDCs, and at reception centres. EM/ANB will receive its policy direction from the DH through NBHEOC Management Group when activated. EM/ANB is responsible for the continuity of service to the community at large throughout the emergency response.

1.6.6 Vitalité Health Network

Vitalité Health will monitor and maintain situational awareness throughout the response and may be called upon to provide psycho-social support to the community at large as well as to provide support to Horizon Health to increase surge capacity, if resources are overwhelmed. Vitalité Health will receive its policy direction from the DH through NBHEOC Management Group when activated.

1.6.7 Service NB (Health Services)

Although not directly involved in a Point Lepreau off-site nuclear emergency response, Service NB (Health Services) is part of the NBHEOC executive team and RHA EOCs. Service NB (Health Services) as a GNB departmental division is integrated in Horizon Health and will be depended upon for supporting Horizon Health with required supply chain and information systems needs throughout the response.

1.7 Readiness

Operational readiness for health nuclear emergencies is achieved through the three pillars of education, training and exercises. Nuclear emergency matters are to be incorporated as an integral part of the education, training and exercise programs of the DH, Horizon Health, Vitalité Health and EM/ANB and all other regional partners, in cooperation with PLNGS and NB EMO. Exercise requirements specific to nuclear emergencies are promulgated in the *New Brunswick Annex, Federal Nuclear Emergency Plan*. Guidance for managing exercises may be obtained from the *DH Exercise Planning Manual* (see Section 16 – *References*).

1.8 Plan Management

1.8.1 Distribution, Location and Accounting

Responsibility for production, distribution, review and amendment of this *Health Nuclear Emergency Plan for the Point Lepreau Nuclear Generating Station* is the responsibility of the Director, Emergency Preparedness and Response Branch (EPR Branch) of the DH. S/he will distribute paper or electronic copies as required to achieve effective emergency preparedness and response and posting final copies on the central repository housed on the DH external Sharepoint site for DH EPR Branch, accessible to the Provincial Health Nuclear Planning Committee, DH, EM/ANB, Service NB (Health Services), Horizon Health and Vitalité Health. To ensure that all documentation in circulation is current and accurate, photocopies are not to be made without approval from the Director, EPR Branch and are to be clearly identified as copies. Distribution of sub-plans is at the discretion of the respective health system partner, each of which is responsible for review, updating and amendment of its own sub-plan.

1.8.2 Review and Continuous Improvement

To be effective, an emergency plan must be regularly reviewed, tested and updated. Each emergency or exercise is an especially important opportunity to assess its effectiveness and to incorporate new lessons. Although the Director, DH EPR Branch has ultimate responsibility for keeping this plan current and effective, it is incumbent on all holders to suggest amendments or improvements as soon as the requirement becomes evident. Periodic reviews are to be conducted as follows:

- a validation check one year after initial promulgation;
- a formal review every three years thereafter; and

- an operational review as required, and as part of the follow-up procedure following any real or exercise event.

1.8.3 Amendment

The Director, DH EPR Branch, will make routine corrections and amendments as required to reflect existing policy and direction. When more substantive changes are required, s/he will coordinate the proposed amendment with all relevant stakeholders. When any amendment is published, the Director, DH EPR Branch will arrange for distribution of a copy to each custodian, who is then responsible for updating his or her documents. When changes are substantive, custodians are to ensure that all personnel with health nuclear emergency responsibilities in their organization are made aware of and understand the change. As part of NB EMO's annual cycle of provincial nuclear plan updates, any changes to the *Provincial Health Nuclear Emergency Plan for the Point Lepreau Nuclear Generating Station* affecting the *Point Lepreau Nuclear Generating Station Off-site Emergency plan* will be submitted by March of each year through the DH EPR Branch (as the DH Provincial Emergency Action Committee member).

2. RADIATION AND HEALTH

2.1 Exposure *versus* Contamination

Someone who has been exposed to radiation is not necessarily contaminated.

- **Exposure** means that an individual has experienced radioactive waves or particles penetrating their body. An x-ray, for example, is a harmless form of exposure.
- **Contamination** means that an individual has radioactive material on their clothing or skin, or inside their body through inhalation, ingestion or a wound.

Patients who have been exposed but not contaminated do not require radiation safety precautions. Contaminated individuals, however, require decontamination for their own safety and that of care givers. Decontamination involves careful removal and disposal of clothing followed by washing of the skin using specific procedures (see Box 3).

2.2 Health Impact of Radiation

Experience has shown that fear of radiation can have a greater impact on a population than the effects of a nuclear incident itself.¹⁴ It is therefore important that all those who have health nuclear emergency management responsibilities, and who may interact with the public, understand the principles. It is equally important that key messages and clear explanation of the issues be part of the communication strategy. An overview of key concepts and principles of radiation is provided in Box 1 on the following page.

2.3 Potassium Iodide (KI)

Potassium iodide (KI) pills are distributed periodically, free of charge, to every residence within 20 kms of PLNGS. Contingency supplies are also stockpiled by NB EMO and at selected Horizon Health facilities and sites, selected Royal Canadian Mounted Police (RCMP) detachments, and the Musquash Fire Department. A KI protocol and order will be issued by the Public Health New Brunswick (PHNB) in real time, as required during an event. To prevent misunderstanding and misuse, clear explanation of KI use must be part of the provincial communication strategy (refer to *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*). Health messaging such as those delivered through Tele-Care 811 must be integrated provincially for consistency. An overview of key concepts and principles is provided in Box 2 on page 10.

¹⁴ A good case study is provided in Osif, et. al., *TMI 25 Years Later: The Three Mile Island Nuclear Power Plant Accident and its Impact* (see Section 16 - References).

Box 1: Radiation and Health Factsheet

Radiation

As unstable atoms decay, they release radiation in the form of electromagnetic waves and subatomic particles. Some of this radiation can detach electrons from other atoms (ionize) as they pass. Alpha and beta particles, and X-rays and gamma rays, are forms of ionizing radiation. Non-ionizing radiation, such as microwaves or radio waves, do not change the structure of atoms.

Types of Health Effects

High doses of ionizing radiation can damage or destroy cells, resulting in serious health effects or even death, depending on the level of radiation dose received. These are known as **deterministic effects** because they can be determined to be a direct result of radiation exposure. Examples include burns, cataracts, sterility, and in extreme cases, death. Short-term, high-level exposure is referred to as 'acute' exposure. Health effects from acute exposure usually appear quickly, e.g., burns and radiation sickness. Radiation sickness is also called 'radiation poisoning.' It can cause premature aging or even death. If the dose is fatal, death usually occurs within two months. The symptoms of radiation sickness include nausea, weakness, hair loss, skin burns or diminished organ function. Sometimes the effects of a radiation dose are not immediately observable; therefore no direct connection can be made between the radiation dose and its possible effects. These are referred to as **stochastic effects**. Increased levels of exposure make stochastic effects more likely to occur, but do not influence the type or severity. Examples include an increased incidence of cancer in exposed persons and the possibility of genetic effects in their offspring.

Effects on Cells

Ionizing radiation affects living tissue on a cellular level by breaking chemical bonds and altering the structure of the molecules. Three things can happen to a cell as a result.

1. **The cell may repair itself.** In this case there is no effect on the body.
2. **The cell may mutate.** If radiation affects the cell's genetic coding (DNA), it may result in abnormalities when the cell divides and multiplies. In this case, there are three possible results: the cell may be destroyed by the immune system; it may survive but lose some function; or it may survive but be dysfunctional. In the first two cases there is no effect on the body. In the third case, dysfunction may result in cancers, reproductive failures, or genetic effects.
3. **The cell may die.** There are three possibilities when cells are killed by radiation. If only a few cells die, the body will heal itself and survive. If more cells are killed, the body may survive but with prolonged symptoms. If too many cells are killed, the person will die.

Contamination

People who are **externally contaminated** with radioactive material can contaminate other people or surfaces that they touch. For example, people who have radioactive dust on their clothing may spread it when they sit on chairs or hug someone. People who are **internally contaminated** can expose people nearby to radiation from the material inside their bodies. The body fluids (blood, sweat, saliva, urine) of an internally contaminated person can contain radioactive materials. Coming in contact with these body fluids can result in contamination and/or exposure.

Sources

- Health Canada. www.hc-sc.gc.ca/hc-ps/ed-ud/event-incident/radiolog/info/body-corps-eng.php
- US Center for Disease Control. www.bt.cdc.gov/radiation/contamination.asp
- US Environmental Protection Agency. www.epa.gov/radiation/
- International Atomic Energy Agency. http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1578_web-57265295.pdf

Box 2: Potassium Iodide (KI) Factsheet

Description

Potassium iodide (KI) is a blocking agent that comes in the form of a tablet. It protects the thyroid gland against absorption of radioactive iodine.

How it Works

The normal thyroid gland collects naturally-occurring iodine manufactured by the body or consumed in food and medicine. Accidental release of a nuclear plume could release a radioactive form of iodine into the air. That may cause internal contamination if it is breathed into the lungs or ingested with contaminated food or water. The thyroid gland would then absorb and retain this radioactive chemical. An appropriate dose of KI taken before exposure can prevent this by filling the thyroid with harmless iodine. Any radioactive iodine will then simply be excreted in the urine. It is important to remember that KI is a preventive (prophylactic) measure and must be taken before exposure.

Effectiveness

The effectiveness of KI in blocking radioactive iodine depends on how quickly the KI is taken (the sooner the better), how fast it is absorbed into the blood and the amount of radioactive iodine to which a person is exposed.

Instructions

KI should be taken as advised by public health or emergency management officials. Taken as instructed, KI can lower the amount of radioactive iodine that is retained in the body and lower the risk of serious damage to the thyroid gland. A single initial dose of KI protects the thyroid gland for 24 hours and, except in extreme cases, should be all that is required. Repeat doses should only be taken on the advice of public health or emergency management officials. Repeat doses should not be taken by pregnant and breastfeeding women or newborn infants (less than 1 month old). The area should be evacuated until levels of radioactive iodine in the environment fall. Taking a higher dose of KI, or taking KI more often than recommended, does not offer more protection and can cause severe illness or even death.

Risks and Side Effects

KI may be harmful for some individuals because of the high levels of iodine it contains. In general, however, the benefits of taking KI outweigh the risks for all age groups. If it is taken properly and as directed, KI is unlikely to have side effects except, in some cases, intestinal upset, allergic reactions, rashes or inflammation of the salivary glands. People with the following conditions should seek medical advice before taking KI pills:

- allergies to iodine (note that a seafood or shellfish allergy does not necessarily mean an allergy to iodine); or
- skin disorders such as dermatitis herpetiformis or urticaria vasculitis.

People with thyroid disease (for example, multinodular goiter, Graves' disease or autoimmune thyroiditis) may be treated with KI, but under careful supervision of a physician, especially if dosing lasts for more than a few days.

Location of Stocks

KI pills are distributed periodically, free of charge, to every residence within 20 kms of PLNGS. Contingency supplies are also stockpiled by the NB EMO at selected Horizon Health facilities and sites, selected RCMP detachments, and the Musquash Fire Department. If an evacuation is ordered, pills will also be made available at reception centres.

Sources

- *US Center for Disease Control.* www.bt.cdc.gov/radiation/pdf/ki.pdf
- *Population Monitoring in Radiation Emergencies: a Guide for State and Local Public Health Planners* (see References, section 16)

3. MANAGEMENT OF CONTAMINATED INDIVIDUALS

3.1 Overview

The relevant guiding principles governing care for contaminated individuals are that contamination with radioactive materials is not immediately life-threatening and that treatment of traumatic injuries takes precedence over decontamination (see Section 1.4). Within Horizon Health facilities and sites, procedures outlined in this document should be consistent with those promulgated for Emergency Code Brown (Radiological).

3.2 Decontamination of Patients and Evacuees

The *Provincial Health Nuclear Emergency Plan for PLNGS* has been written in the context of the full concept of operations for the decontamination of evacuees as per the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*. The concept of operations includes an MDC on both side of the Emergency Evacuation Zone (see Section 5.1.1) and the capability for the SJRH to receive potentially contaminated casualties from PLNGS, from within the 20km Emergency Evacuation Zone, or from either MDC.

3.2.1 Decontamination Responsibilities

Contaminated patients from the PLNGS facility will, if possible, be decontaminated by PLNGS radiation protection qualified staff to the extent possible before transport by ambulance to SJRH. Anyone exposed or contaminated during an incident at the PLNGS site will, without exception, be transported to the Emergency Department at SJRH in accordance with PLNGS, SJRH and EM/ANB protocols. PLNGS employs specially trained radiation protection qualified staff whose function is to manage potentially exposed or contaminated patients on-site. PLNGS radiation protection qualified staff will always accompany the ambulance when a contaminated patient from PLNGS is being transported to the receiving facility i.e. SJRH.

As previously discussed, SJRH is the designated facility for the receiving contaminated evacuees from PLNGS, within the Emergency Evacuation Zone and from both MDCs who require medical treatment or who fail decontamination. As the designated hospital for treating and receiving casualties with radiation-related injuries and contamination, the SJRH is required to maintain a detailed internal plan and exercise it periodically. Further details on decontamination issues in a Point Lepreau off-site nuclear emergency are addressed in Section 5.

3.2.2 Decontamination Procedures

The principles of decontaminating individuals requiring medical treatment are described in Box 3 on the follow page. Authoritative protocols for individual organizations are promulgated in the relevant plans. For decontamination in the field for evacuees not requiring medical treatment, refer to the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*.

4. STAFF RADIATION PROTECTION, PROCEDURES AND PRACTICES

4.1 Principles of Protection

Health emergency workers require protective measures when dealing with contaminated patients. It is important to remember, however, that patients who have been exposed but not contaminated do not pose any radiation hazard. The aim of staff protection is to maintain exposure and contamination at levels “as low as reasonably achievable” (ALARA). This is achieved by monitoring radiation and minimizing exposure.

4.2 Detection and Monitoring

Levels of exposure to health emergency workers will be monitored in all settings or situations designated as requiring radiation dosimetry through the wearing of Thermoluminescent Dosimetry (TLD) badges or Direct Reading Dosimeters (provided either through PLNGS or Health Canada). Notwithstanding, in certain instances, such as those involving EM/ANB treatment and transport of a contaminated casualty from PLNGS exposure levels may need to be monitored through other means either by measuring environmental dose rates and logging the time spent in that environment or utilizing a buddy system whereby PLNGS radiation protection qualified staff equipped with a dosimeter monitors while accompanying the health emergency worker. PLNGS and Health Canada will be responsible for providing radiation dosimetry equipment and monitoring as required, in accordance with criteria and procedures set out in the *Point Lepreau Nuclear Generating Station Off-site Emergency Plan*.

Health system organizations holding meters and badges are responsible for accounting for inventories in their internal organization-level plans. In a co-operation agreement between Horizon Health and PLNGS, PLNGS staff will provide radiation dosimetry and contamination monitoring equipment to the SJRH emergency department. A total of six radiation monitoring posts and associated PLNGS radiation protection qualified teams will be established in the emergency department setting. These assets will be deployed with the pre-positioning of the NB EMO Field Command Post and confirmed once in place by the NB Power’s Point Lepreau Off-site EOC. The SJRH nuclear medicine department personnel will be available to assist PLNGS Radiation protection qualified staff in providing radiation safety support within the hospital during a nuclear emergency.

4.3 Dose Limits

Radiation exposure of emergency workers will be monitored as described above in Section 4.2 and kept to a minimum as detailed in Section 4.4 below. Assignment of duties will ensure that no emergency worker receives a radiation exposure greater than that specified in *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (Requirement 11, Sections 5.49 to 5.59)*¹⁵. The exposure of any worker shall not exceed an effective dose of 20 mSv per year averaged over five consecutive years and shall not exceed 50mSv in any single year. A worker may voluntarily exceed the maximum single year dose limit of 50mSv if undertaking lifesaving actions; every effort shall be made to keep doses below ten times the maximum single year dose limit (500mSv) and only when the benefits to others clearly outweigh

¹⁵ International Atomic Energy Agency. (2015). http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

their own risk. Emergency workers will be trained in the use of personal protective equipment for radiation contamination and proper donning and doffing procedures. Because of fetal sensitivity to radiation, pregnant staff will not be assigned to contaminated patients or evacuees. Any helpers, members of the public who are aware of the risks and voluntarily help during a nuclear emergency shall not be allowed to take actions that could result in their receiving doses in excess of an effective dose of 50 mSv (IAEA, 2015).

4.4 Reduction of Exposure

Protection from radiation can be achieved by managing the four factors of time, distance, shielding and quantity.

- **Time.** The shorter the time exposed to radiation, the less will be accumulated. If patient contamination is severe, a rotating team approach should be adopted to keep individual health care worker exposure to a minimum.
- **Distance.** The further from the radiation source, the lower the dose. Exposure is reduced as an inverse square: in other words, doubling the distance reduces exposure by a factor of four. Those not involved in immediate care of a contaminated patient should remain as far away as possible. Those removing contaminated material from the patient should use long-handled forceps.
- **Shielding.** The principles of shielding are similar to standard epidemiological “universal precautions” of gloving, gowning, masking and other protective barriers, along with careful waste management and limitation of the time exposed to contamination. Standard hospital clothing such as uniforms, surgical clothing and masks, gowns, latex gloves, etc., provide adequate protection against radioactive contamination if used in conjunction with managing time, distance and quantity. For further details on personal protective equipment see Section 4.5 below.
- **Quantity.** Exposure rate is directly related to the amount of radioactive material. Any technique that reduces the amount of material in the treatment area is desirable.

4.5 Personal Protective Equipment

Personal protective equipment (PPE) is recommended as a form of shielding as described above in Section 4.4.

In context of a nuclear emergency, PPE is used to protect first responders, first receivers or emergency workers in radiation control zones (hot and warm zones) where there is either potential for exposure due to a release of radioactive material from PLNGS or 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. Physical boundaries will be in place in the field and hospital settings to demarcate the areas where PPE is required. Any movement between areas requires a protocol for removing and donning PPE.

PPE is used where there is a high risk of contamination and requires Tyvek coveralls, Tyvek booties, goggles / face shield, an inner and outer layer of gloves, and an N95 respirator.

Box 3: Personal Decontamination Factsheet for Individuals Requiring Medical Treatment

Aim

The aim of personal decontamination is to remove as much radioactive material as practicable in order to reduce the surface dose and prevent contaminant from entering the body. Careful skin decontamination can also enhance the accuracy of whole-body counting for estimation of internal body burdens.

Preliminary Considerations

Treatment of traumatic injuries takes precedence over decontamination. Those doing the decontamination should strive to keep their own exposure and contamination to levels “as low as reasonably achievable” (ALARA) by monitoring radiation and managing time, distance, shielding and quantity of exposure. There are three steps to decontamination: Survey, Clothing Removal and Cleansing.

Steps To Decontamination

1. Survey

Survey should be conducted by trained personnel using consistent technique. Exceptionally large amounts of surface or embedded radioactive material should be noted. A complete record of location and level of contamination must be kept.

2. Clothing Removal

In most cases, removal of the patient's clothing and shoes will remove most contamination. Careful cutting and rolling clothing away from the face can help to contain contamination. Collect and segregate all clothing and contaminated materials, place in plastic bags, and then label and store them in a secure area for subsequent monitoring and disposal.

3. Cleansing

- Decontamination should be undertaken from the area of highest contamination (if known) to the lowest. Except when urgent wound care is required, decontamination is performed in the following order:
 - head, face, and hands (to avoid internal contamination);
 - wounds and adjacent skin; and
 - other skin areas.
- Radioactive objects should be removed using long-handled forceps and stored in lead containers.
- Over-aggressive skin decontamination must be avoided since it may injure the natural barriers in the skin and allow absorption through the skin.
- Use warm (not hot or cold) water. Hot water could open the pores and allow ingress, while cold water could close the pores and make contamination more difficult to remove.
- For intact skin, dry decontamination methods (e.g., adhesive tapes to strip removable particulate matter) may be used. Liquid decontaminants (detergents or other mild chemical agents) are also suitable but may not be appropriate for wound cleansing or irrigation of body orifices.
- If possible, swabs should be taken from nostrils, ears, mouth and other orifices and segregated for later measurement of radioactivity. If inhalation is suspected, nose blow and cough samples should be collected.
- Decontamination must be thorough to prevent transfer of contamination to people and to other areas of the facility.

Sources

Patient Decontamination Recommendations for Hospitals. Hospital and Healthcare System Disaster Interest Group and the California Emergency Medical Services Authority. July 2005

Principles of Patient Decontamination. Appendix H to Atomic Energy Control Board publication GMA-3.

5. OFF-SITE EMERGENCY CONCEPT

5.1 Overview

5.1.1 Emergency Planning Zone (Emergency Evacuation Zone)

For purposes of nuclear emergency preparedness and planning, the *New Brunswick Annex, Federal Nuclear Emergency Plan* has established three Emergency Planning Zones around the PLNGS. Figure 4 depicts these three planning zones in the context of the main highway where traffic control points and MDCs will be established. The supporting medical facility and reception centres are depicted on both the East and West sides.

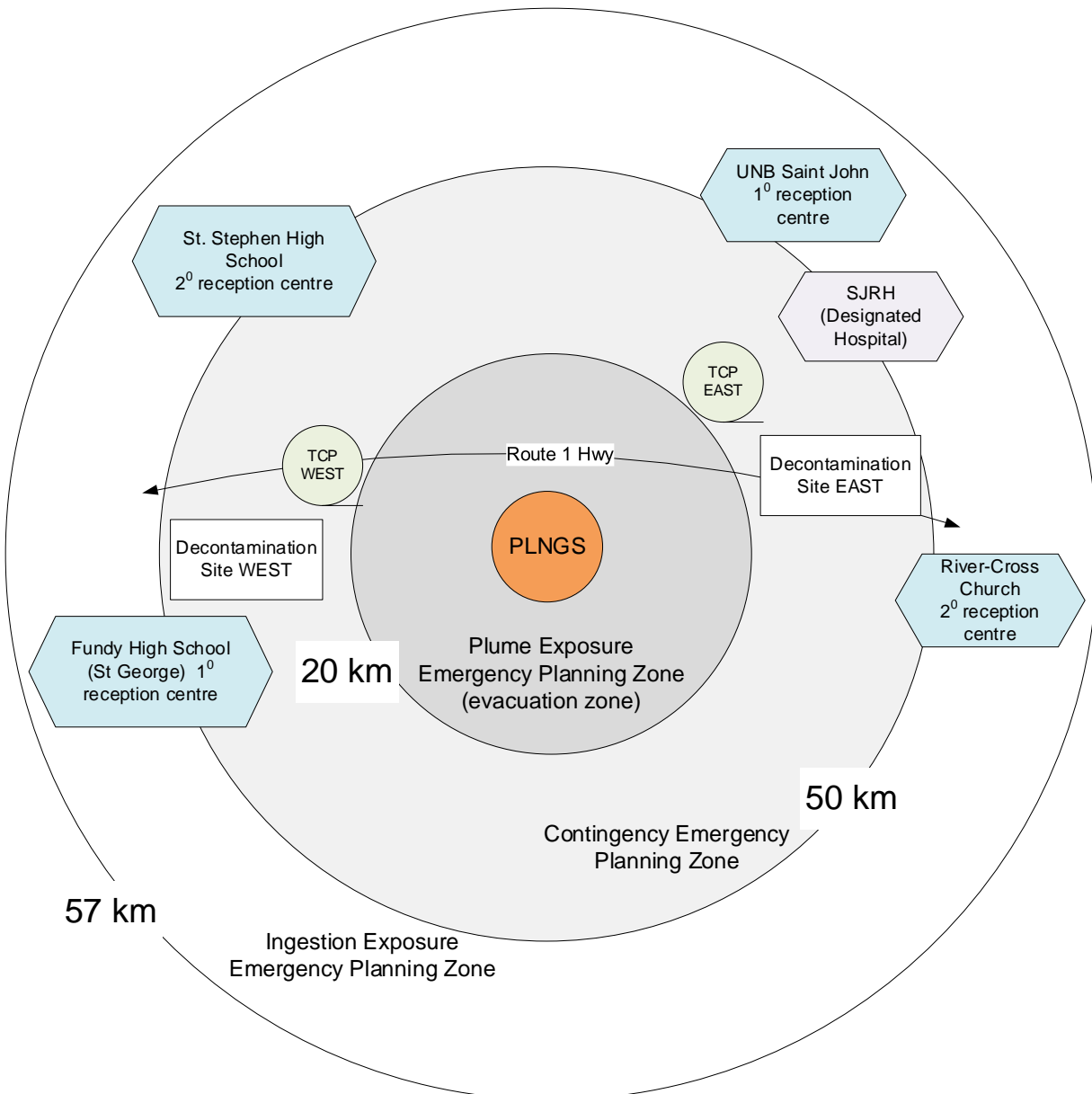


Figure 4. Off-site Concept

- **Plume Exposure EPZ (or Detailed Planning Zone or Emergency Evacuation Zone).** A 20 km radius circle around the station includes portions of the Musquash, Maces Bay, Lepreau and New River Beach-Pennfield areas, and extends seaward into Bay of Fundy. Planning and preparation for this zone includes ensuring that appropriate measures against exposure to a radioactive plume (such as sheltering-in-place or evacuation) can be applied in a timely and accurate manner. For planning purposes, the Plume Exposure EPZ (or (Emergency Evacuation Zone) contains approximately 3000-5000 individuals, including 20 to 40 patients of the Extra-Mural Program, one licensed Special Care Home with ten beds and zero nursing homes.
- **Contingency EPZ (or Contingency Planning Zone).** A radius area outside the 20km Plume Exposure EPZ to 50 km. It includes the City of Saint John, part of Grand Manan, Deer Island, Campobello Island, St. Andrews, Welsford, and eastern most parts of Maine. Contingency planning and arrangements in the contingency planning zone would be less detailed and have less specificity than the plans in the Plume Exposure EPZ.
- **Ingestion Exposure EPZ (or Ingestion Planning Zone).** A 57 km radius circle around the station includes the City of Saint John as well as eastern most parts of the State of Maine in the United States. Its purpose is to enable planning and preparation for measures against exposure from ingestion of radioactive material.

These terms will be used throughout the document for any area referring to planning however any references to the actual area being evacuated during a response will be referred to throughout this document as the **Emergency Evacuation Zone**. The Emergency Evacuation Zone is made up of individual areas of responsibility referred to as Warden Zones. The actual Emergency Evacuation Zone will be defined at the time of the emergency based on real-time information and measured levels of radioactivity; it could change during the response to adapt to the actual plume of radioactive material, as the situation unfolds.

5.1.2 Health System Functions

Responsibilities for health nuclear emergency management in an off-site emergency are assigned to the DH, Horizon Health, Vitalité Health and EM/ANB in the *Provincial Health Nuclear Emergency Plan for the Point Lepreau Nuclear Generating Station*. Detailed plans for carrying out those responsibilities are produced by individual health care partners and included in their organization-level plans.

5.2 Shelter-in-Place

5.2.1 Overview

In the event of a nuclear incident at PLNGS requiring activation of the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*, there is a possibility that residents of the Emergency Evacuation Zone may be required to evacuate, either as a precautionary measure or as a result of release of radioactive materials. Alternatively, the provincial Nuclear Control Group may order shelter-in-place rather than evacuation. In either case, subsequent decontamination of people, animals, vehicles and property may become a requirement.

5.2.2 Health Services Responsibilities

The decision to shelter-in-place will be made by the Nuclear Control Group on recommendation by the Technical Advisory Group using Health Canada's *Generic Criteria and Operational*

Intervention Levels for Nuclear Emergency Planning and Response guidelines based on the ambient dose rate in the plume as well as in consideration of:

- health and safety risk;
- the dissipation rate of the plume versus the inherent disruption of an evacuation;
- the risk of exposure during evacuation.

If the decision is made to shelter-in-place, three challenges must be addressed by the health system. First, there may be a requirement to respond to medical emergencies in the sheltering area, and special needs may still have to be addressed. Second, there may be issues of decontamination and post-event public advice, counseling and medical follow-up to address. Third, timely and accurate health information must be provided continuously by all appropriate means.

5.3 Evacuation

5.3.1. Overview

The lead agency for conducting an evacuation is the Department of Justice and Public Safety. Conduct of operations is a Royal Canadian Mounted Police (RCMP) responsibility under guidance of the provincial Nuclear Control Group. Health aspects are the responsibility of the DH, in cooperation with the Department of Social Development and other relevant provincial government departments as defined in Part 1 of the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*. Essential operational information for evacuation is provided in Part 2 of the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan* and that information is reflected in the detailed plans of the health system partners.

5.3.2 Evacuation - Concept of Operations

In general terms, the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan* states that the St. George RCMP detachment (District 1) will establish traffic control points to direct movement in and out of the Emergency Evacuation Zone (see Figure 4). An evacuation may be precautionary before the release of radiation, or as a result of a release of radiation. Depending on the circumstances, evacuees may be directed to a Radiation Monitoring Post to be checked for possible contamination (see Section 5.4.1). Contaminated individuals will be taken through the decontamination process at the Monitoring and Decontamination Centre (see Section 5.4.2). Uncontaminated individuals will be bussed to a reception centre established by the Red Cross and directed to register, as detailed in section 5.5 and in Part 2 of the provincial *Point Lepreau Nuclear Off-Site Emergency Plan*. After registration, evacuees have the option of being accommodated at a reception centre or making their own arrangements. In addition, marine control centres and monitoring sites may be established at Saint John and Black's Harbour.

5.3.3 Health Services Responsibilities

The decision to evacuate will be made by the Nuclear Control Group on recommendation by the Technical Advisory Group using Health Canada's *Generic Criteria and Operational Intervention Levels for Nuclear Emergency Planning and Response* guidelines as well as in consideration of:

- health and safety risk;
- the dissipation rate of the plume versus the inherent disruption of an evacuation;
- the risk of exposure during evacuation.

If the decision is made to evacuate, two challenges must be addressed by the health system. First, there may be a requirement to respond to medical emergencies in the Emergency Evacuation Zone and second, special needs may still have to be addressed.

- **EM/ANB - Ambulance Services.** An ambulance unit may be required to enter the Emergency Evacuation Zone for emergency treatment and transport. Once an ambulance has been contaminated, it will be used only for transportation within contaminated areas. EM/ANB will continue to respond to normal patient requests in and around the Point Lepreau area.
- **EM/ANB - Extra-Mural Program.** The Extra-Mural Program will assess the needs of their patients in the Emergency Evacuation Zone and identify those patients requiring transportation assistance. For those requiring assistance, transportation will be coordinated with NB EMO through the Provincial EOC.

5.4 Monitoring and Decontamination

5.4.1 Radiation Monitoring Posts

If a release of radioactive materials takes place, or is likely to take place, before evacuation of the Emergency Evacuation Zone can be completed, Radiation Monitoring Posts will be activated in accordance with the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*. The purpose of radiation monitoring is to ensure that all persons are checked for radiation contamination. Anyone who is not contaminated should be directed to a reception centre for registration. Contaminated individuals will be directed through the decontamination process at the MDC (Section 5.4.2). It is essential that decontamination always precede the registration process. If an individual refuses radiation screening or decontamination, then quarantining may be necessary to protect the health of the public (see Section 9).

5.4.2 Monitoring and Decontamination Centres (MDCs)

Unless circumstances require otherwise, MDCs will be established on both sides of Highway 1, beyond the Emergency Evacuation Zone, by the Department of Justice and Public Safety, Office of the Fire Marshal, with support from fire departments and Provincial Hazmat resources as necessary.

Disposal sites for contaminated material will be established in accordance with the *Point Lepreau Nuclear Off-Site Emergency Plan*. Everyone who is successfully decontaminated by the first or second shower will be directed to the buses which will transport them to a reception centre. Anyone who is still contaminated following the second shower will be sent by non-emergency transportation to the SJRH for further care. Those who fail decontamination at the westerly MDC and require non-urgent transport to hospital will go to the SJRH via transportation coordinated by NB EMO. For a schematic of the concept of operations see Figure 5.

5.4.3 Monitoring and Decontamination Process

Initial triage of evacuees will be followed by a more intensive monitoring before decontamination, after removal of clothing and after decontamination. This initial screening and segregation of contaminated individuals is important to limit spread and cross-contamination of radioactivity. Provided there is no physical contact, contaminated evacuees are unlikely to

present a major radiation hazard to first responders/first receivers, emergency workers or other evacuees. Decontamination of individuals will follow the principles described in Box 3.

5.4.4 Radiation Status Identification System (Wrist Bands)

A system of colored wrist bands will be used to identify evacuees who have been assessed for radiation and distinguish those who are free of contamination from those who are contaminated. This system will be required in the field setting however it will also be useful in the Emergency Department setting, to quickly identify an individual as an evacuee from the Emergency Evacuation Zone who has been assessed. It also will provide information on their contamination status.

All evacuees will be assessed for radiation contamination. Those who are not contaminated receive a white wrist band. Those who are contaminated will proceed through the decontamination line and will be reassessed post-decontamination. If the evacuee successfully completes the decontamination process, a white wrist band will be applied. If an evacuee fails decontamination after two attempts or if he/she must be transported by ambulance for urgent medical care before decontamination, an orange wrist band will be applied.

An evacuee with a permanent radioactive implant as part of a medical procedure will fail decontamination; there is no way to pinpoint whether the detectable radiation is from the implant or due to failed decontamination therefore these evacuees will receive an orange wrist band and be transported to hospital for further assessment.

5.4.5 Waste Management

The management of radiation contaminated waste is the responsibility of PLNGS.

5.4.6 Health Services Responsibilities

Upon notification of MDC activation, implicated Nuclear Control Group members will request the deployment of personnel to the MDC assembly area identified by NB EMO, on the East and West sides of the Emergency Evacuation Zone. The Health member of the Nuclear Control Group will notify the NBHEOC to trigger the deployment of health personnel. Health staff from Horizon Health and EM/ANB will be notified to deploy through their respective EOC linkages, one hour prior to the MDCs being open to evacuees.

It should be noted that health system personnel are implicated in the MDCs only where the public is implicated. If the MDCs are activated for PLNGS and emergency workers only, in a scenario where evacuation is successfully completed prior to any release of radioactive material, the field roles for the health system will not be required. In this type of scenario, EM/ANB would be available on request.

The following roles and responsibilities for the health system are intended for a mass monitoring and decontamination scenario.

- **Emergency Medical Services.** In the event of a release of radiation, EM/ANB will withdraw their position to just outside of the MDCs and perform the following functions:
 - a. Pre-decontamination triage – EM/ANB will provide paramedics in the pre-decontamination area to prioritize evacuees for decontamination based on existing medical conditions or other limitations. Personal protective equipment

will be required in this setting. As communication between paramedics and evacuees will be hampered by wearing the required N95 respirators, NB EMO will provide placards for communicating process information, to decrease process-related questions.

Facilitation of radio consultations with mental health and/or public health positioned in the post-decontamination area with evacuees in the queue for decontamination - a job action sheet will be provided to paramedics working in this area to guide them in making referrals to public health and mental health resources positioned in the post-decontamination area and facilitating a radio consultation between these resources and evacuee requiring immediate intervention, before decontamination is possible.

- b. Post-decontamination medical assessment of evacuees who self-present or are referred by Red Cross for medical care.
 - c. Provide treatment and emergency transport, as required, potentially in the Emergency Evacuation Zone or either MDC. If an ambulance unit is required to enter the MDC for emergency treatment and transport, NB EMO will ensure an area is cleared to allow access to the patient and to radiation monitoring. Once an ambulance has been contaminated, it will be used only for transportation within contaminated areas.
 - d. Assign an EM/ANB Manager to provide coordination to field staff through both MDC Command Posts.
- **Public Health Information.** Some waiting time can be anticipated in the pre-decontamination area, as evacuees stand in line for decontamination. Waiting time can also be anticipated as evacuees wait to board the buses to reception centres. Horizon Health Regional Public Health staff trained in the health effects of radiation and equipped with print material and resource lists will be available in the post-decontamination area alongside mental health services (also positioned in the post-decontamination area). They will be able to provide information, answer questions related to radiation and health, and make referrals to appropriate services. This service will be a mitigation measure to ease some of the potential burden of the “worried well”.

Horizon Health Public Health Staff will also be available remotely to those in the pre-decontamination area through paramedics responsible for triaging evacuees in the queue for decontamination. As described above under ‘Emergency Medical Services’ section, paramedics will be equipped with radios and can facilitate radio consultation with public health and/or mental health personnel in the post-decontamination area, if an evacuee is identified as requiring immediate intervention. Personal protective equipment will not be required by those working in the post-decontamination area.

Mobile Mental Health Services. Mobile Mental Health Services will provide psychosocial support in the field setting. They will be available alongside Regional Public Health staff, in the post-decontamination area before evacuees board buses. A shelter will be provided in the post-decontamination area for interventions or consultations requiring a quiet, private space. Staff will have *Communities in Crisis* training as well as an understanding of the health effects of radiation. As for Regional Public Health staff described above under the ‘Public Health Information’ section, mental health personnel in the post-decontamination area will be made available for consultation remotely via radio, for any evacuee identified by paramedics as requiring immediate intervention.

Mental health personnel will flag any evacuee who requires follow up at one of the reception centres, where they can be referred to on-site mental health services. Personal protective equipment will not be required by those working in the post-decontamination area.

Critical Incident Stress Management (CISM) teams will be available for deployment upon request for first responders and emergency workers.

- ***Decontamination Assistance to the Medically Vulnerable.*** There will be three decontamination lines: male, female and one for those requiring assistance. Horizon Health staff will assist the medically vulnerable population as required, with personal care throughout the process of decontamination. Waterproof personal protective equipment will be required in this setting.

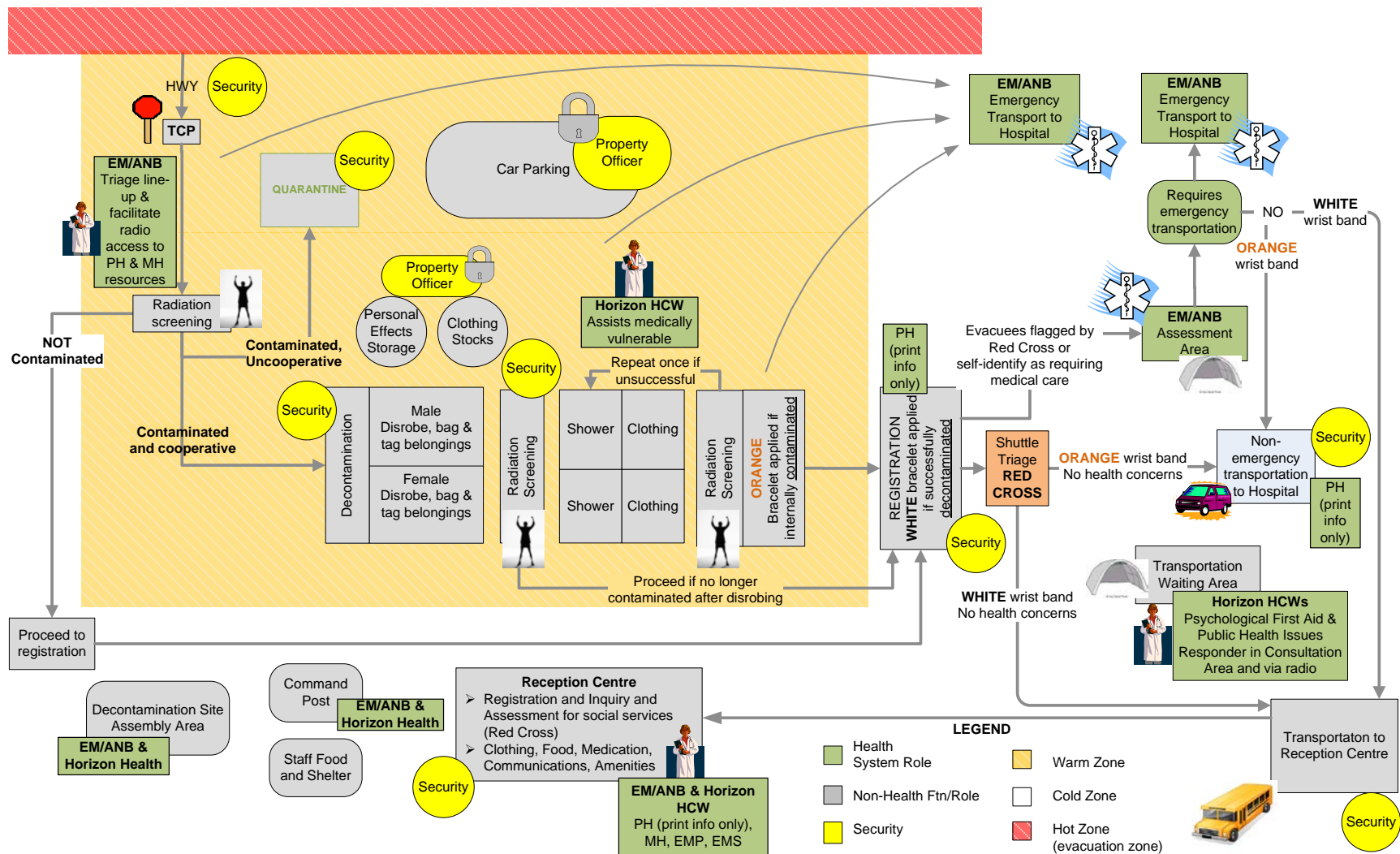


Figure 5. Off-site Emergency Response Concept of Operations

Legend: TCP = Traffic Control Point; HWY = Highway (Highway 1); PH = Public Health; HCW = health care worker; EMP = Extra-Mural Program; MH = Mental Health; EM/ANB = Extra-Mural/ Ambulance NB; Hot Zone/Warm Zone/Cold Zone = see Part IV, Section 15 - Glossary for definitions.

5.5 Reception Centres

Establishing and operating reception centres is the responsibility of the Red Cross. Locations in Saint John, Sussex and St. Stephen are defined in the *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*.

Upon notification of an evacuation order by the Provincial EOC, Red Cross will deploy teams to set up reception centres. With the deployment of Red Cross teams, the Red Cross Nuclear Control Group member will request the deployment of implicated personnel to reception centres. The Health member of the Nuclear Control Group will notify the NBHEOC to trigger the deployment of health personnel. Health staff from Horizon Health, EM/ANB, will be notified to deploy to Reception Centres, through their respective EOC linkages, and report for duty one hour prior to the opening of the centre to evacuees.

All uncontaminated and decontaminated evacuees from MDCs will be directed to a reception centre for registration before being allowed to proceed independently, if they do not require any of the emergency social services offered. The Red Cross will provide registration services. For evacuees with no alternative accommodation, the Red Cross will establish reception centres in accordance with the provincial *Point Lepreau Nuclear Generating Station Off-Site Emergency Plan*.

The following sections summarize reception centre responsibilities, specific to the health system responsibilities.

5.5.1 Emergency Medical Services

EM/ANB will provide paramedics on-site for the first 24 to 48 hours at primary and secondary sites (as necessary), to provide reassurance to evacuees as they arrive, and assist those who require emergency treatment and/or emergency transport. After the initial 24 to 48 hours, coverage will be provided through the NB-911 system.

5.5.2 Mobile Mental Health Services

Horizon Health Communities in Crisis services teams will provide psychological first aid and crisis management briefings to evacuees at reception centres.

5.5.3 Extra-Mural Program

EM/ANB Extra-Mural Program staff will provide continuity of care for displaced patients in or outside of reception centres. Extra-Mural Program staff will also assess evacuees with health care needs, as requested and within their scope of practice, to determine if they can be supported through Extra-Mural Program service providers. New patients may be referred to the Extra-Mural Program by EM/ANB paramedics on-site at reception centres.

5.5.4 Public Health

The DH Public Health New Brunswick will order health and hygiene inspections of reception centre sites through Department of Justice and Public Safety health inspectors prior to opening of the facility, as required. Signage will be posted at reception centres with relevant public health guidance related to smoking, handwashing, food safety and other public health preventative measures.

Print information in the form of a brochure on radiation and health, will be provided through NB EMO on behalf of the Department of Health, Public Health New Brunswick and distributed by the Horizon Health Red Cross Control Centre Lead, to Red Cross workers and health system workers on-site at reception centres. This print information can be distributed to evacuees and/or used by staff at reception centres for answering questions on the health effects of radiation.

5.5.5 Access to Prescription Medication, Outpatient Appointments and Rehabilitative Equipment

Residents of the 20km EPZ / Emergency Evacuation Zone (around PLNGS) have been educated through PLNGS and the NB EMO to bring prescriptions and prescription medications with them in the event of an evacuation order. It is acknowledged however that evacuees may not always remember to bring prescriptions or medications and may not even be home at the time of the evacuation order. The Red Cross logistics department will work with Regional EOCs to access municipalities and coordinate transportation for evacuees to access medications and medical appointments. Red Cross may also work with pharmacies and local taxi services to have prescription medications delivered.

In the event an evacuee is unable to access existing prescription medications either through a primary health care practitioner or community pharmacist¹⁶, the Provincial Radiation Medical Advisor may be contacted by appropriate health staff at the reception centre via the NB Health EOC (through their respective regional EOC) for initial consultation. Following initial consultation with health staff and at his/her sole discretion, the Provincial Radiation Medical Advisor may initiate a consultation with the evacuee via telephone for purposes of determining whether to prescribe medication in equivalent dose amounts not to exceed two days (48 hours) based on the evacuee's existing prescription. Upon his/her approval, the Provincial Radiation Medical Advisor will telephone/fax the new prescription directly to the appropriate pharmacy.

Note: the Provincial Radiation Medical Advisor will be provided with logistical support via the NB Health EOC to access electronic patient health records.

In relation to the above-noted, in the event of an evacuation order the New Brunswick College of Pharmacists (College) will be notified by the Department of Health via the NB Health EOC. The College will, in turn, advise and direct its membership accordingly.

5.5.6 Red Cross Control Centres

A Canadian Red Cross Control Centre will be established at each reception centre. A Red Cross Site Manager will be assigned to each primary site (UNB Saint John and Fundy High School) to provide oversight and he/she may also have responsibility for secondary sites (River Cross Church and St. Stephen High School). The Site Manager will be a dedicated position in charge of managing operations, communicating with external agencies, local authorities, Regional EOCs and the PEOC. He/she will be in charge of the site, ensure resource, logistic

¹⁶ In accordance with Article 21.3 of the Regulations under the *New Brunswick Pharmacy Act* New Brunswick pharmacists have the authority to prescribe in an emergency, renew a prescription for continuity of care and continue therapy without a prescription for a previously diagnosed condition. Pharmacists' prescribing authorities are subject to certain restrictions, including narcotics as set out in the *Controlled Drugs and Substances Act* (Canada) and its regulations.

and equipment needs are met. The Site Manager will be responsible for security, administration, information technology, security, and health and safety for organizations and agencies on-site. Organizations and agencies will report to the Site Manager upon arrival to the reception centre, and shall be assigned to their designated area however, each organization or agency will retain the responsibility and authority for their own roles within reception centres. Site Managers will establish a daily schedule for situation briefings and information will flow to and from Regional EOCs, and the PEOC via their Red Cross members.

Each health organization will assign a lead while they are on-site and report to the Control Centre, to ensure a liaison function within the Red Cross Control Centre. Health system organizational leads are not necessarily dedicated positions i.e. the roles may be assigned to individuals fulfilling a specific Health role in the reception centre. Red Cross Control Centre responsibilities for the health system at reception centres are as summarized below.

- Health system organizational leads assigned by EM/ANB, Horizon Health and the DH (Public Health New Brunswick) will, relevant to his/her organization:
 - facilitate logistical, health / medical and other support and assistance for on-site personnel, by reaching back to their respective EOCs;
 - facilitate delivery of on-site health services;
 - brief and ensure corporate EOC has current information on the on-site response;
 - serve a liaison function between the Site Manager and on-site personnel as well as between corporate EOC and on-site personnel (see Figure 6 - Operational Communication, below).
- Health system organizational leads will participate in Red Cross Control Centre briefings led by the Red Cross Site Manager, 2 to 3 times daily;
- Health system organizational leads report to their respective organizational EOCs.
- Horizon Health Control Centre lead will pre-position public health brochures in reception centres and ensure health personnel on-site as well as Red Cross registration tables maintain a supply.

Operational Communications between Emergency Operations Centres and the Canadian Red Cross Control Centres is depicted in Figure 6.

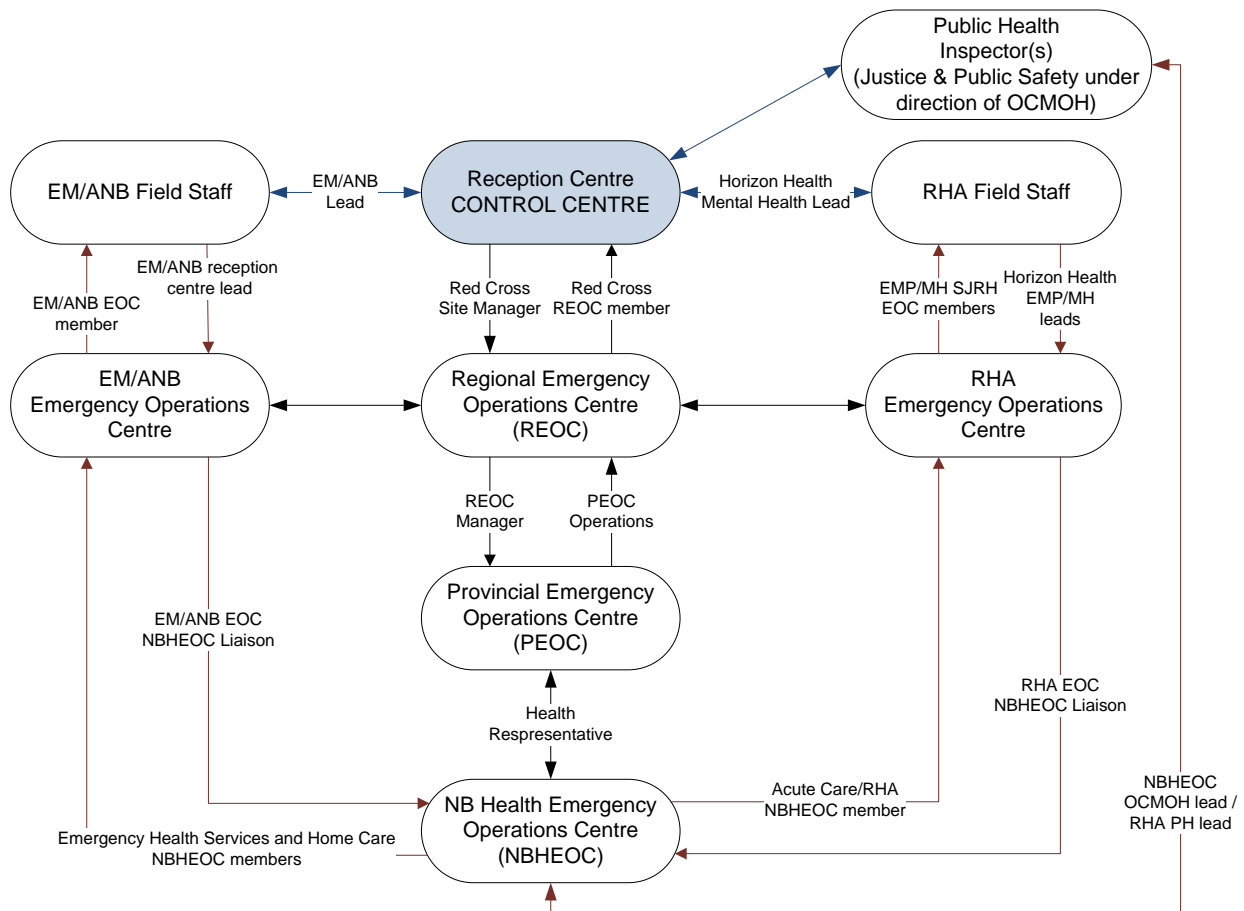


Figure 6. Operational Communications - Canadian Red Cross Control Centre

5.6 Management of the Worried-Well and those Bypassing Monitoring and Decontamination Centres

The anticipated numbers of ‘worried-well’ and evacuees who bypass the MDCs have the potential to overwhelm hospital emergency departments. The use of emergency departments’ resources needs to be optimized for providing timely service to casualties of the emergency and to the community at large, who require medical assessment and treatment. To prevent a surge in demand from the ‘worried-well’ and evacuees who bypass the MDCs (requiring radiation screening and potentially decontamination), a process will be implemented at strategic locations to control access to hospital emergency departments.

5.6.1 Saint John Regional Hospital (SJRH) and Charlotte County Hospital (CCH)

Checkpoints will be established for redirecting unnecessary traffic away from hospital emergency departments.¹⁷ The first checkpoint, **Checkpoint #1**, will be established at or near

¹⁷ There will only be one access route available to the hospital emergency department. Secondary access roads will be secured and barricaded by hospital security personnel.

the entry to a primary access route to the hospital by City Police or RCMP¹⁸ and serve as a traffic control point.¹⁹ Evacuees who bypassed MDCs and those reporting their intention to go to the hospital emergency department will be flagged for further screening by Horizon Health personnel to determine their need for medical assessment/treatment at the hospital emergency department. Police will allow any traffic with intended destinations other than the hospital to continue to their destination. Police will also allow ambulances, hospital staff, hospital volunteers, visitors or patients of ambulatory clinics, to continue to the hospital. There are four possible outcomes to the **Checkpoint #1** screening process:

1. Those who have not been in the Emergency Evacuation Zone who require medical assessment/treatment will be allowed to proceed via an established thoroughfare to the hospital emergency department, without stopping at any further checkpoints;
2. Evacuees who bypassed the MDCs and do not require medical assessment/treatment will be asked to proceed to the second checkpoint;
3. Those who have not been in the Emergency Evacuation Zone and are assessed as not requiring medical assessment/treatment will be redirected to an alternate location²⁰ away from the hospital, where they will receive reassurance monitoring, information on radiation and health, as well as a list of community resources for accessing further information and services;
4. Evacuees stopped at the first SJRH checkpoint only, who bypassed the MDCs and require medical assessment/treatment, will be asked to park their cars in a designated area and will be shuttled by NB EMO coordinated transportation to the SJRH emergency department for radiation screening, medical assessment/treatment, and potentially decontamination.
5. Evacuees stopped at the first CCH checkpoint only, who bypassed MDCs will be asked to park their cars in a designated area and will be shuttled by NB EMO coordinated transportation to the SJRH hospital emergency department for radiation screening, medical assessment/treatment, and potentially decontamination, as CCH is not a designated treatment centre for contaminated casualties; SJRH is the only designated hospital in NB for receiving contaminated casualties.

A second check point, **Checkpoint #2**, will be established by City Police or RCMP and serve as a traffic control point to redirect those flagged by the first checkpoint:

1. Evacuees who bypassed the MDCs will be directed to a designated parking area where they will be asked to park their cars and proceed to a radiation monitoring post. A PLNGS radiation protection qualified staff member will screen each evacuee for radiation contamination. Those who screen positive for radiation will be shuttled to the closest MDC where they will go through the decontamination process. Once successfully decontaminated, they will travel by NB EMO coordinated transportation to the closest Red Cross Reception Centre, as for other evacuees at MDCs. The PLNGS radiation

¹⁸ During a General Radiation Emergency, as classified by PLNGS, the RCMP will oversee operational command of provincial police forces.

¹⁹ Police will determine at this checkpoint: (1) what is the intended destination; (2) if they are going to hospital, for what purpose, and; (3) determine if they have been in the emergency evacuation zone during at the time of a PLNGS General Radiation Emergency classification.

²⁰ An alternate location within the community, away from hospital emergency departments, will be set up through the relevant NB EMO Regional Emergency Operations Centre. The worried-well will be redirected to this location for 'reassurance' radiation monitoring and to access information. Horizon Health mental health resources will be on standby and may be deployed on request to provide psychological first aid.

protection qualified staff will provide contaminated evacuees with a briefing and rationale on the process as well as an information pamphlet, to address questions and concerns before asking them to board the shuttle to the MDC.

2. All other traffic will be allowed to proceed to their destinations via an established thoroughfare, as directed in Checkpoint #1.

For a schematic illustrating the process for the SJRH, refer to Figure 7.

5.6.2 St Joseph's Hospital

A secure checkpoint will be established by City Police at a designated entrance to the St Joseph's Hospital Emergency Department. Anyone arriving at the designated entrance will be screened and those flagged as evacuees who bypassed MDCs and/or those reporting their intention to go to the hospital emergency department will be further screened by Horizon Health personnel to determine their need for emergency medical assessment/treatment at the hospital emergency department. Police will allow hospital staff, visitors or others not associated with the emergency, to continue to the hospital through the checkpoint. There are four possible outcomes to this screening process:

1. Any evacuees who bypassed the MDC and do not require medical assessment/treatment, will be shuttled to the SJRH checkpoint system;
2. Evacuees who bypassed the MDCs but require urgent/emergent medical assessment/treatment will be sent to the hospital emergency department via EM/ANB.
3. Those who have not been in the Emergency Evacuation Zone and are assessed as not requiring medical assessment/treatment (i.e. the 'worried-well') will be redirected to an alternate location away from the hospital by shuttle (arranged by NB EMO), where they will receive reassurance monitoring, information on radiation and health, as well as a list of community resources for accessing further information and services.
4. Those who have not been in the Emergency Evacuation Zone who require medical assessment / treatment will be allowed to proceed to the hospital emergency department.

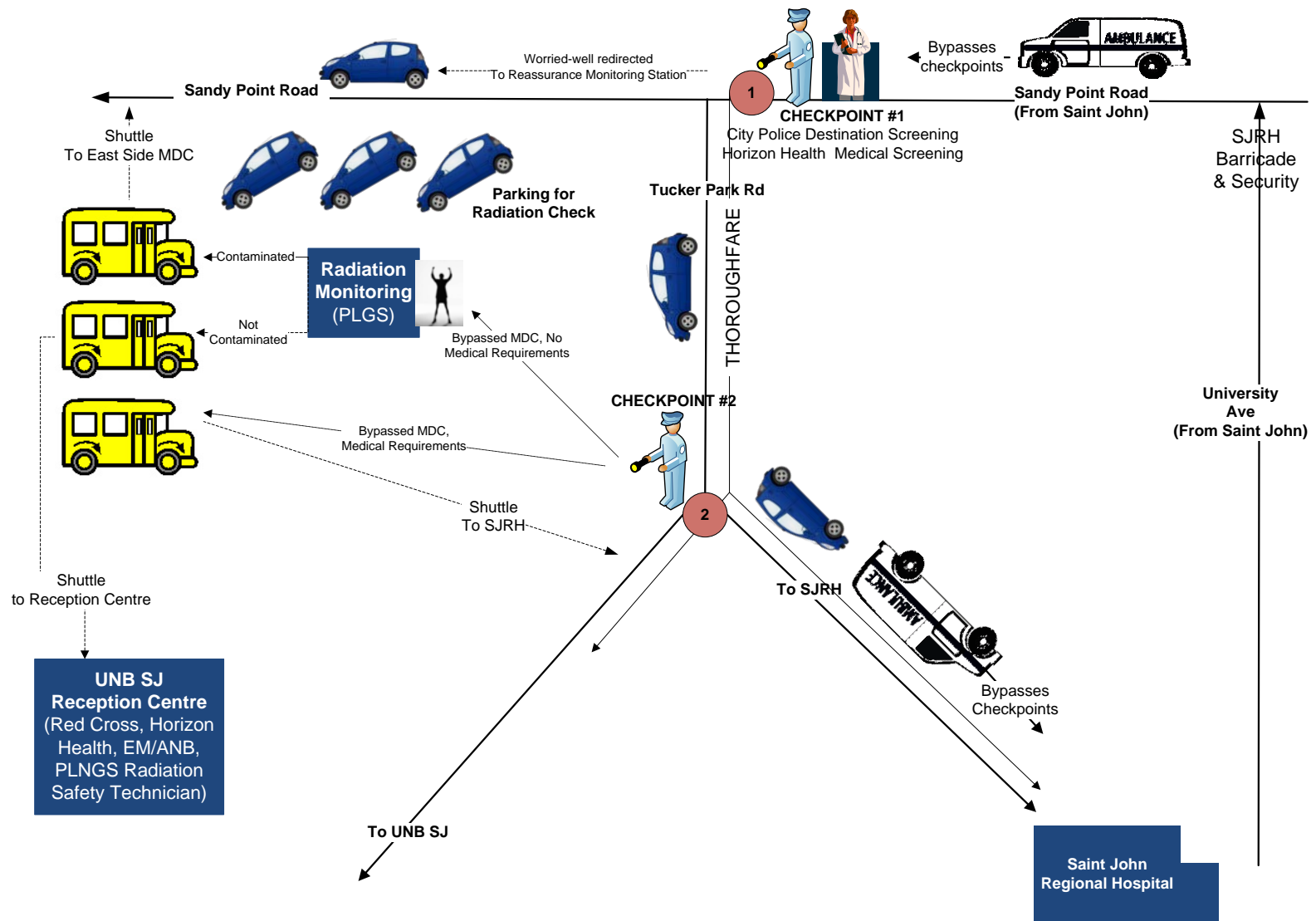


Figure 7. Management of the Worried Well at the SJRH

5.7 Pre-hospital and Hospital Services

5.7.1 Emergency Medical Services

Ambulance service to the community affected by an off-site emergency is governed by all-hazard standard operating procedures for emergencies; paramedics will take all precautions mandated by the hazard to ensure safety of themselves during response activities, with guidance from PLNGS radiation protection qualified staff. EM/ANB will continue to participate in emergency medical care activities inside the Emergency Evacuation Zone during the evacuation of the community while safe to do so. When radiological contamination is above safe levels as determined by the Nuclear Control Group, EM/ANB's activities will withdraw to the outside of the Emergency Evacuation Zone and standby for further requests. Entry back into the Emergency Evacuation Zone after safe levels are exceeded will be for emergencies and while wearing NB EMO issued PPE.

Ambulances used to transport contaminated patients will need to be decontaminated and put back into service; this will be done at the SJRH ambulance bay with PLNGS radiation protection qualified staff. The ability to decontaminate an ambulance during the response to maximize emergency medical response will be considered on a case by case basis, depending on the ability to release PLNGS radiation protection qualified staff assigned to the SJRH.

5.7.2 NB Trauma Program

The NB Trauma Program provides Field Trauma Triage Guidelines to help ensure injured patients are transported directly to the facility best equipped to meet their immediate needs. Consideration must be given to the impact of the 20km Emergency Evacuation Zone covering access to the SJRH through Highway 1 from the Charlotte County area.

In compliance with the NB Trauma Program Field Trauma Triage Guidelines, trauma cases qualifying for level 1, 2, or 3 care must be transported to the SJRH, as it is the closest Trauma Centre with a designation at or above level 3. As such, any contaminated casualty qualifying for level 1, 2, or 3 care from within the plume must be transported through to the East side, to the SJRH. Any casualty qualifying for level 1, 2, or 3 care and who are on the West of the plume, will be transported across the plume to the SJRH. This will apply whether the casualty is a contaminated evacuee from the MDC or a non-contaminated patient within the Charlotte County area. In traveling across Highway 1 travelling to the SJRH, the probability of receiving radiation exposure in excess of 50mSv, the annual dose limit for emergency workers, is low within plausible PLNGS emergency scenarios. The provincial emergency response structure includes a Technical Assessment Group with membership from experts in radiation, health physics and public health. Real time field survey data will be available to the Technical Assessment Group for analysis; in the event that levels along Highway 1 exceed the prescribed dose limit for emergency workers, this will be communicated to RCMP at access control points on the easterly and westerly sides of the Emergency Evacuation Zone. For further details refer to Section 11 – *Emergency Medical Services*.

5.7.3 Provincial Radiation Medical Advisor

The Provincial Radiation Medical Advisor's role is to (1) provide a liaison with Health Canada and interpret real-time information from radiation experts; (2) to provide medical advice to the NBHEOC, the Saint John Regional Hospital Medical Lead, and (3) participate in the PEOC as a member of the Technical Advisory Group. The advisor ensures the consistency, integration and communication of clinical information and responds to policy-specific questions from Tele-Care

811. The Provincial Radiation Medical Advisor will also act as spokesperson regarding medical issues, working closely with the Chief Medical Officer of Health.

5.7.4 Saint John Regional Hospital (SJRH)

The SJRH is the designated facility for receiving contaminated casualties from a nuclear emergency at the PLNGS. Every effort will be made to decontaminate casualties before transportation to hospital emergency departments, however as the treatment of life-threatening health conditions takes precedence over decontamination, the SJRH will be prepared to receive contaminated casualties where required. In addition to those with life-threatening medical conditions, the emergency department will also receive evacuees who have failed decontamination at an MDC after two attempts, for further assessment for internal contamination and treatment. PLNGS radiation protection qualified staff (6) and associated equipment will be deployed with the first case on route to the SJRH or as soon as the pre-positioning of the MDC has been triggered, whichever is first. The NB Power representative in the Provincial EOC will confirm once these resources have been deployed and this will be communicated through the emergency response structure to the SJRH EOC. Response activities and decontamination of the treatment areas post-response will be conducted under the advice of PLNGS radiation protection qualified staff.

- ***Emergency Department Setting***

In an event with off-site implications, the SJRH will be notified by the Horizon Health through the notification process outlined in the all-hazards health emergency management plans.

Triage and Initial Assessment

The emergency department at the SJRH is responsible for screening, triaging, assessing and treating evacuees from PLNGS, the Emergency Evacuation Zone and MDCs. The radiation assessment tool used in the METER training course by Health Canada will be adapted at the facility level to guide procedures from screening and triage through to treatment. The Radiation Casualty Assessment Tool (adapted from the Health Canada METER Course, May 2014) will be used by a physician or Registered Nurse to assess patients presenting at the Emergency Department to establish initial priority. Triage will determine the patient's level of stability, contamination status and history of exposure to radiation. It will establish initial priority, i.e. those requiring immediate treatment versus those who can be decontaminated prior to treatment.

Patients requiring immediate treatment will be assumed contaminated and will be cohorted as such, unless they are wearing a white wrist band applied in the field at the radiation monitoring stations, indicating that they are not contaminated. Patients who are not already presenting with wrist bands indicating that they've been previously assessed in the field, will be assessed for contamination. The same wrist band system will be applied as in the field to identify a patient as contaminated or not contaminated (see Section 5.4.4). Patients will also be assessed for exposure to radiation.

There may be patients who have had medical procedures or implants that are a source of radiation and despite decontamination, will fail radiation assessment. In some cases, patients can provide documentation indicating that they have had such a procedure or implant. This should be considered in the initial assessment.

Pregnant women will be treated as any other contaminated patient, and then referred to an obstetrician as a high risk pregnancy, to be monitored throughout the duration of the pregnancy.

Decontamination

Decontamination procedures for the Emergency Department at the SJRH are detailed in SJRH documents. The plan will include protocols for decontamination and wound decontamination.

Secondary Assessment

The Radiation Assessment Tool includes a History and Physical Form. This form is intended to be completed by the treating physician and used to prompt the physician to obtain specifics relevant to treatment and disposition decisions unique to radiation exposure and/or contamination.

The Radiation Assessment Tool also includes a Body Mapping Form. This form is intended to be completed by the attending physician or a registered nurse to facilitate recording the location of any skin contamination and radiation-related injuries. Contaminated areas, injuries, burns or skin changes are recorded as observed by the person performing the survey. Initial counts and post-decontamination counts are recorded.

Specific laboratory tests and medications related to the treatment of radiation exposure and/or contamination can be recorded on the Physician's Order section of the tool. There is also a decision-making tool included for allowing the attending physician to estimate the severity of the injury due to radiation exposure, when the dose has not been determined. This includes a list of decorporating agents for treating internal contamination.

- ***Hospital Settings other than the Emergency Department***

Lifesaving interventions take priority over radiation and contamination concerns so contaminated patients may require interventions outside of the emergency department prior to decontamination. If diagnostic imaging or surgery is required, the SJRH supervisor or unit manager will provide advanced notice to these departments to allow time to prepare the area and staff. Personnel from PLNGS will be on-site to monitor staff and patient contamination levels and assist with the decontamination of the treatment area.

- ***Medical Management***

Lifesaving interventions take priority over decontamination and radiation-related concerns. Patients should be evaluated and treated based on current triage standards. There are many scenarios possible as a result of a nuclear emergency at PLNGS; detailed medical management of radiation and contamination related injuries are outside the scope of this plan. For information on the medical management of radiation-related injury, the following resources are available:

- Health Canada. Canadian Guide on Medical Management of Radiation Emergencies. Request the document using the following link: <https://www.canada.ca/en/health-canada/services/health-concerns/emergencies->

[disasters/emergency-preparedness/nuclear-emergency-preparedness/canadian-guide-medical-management-radiation-emergencies.html](https://orise.orau.gov/reacts/documents/medical-aspects-of-radiation-incidents.pdf)

- Radiation Assistance Training Centre / Training Site, The Medical Aspects of Radiation Incidents. See the following link:
<https://orise.orau.gov/reacts/documents/medical-aspects-of-radiation-incidents.pdf>

Clinical Support

The attending physician of a contaminated or exposed patient can access radiation medical expertise at their discretion, through the Provincial Radiation Medical Advisor, as facilitated through the NBHEOC and Health member of the PEOC (Nuclear Control Group). A secondary resource for radiation expertise is available through the Health Canada Radiation Protection Branch, accessible through the SJRH EOC via a request to the NBHEOC. To ensure expedient access, an initial contact will be made through the NBHEOC to place the Health Canada Radiation Protection Branch on standby. If additional resources are needed beyond Health Canada, they will facilitate access to the US Radiation Emergency Assistance Centre/Training Site, which can provide access to an on-call 24 hours a day/seven days a week to offer expertise on managing the medical component of a radiation incident.

If isotope identification is required to support medical treatment, the implicated isotopes would be known to PLNGS and could be communicated from the provincial Technical Assessment Group to the attending physician, by the Provincial Radiation Medical Advisor in consultation with the NB Power health physicist. If required, an NB Power health physicist will be on site at the SJRH with a portable spectrometer with the capability to identify isotopes.

Decorporating Agents

Decorporating agents can be made available through the National Emergency Strategic Stockpile (refer to Section 6.1.3 for details). The US Department of Health and Human Services, Radiation Emergency Medical Management Site contains useful guidelines for decision-making: http://www.remm.nlm.gov/int_contamination.htm#blockingagents

● **Laboratory Setting**

PLNGS radiation protection qualified staff will be on-site in the emergency department at SJRH to assist medical personnel with dose assessment. All specimens from patients related to the nuclear emergency event requiring laboratory analysis will be labeled with radiation dose rate. As part of the assessment of casualties suspected to have been exposed to radiation, potentially contaminated samples will be sent to the laboratory for analysis. This may include blood samples, nasal swabs, mouth swabs, urine samples, stool samples or emesis samples. Any specimen with a dose rate exceeding 100 times background level will be flagged for the hospital laboratory for implementing special precautions. The laboratory will have a plan for receiving and processing potentially contaminated samples.

Cytogenetic analysis and other radiation expertise to support the SJRH laboratory will be accessible in real time through Health Canada's Radiation Protection Bureau via the NBHEOC.

● **Waste Management**

Within the hospital setting, the management of waste will be outlined in the internal plan for SJRH and guided by PLNGS radiation protection qualified staff. The SJRH decontamination system (located in the ambulance bay), has the capacity to decontaminate 9 to 18 people before the cistern capturing waste water would need to be emptied. Given that measures have been put in place to redirect evacuees that bypass MDCs away from the hospital, the SJRH is not expected to require mass decontamination capability; as such, it is not expected that emptying the cistern capturing waste water from decontamination will be required during the response. In any case, waste water produced during decontamination will need to be captured and handled as hazardous material. In the event that decontamination capability must be suspended to properly dispose of cistern waste water, outage time will be minimized by having a waste water removal service on standby for rapid response and by temporarily capturing waste water in an alternate receptacle.

- **Facility Recovery**

Responsibilities and procedures specific to SJRH are detailed in its internal facility plans. In general, the decontamination objective for any health facility is to ensure that equipment and floors are at less than twice the normal background reading, although higher levels should not deter the use of emergency facilities during periods of critical need. Thorough cleaning routines are usually effective but if there is still residual contamination, some furniture, equipment or flooring may need to be replaced. Procedures must be in place, and practiced, to remove waste from the Emergency Department and triage area to a holding area where it can be surveyed for radioactive material before disposal.

5.7.5 Other Facilities and Sites within the Evacuation-Affected Area

Horizon Health facilities, sites and programs in the area surrounding PLNGS between St. Stephen and Sussex may be called upon to provide the following services. Note, that Horizon Health facilities on the Fundy Isles hold stockpiles of KI pills however with the exception of the designated hospital, those on the mainland do not.

- **Charlotte County Hospital (CCH), St Stephen.** Although every effort will be made to transport contaminated patients to the SJRH, it is possible for an evacuee waiting on the westerly MDC to unexpectedly require emergency transportation to the nearest emergency department. The CCH may have to stabilize a contaminated patient until transfer to the SJRH is possible. PLNGS radiation protection qualified staff will be deployed upon notification of a contaminated casualty on route to the CCH.
- **St. Joseph's Hospital, Saint John.** Preparedness to support the SJRH if the impact is exceeding SJRH capacity (e.g., provision of staff or administrative support, overflow facilities, etc.). Preparedness to support the plan for the management of the worried-well and those who bypass the MDCs (see Section 5.6.2).
- **Fundy Health Centre, Blacks Harbour.** Preparedness to advise or counsel drop-in queries from concerned people. Otherwise the facility should only be affected if the 57 km Ingestion Exposure EPZ (or Ingestion Planning Zone) is activated.
- **Campobello Health Centre, Welshpool.** Preparedness to advise or counsel drop-in queries from concerned people. Issue pills from KI stockpile if instructed. It is possible

that contaminated vessels may enter the harbour. Otherwise the facility should only be affected if the 57 km Ingestion Exposure EPZ (or Ingestion Planning Zone) is activated.

- **Deer Island Health Centre, Fairhaven.** Preparedness to advise or counsel drop-in queries from concerned people. Issue pills from KI stockpile if instructed. It is possible that contaminated vessels may enter the harbour. Otherwise the facility should only be affected if the 57 km Ingestion Exposure EPZ (or Ingestion Planning Zone) is activated.
- **Grand Manan Hospital.** Preparedness to advise or counsel drop-in queries from concerned people. Issue pills from KI stockpile if instructed. It is possible that contaminated vessels may enter the harbour. Otherwise the facility should only be affected if the 57 km Ingestion Exposure EPZ (or Ingestion Planning Zone) is activated.
- **Other Facilities within the area surrounding PLNGS.** SJRH will be supported by other Horizon Health staff and/or facilities if the impact is exceeding capacity.

5.7.6 Other Facilities and Sites beyond the Emergency Evacuation Zone

Sussex Health Centre has no designated health nuclear emergency responsibilities but may be called upon by the Horizon Health / SJRH EOC's to support affected Horizon Health facilities and sites (e.g., augmentation of staff, supplies, etc.).

5.7.7 Supplies and Equipment

A dedicated supply cabinet reserved for use in a nuclear emergency is maintained at the SJRH by the PLNGS and contains supplies such as PPE, dosimeters, waste management supplies, self-decontamination kits, KI pills, and wrist bands for identifying contaminated versus decontaminated or non-contaminated patients.

For the field setting, most supplies and equipment such as PPE and dosimeters will be provided by NB EMO and PLNGS. For health care workers, N95 respirators from the Provincial Emergency Stockpile are pre-positioned with NB EMO supplies and will remain under their custodianship as for use at the MDCs. Other supplies required include information brochures published by PHNB, any tools required to triage and provide personal care assistance. PHNB brochures will be provided by the DH and remain under the custodianship of NB EMO with other supplies required for the MDCs, in preparation for an emergency event. These brochures will be pre-positioned at the MDCs by NB EMO and distributed to health personnel in the post-decontamination areas as well as at Red Cross MDC registration tables by the Horizon Health Services Coordinator, who will also ensure the supply is maintained during the event. As per section 5.5, Horizon Health Coordinator for reception centres will bring a supply of brochures to each centre and ensure a supply is maintained for use and distribution by Horizon Health personnel and at Red Cross reception desk. The National Emergency Strategic Stockpile system and Provincial Emergency Stockpile may be accessed if required through the NBHEOC (see Section 6.1.2 and 6.1.3).

5.7.8 Organizational Development

Horizon Health's Organizational Development will support the services within Horizon Health that provide direct patient care during a nuclear emergency. Its focus will remain on Human Resources Advisory Services, Library Services, Occupational Health and Safety Services and Learning Services.

During a nuclear emergency, Organizational Development will communicate with unions and professional groups regarding the event, managed and directed by the Director of Labour and Employee Relations and/or delegated to the Horizon Health (Saint John Area) Senior Human Resources Advisor. Organizational Development's nuclear preparedness activities include the following responsibilities.

- Develop learning strategies in support of, and based on, direction from content owners and subject matter experts so that employees are appropriately trained to treat victims of a nuclear accident.
- Provide occupational health and safety leadership to Horizon Health including direction on personal protective equipment and decontamination.
- Develop an occupational health response plan outlining the role of Horizon's Health and Safety Officer.

5.8 Extra-Mural Program in Community Settings

EM/ANB's Extra-mural Program will provide service to all of its displaced patients and any new patients resulting from the emergency event in alternate accommodations (e.g. hotels, friends or families' homes). Roles of the closest Extra-mural Program Units are as follows:

- Eastern Charlotte Office, St. George. Support to displaced patients at Reception Centres. Ensuring continuity of care and preparedness to advise or counsel drop-in queries from concerned people.
- St. Stephen Unit. Ensuring continuity of care. Preparedness to advise or counsel drop-in queries from concerned people.
- Saint John Unit. Ensuring continuity of care. Preparedness to advise or counsel drop-in queries from concerned people.

5.9 Tele-Care 811

Tele-Care 811 must be prepared to respond quickly to individual queries on instructions on food, air and water safety, sources and advice on KI pill administration, and advice and information on care. Coordination between PHNB and Tele-Care 811 is therefore required to ensure Public Health approval of information and protocols before they are provided by Tele-Care 811 to the public. This will be done as part of wider coordination requirement with other partners as described in Section 13.

5.9.1 Tele-Care 811 Information Requirements

In order for Tele-Care 811 to be in a state of readiness to fulfill all roles, all information requirements from contributing partners must be met on a real time basis.

- up-to-date public messaging;
- a list of frequently asked questions and answers on the health effects of radiation;
- up-to-date information on services changes within the Health Networks;
- clinical support to ensure Tele-Care 811 symptom triage protocols are aligned with current clinical information; and
- contact information from outside partners providing referral services.

Tele-Care 811 will be activated immediately after NBHEOC activation with pre-scripted and pre-approved information.

5.10 Public Health – General Responsibilities

5.10.1 Public Health New Brunswick (formerly Office of the Chief Medical Officer of Health)

In addition to ordering inspections of reception centres, Public Health New Brunswick (PHNB) will provide recommendations and guidance in four main areas: air quality; water quality; food quality and public health guidance, as part of response and recovery to a nuclear emergency. The following is a description of specific items.

- **Air Quality**
 - Assist with health risk assessments related to human health as required.
 - Provide Public Health Advisories regarding air quality through the emergency communications organization, as well as through the Public Health Advisories page on the PHNB website.
- **Food Quality**
 - Assist with health risk assessments related to human health as required.
 - Provide public health advice with regard to the contamination of foods, their condemnation, embargo and disposal if required.
 - Provide public health advice regarding food related matters in the event of a power outage.
 - Through Department of Justice and Public Safety health inspectors, order inspections of community centers used for temporary accommodations to ensure adequate food safety, water quality, washroom requirements and general sanitation.
- **Water and Soil Quality**
 - Assist with health risk assessments related to human health as required.
 - In conjunction with the Department of the Environment and Local Government, provide consultation and advice to local municipalities where a municipal water supply may be or has been affected.
 - Provide public health advice on what to do if water or soil contamination exceeds health guidelines.
- **Public Health Guidance**
 - Provide public health advice to the population and relevant stakeholders.
 - Provide advice to government departments on public health impacts.
 - Provide public health guidance to the representatives of response organizations as requested.
 - Provide advice to the Provincial Nuclear Control Group on all public health matters.
 - The Saint John Regional Medical Officer of Health will review requests from the PEOC regarding the distribution of KI pills, issue a KI Advisory as required and provide recommendations on the appropriate dosages.

- Provide a printed information brochure published by the PHNB as a resource to support Horizon Mental Health Services and Regional Public Health field roles, for distribution at reception centres.
- Provide public health messaging to NB EMO Communications and Health Communications such that they may:
 - ensure that the web site is updated daily with public health and safe zone information;
 - ensure that Tele-Care 811 receives public health information in advance of being reported to the public;
 - ensure the public receives pertinent public health information in a timely manner to prevent adverse health effects related to the event; and
 - respond to all media calls transferred from Tele-Care 811 within 24 hours.
- Participation of the regional Medical Officer of Health (or alternate) in town hall sessions to provide guidance and respond to general inquiries from attendees and media (Section 5.14).

5.10.2 Regional Health Authorities – Public Health

- Regional public health has specific roles in MDCs (see Section 5.4);
- Otherwise, the relationship between Horizon Health, Vitalité Health and Public Health staff is already defined and there are no further unique considerations for a nuclear emergency.

5.11 Community Psychosocial Services

In addition to responsibilities specific to the MDCs, reception centres, worried-well concept and town hall sessions previously (Sections 5.4, 5.5, 5.6 and 5.14), Addictions and Mental Health Centres within Horizon Health and Vitalité Health may be called upon in the event of a nuclear emergency, to provide psychosocial assistance to individuals, families, caregivers as well as Critical Incident Stress Management services to assist first receivers and first responders who have experienced emotional and psychological stress related to the event.

None of Horizon Health's Addictions and Mental Health Centres or satellite clinics are within the 20 km Emergency Evacuation Zone around the PLNGS. Centre staff from within the RHAs may also be required to assist other Horizon Health programs based on abilities and needs, dependent on the phase and extent of the emergency.

The concept of Mental Health operations during a nuclear emergency is based on the following three core functions.

- **Maintenance of Essential/Critical Services** including screening, intake and assessment, urgent treatment for new patients, and ongoing treatment and intervention for active patients with complex needs. Some non-critical activities such as skill groups may be suspended during the emergency if necessary.
- **Community in Crisis Response** including on-site counselling and de-briefing; telephone consultation; crisis intervention; crisis reduction counselling; defusing and debriefing; advocacy and mediation; education, and referral services. Disaster victims typically do not request services from the mental health system.

- **CISM for First Responders.** The regional Critical Incident Stress Management (CISM) team is responsible for providing CISM services to first responders, front line health care workers, other CISM members and emergency coordinators before, during and after a significant traumatic incident. If services of the provincial CISM team are required, they will be requested through the PEOC.

5.12 Management of Decedents Contaminated with Radioactive Material

An emergency at the PLNGS with off-site implications poses very low risk of mortality or morbidity to the general public. Despite the low probability, the management of contaminated decedents necessitates advanced planning as specific guidelines, precautions and procedures are required and multiple organizations are implicated from within, and external to the health system. Any decedent at PLNGS, within the 20km evacuation area, at one of the MDCs or any casualty transported to hospital from any of these areas, has the potential to be contaminated with radioactive material. The following sections provide provincial health guidance, policy direction and protocols regarding the management of the deceased in the context of a nuclear emergency at PLNGS, where there are implications to the health system. It provides clarity on roles and responsibilities of implicated stakeholders specific to the safe handling and management of contaminated decedents, within the hospital and in community settings.

5.12.1 Dose Limit

Funeral home workers, coroner services, pathologists, morgue attendants, cemetery staff, spiritual care workers, and others implicated in death care are subject to the same dose limit as the general public. As such, protocols for the management of contaminated decedents must not result in exposure beyond this annual limit. To ensure those involved in death care as well as families and friends of the deceased are not exposed to radiation levels above the maximum annual limit for the public (1 milli Sievert or 1,000 micro Sieverts), a threshold has been set for releasing a decedent to funeral homes. Any decedent with a dose rate above 10 micro Sieverts per hour ($\mu\text{Sv}/\text{hour}$) above background levels will not be authorized according to Health guidelines, for release to the funeral home. At this maximum level, it would take 100 hours of close contact to reach the public dose limit. Special procedures for the management of decedents with dose rates above 10 $\mu\text{Sv}/\text{hour}$ are discussed in Sections 5.12.4 and 5.12.5.

5.12.2 Personal Protection

Where a release of radioactive material has occurred, any emergency worker within the 20km Emergency Evacuation Zone or the MDC, first receivers, first responders or any person handling a contaminated decedent, will require personal protective equipment (PPE). Refer to the PPE guidelines for health care workers in Section 4.5.

5.12.3 Roles and Responsibilities

- **EM/ANB**

EM/ANB is responsible for emergency treatment and transport of patients to hospital emergency departments. They are not responsible for the transportation of the

deceased, although may under certain circumstances be requested to do so by the Coroner. If first on scene, paramedics may have a role in confirming a death. Although there is no legislation in NB that explicitly states who is legally able to pronounce death, paramedics may be delegated this function.

- ***NB EMERGENCY MEASURES ORGANIZATION***

NB EMO will provide the physical resources and coordination for establishing a temporary field morgue (at least two refrigerated trucks) and decontamination capability for decedents. They will also provide the physical resources and coordination for a temporary morgue (two or more refrigerated trucks) in proximity to the SJRH, as required. NB EMO is also responsible for arranging transportation in consultation with the Coroner and the RCMP, of any decedents from within the 20km Emergency Evacuation Zone to the temporary field morgue.

- ***CORONER SERVICES***

Coroner Services will be notified by a first responder or by the hospital, of any death related to a nuclear emergency. Decedents remain under the jurisdiction of the Coroner until released to the funeral home. For safety reasons, Coroner Services will not enter a radioactively contaminated area (MDCs, 20km Emergency Evacuation Zone or PLNGS) and as such, the decedent will be identified and cause of death investigated using all other appropriate means and information available to him/her, as per standard procedures. Coroner Services may consult with the Provincial Radiation Medical Advisor, Public Health New Brunswick and/or NB Power health physicist in decisions regarding the handling of contaminated decedents.

- ***NB POWER / POINT LEPREAU NUCLEAR GENERATING STATION***

In consultation with Coroner Services and the RCMP, NB Power/PLNGS will decontaminate and transport the remains of any PLNGS worker who dies on-site at the station.

NB Power/PLNGS will be responsible for providing PLNGS radiation protection qualified staff and equipment for surveying decedents from the 20km Emergency Evacuation Zone and providing guidance on their safe handling in field, funeral home, burial site and hospital settings. Once all live evacuees have been decontaminated and transported to reception centres, PLNGS will also provide PLNGS radiation protection qualified staff for decontaminating and surveying decedents at MDC(s), placing the remains in a body bag and labeling them to prepare for transportation to hospital or funeral home. Where burial is required without going to a funeral home, by order of the MOH, PLNGS radiation protection qualified staff will seal contaminated decedents in a metal casket, under the direction of the implicated funeral home (see Section 5.12.4 and 5.12.5).

All labeling of body bags and/or casket as per Section 5.12.4 and 5.12.5 is the responsibility of PLNGS. Labels for body bags and/or caskets will be provided by PLNGS along with an instruction guide for their proper application.

- ***DEPARTMENT OF HEALTH, PUBLIC HEALTH NEW BRUNSWICK***

The Medical Officer of Health on-call will be contacted if there is a death related to a nuclear emergency. In the field setting the Medical Officer of Health on-call will be alerted by RCMP. The Medical Officer of Health on-call will conduct a risk assessment in

consultation with Coroner Services and an NB Power health physicist to determine safe management. He/she may order funeral restrictions and special burial instructions, where required, as outlined in this guideline and in compliance with the Public Health Act.

For the purposes of a potential exhumation request of remains with burial restrictions related to radiation contamination, the Medical Officer of Health will direct the cemetery to maintain appropriate records. The Medical Officer of Health on-call will consider the authorization of such a request in collaboration with appropriate authorities and an NB Power health physicist.

- ***SAINT JOHN REGIONAL HOSPITAL, HORIZON HEALTH***

The SJRH hospital will be required to manage contaminated decedents should they die in hospital. In cooperation with PLNGS, decedents within the hospital will be decontaminated to the greatest extent possible and prepared to be picked up and transported to the funeral home, as per standard hospital procedures. If a decedent remains contaminated above background levels, arrangements will be made to store the body in a temporary morgue in proximity to the hospital, until it is able to be handled safely; if radiation levels remain high and the decedent cannot be handled, a direct burial will be ordered without first going to a funeral home. When ordered by the Coroner, autopsies will be performed at the SJRH; however certain conditions will apply (see Section entitled 'Autopsies').

- ***FUNERAL HOMES***

The funeral home is responsible for the transportation of decedents to the SJRH morgue (if an autopsy is required) or to the funeral home as per normal procedure except where otherwise restricted (see Sections 5.12.4 to 5.12.6). Any special requirements ordered by the Medical Officer of Health on-call for burial, funeral practices and guidance to families and friends will be carried out by the funeral home as per guidelines contained in this document. High risk procedures as detailed in Section 5.12.6, such as cremation, embalming or open casket funerals, will be restricted as directed by the NB Power health physicist or PLNGS radiation protection qualified staff and the Medical Officer of Health on-call.

- ***RCMP***

The RCMP will notify the Medical Officer of Health on-call and Coroner Services of any death involving radiation exposure or contamination. The RCMP will be consulted in any case where NB EMO must make arrangements for the transportation of any human remains from inside the 20km Emergency Evacuation Zone or an MDC, to the temporary field morgue.

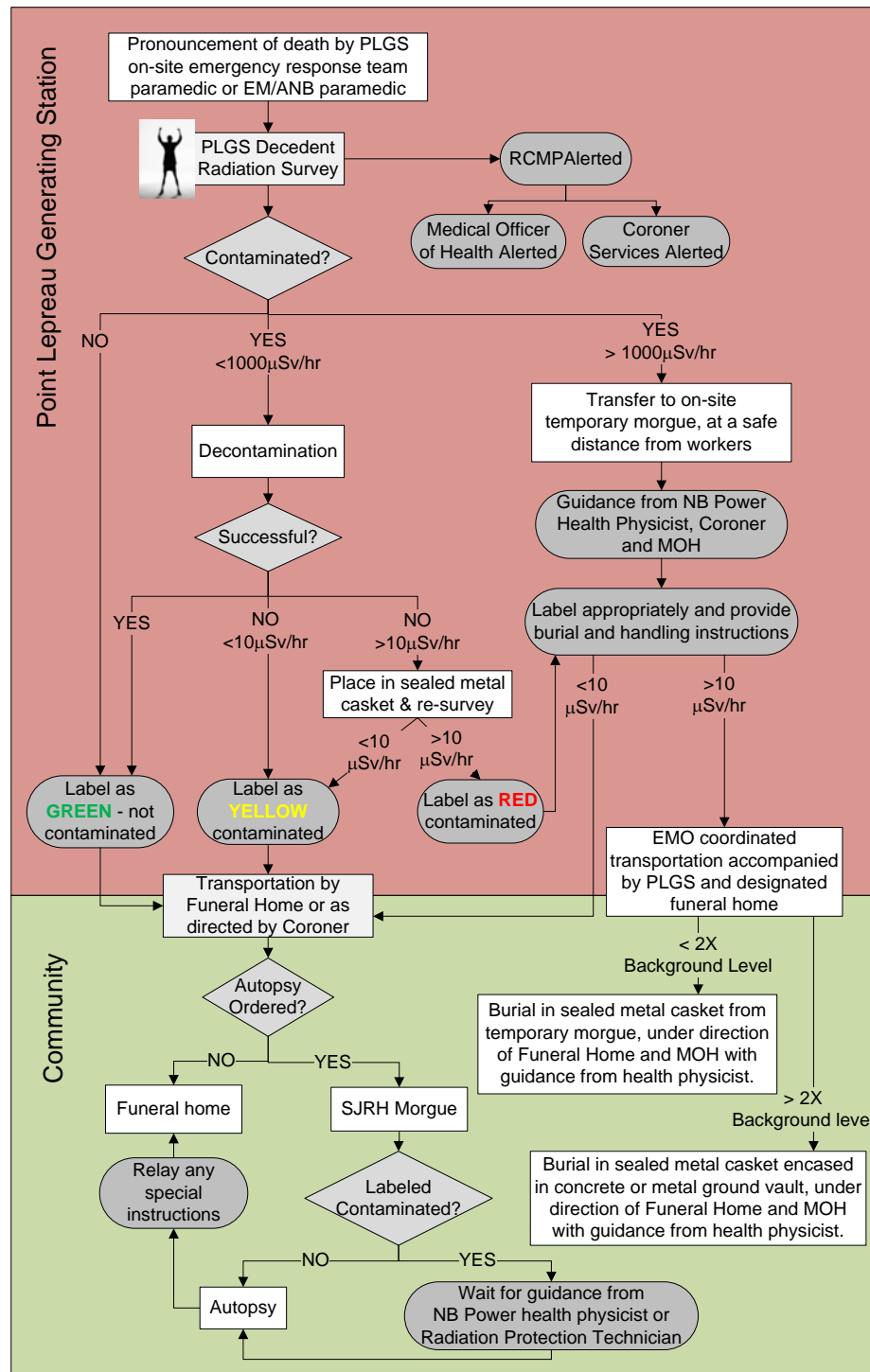
5.12.4 Concept of Operations – Management of the Deceased in the Field Setting

This section refers to the management of decedents on-site at PLNGS (within a 1km radius around PLNGS), within the 20km Emergency Evacuation Zone, or at an MDC. There are two separate protocols, one for managing a decedent before the release of any radioactive material and another for managing a decedent when radioactive material has been released from PGLS.

- ***NO RELEASE OF RADIOACTIVE MATERIAL***

Prior to the release of radioactive material from PLNGS, the only plausible scenario for a death involving a contaminated and/or exposed person will be on-site at PLNGS or in hospital after having been transported from PLNGS. In the context of a nuclear emergency, this scenario could occur during a PLNGS emergency classified as a Radiation Alert, Site Area Radiation Emergency or General Radiation Emergency (only where a release is imminent but has not yet occurred). In the event of a death at PLNGS involving radioactive contamination, the RCMP will alert the Medical Officer of Health on-call (via PMCC, the Provincial Mobile Communication Centre) and Coroner Services. This process is depicted in Figure 8 and possible scenarios are described in Table 1.

PLNGS is responsible to decontaminate the remains of any person who is deceased on-site, to the greatest extent possible. If a decedent has a dose rate that exceeds 1,000 $\mu\text{Sv}/\text{hour}$, storage will be required at an on-site temporary morgue, at least 30 feet away from PLNGS workers; PLNGS Radiation protection qualified staff will decontaminate the decedent only once levels have dropped below 1,000 $\mu\text{Sv}/\text{hour}$ (see Table 1). Decedents at PLNGS will be scanned for radiation and labeled appropriately (see Section 5.12.13 for label templates) even if free of contamination, before being transported to a funeral home, hospital morgue or on-site temporary field morgue. If a release of radiation is imminent, PLNGS will also be responsible for transporting the deceased outside the Emergency Evacuation Zone, to be received by funeral home personnel, rather than having the funeral home pick up the remains at PLNGS. The process applied is dependent on the different plausible scenarios, as per Table 1. For a death in hospital after transportation from PLNGS, see Section 5.12.5.



NOTE: Any reference to dose rates in micro Sieverts per hour refers to rates above background levels.

Figure 8. Management of an on-site death at PLNGS without an off-site release of radioactive material.

- **WITH A RELEASE OF RADIOACTIVE MATERIAL**

In this scenario, a General Radiation Emergency would have been declared by PLNGS. This section refers to Figure 9.

On-Site At Point Lepreau Nuclear Generating Station

In the event of a death on-site at PLNGS (within a 1 km radius around the plant), Coroner Services and the Medical Officer of Health on-call will be notified, the decedent will be surveyed by PLNGS for radiation contamination, and decontaminated to the greatest extent possible (see Section 5.12.4). Under the direction of Coroner Services, human remains will be bagged, labeled and stored in an on-site temporary morgue (refrigerated truck) until the emergency event has been stabilized. At this point, PLNGS will transport human remains to a temporary field morgue, outside of the 20km Emergency Evacuation Zone in proximity to the MDC. PLNGS will be responsible for maintaining a stockpile of body bags on site.

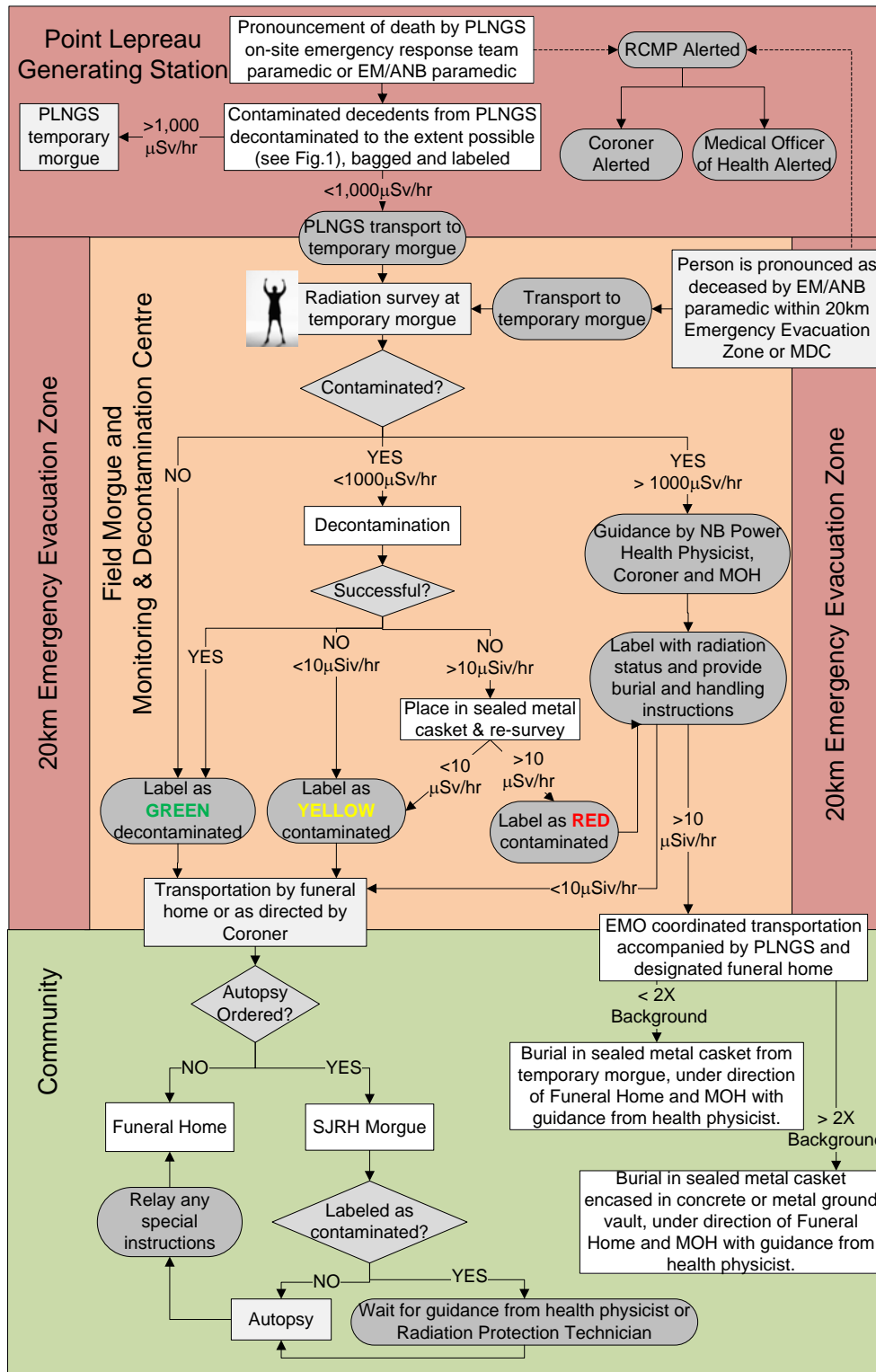
Off-site

If RCMP encounter a decedent in the course of evacuating the 20km Emergency Evacuation Zone, they will, under the direction of Coroner Services, document the scene, secure the area, call the Medical Officer of Health on-call (via the PMCC) and leave remains in place until all live evacuees are safely out of the zone. If a Zone Warden encounters a decedent, 911 will be called, RCMP and in most cases EM/ANB will respond, and the Medical Officer of Health on-call will be notified (via PMCC). The Off-site EOC will confirm with RCMP that the Medical Officer of Health on-call has been called. If EM/ANB is called to the scene, they will confirm death and transport the remains to the temporary morgue under the direction of Coroner Services, otherwise transportation of remains will be arranged through Coroner Services, as appropriate.

A temporary field morgue will be established by NB EMO, in proximity to the MDC, triggered by the setup of the MDCs. Once live evacuees have been brought to safety, NB EMO in consultation with RCMP and Coroner Services will arrange transportation of any human remains from inside the 20km Emergency Evacuation Zone or the MDC, to the temporary field morgue to be surveyed for radiation contamination. In consultation with Coroner Services, EM/ANB may in certain circumstances transport a decedent to the temporary field morgue. At the temporary field morgue, PLNGS radiation protection qualified staff will provide resources and equipment to survey decedents and provide advice on the safe handling of the remains. If decontamination is required, PLNGS will decontaminate decedents, provide post-decontamination radiation monitoring and advise on the safe handling of the remains. There are four possible outcomes to the radiation survey and decontamination of decedents, which will each require a different approach as per Table 1, below.

Once processed through the temporary field morgue a decedent will be transported as directed by Coroner Services to the funeral home, burial site or to the hospital morgue, if an autopsy has been ordered. In a General Radiation Emergency, any decedent from PLNGS, the 20km Emergency Evacuation Zone or an MDC will be scanned for radiation and labeled appropriately by PLNGS (as per label templates found in Section 5.12.13), before being transported to a funeral home or hospital morgue, even if free of contamination, i.e. never contaminated or successfully decontaminated. For decedents that remain contaminated any necessary precautions will be communicated to the

transporter or receivers (SJRH or funeral home), by the on-site PLNGS radiation protection qualified staff.



NOTE: Any reference to dose rates in micro Sieverts per hour refers to rates above background levels.

Figure 9. Management of a death at PLNGS, within the 20km Emergency Evacuation Zone or at an MDC, with an off-site release of radioactive material.

Table 1. Possible Scenarios in the Management of the Deceased in Field Settings.

<p>i. The decedent has no measurable levels of contamination (dose rate is not above background level).</p>	<p>Radiation-specific precautions (such as special burial procedures or personal protective equipment) will not be required. Normal procedures can be followed and the remains can be released to the funeral home (or to the SJRH morgue if the Coroner orders an autopsy). Label body bag as being cleared of contamination (Green Label – as per Section 5.12.13).</p>
<p>ii. The decedent is externally contaminated with a reading of less than 1,000 $\mu\text{Sv}/\text{hour}$ and can be decontaminated using appropriate precautions.</p>	<p>This type of decedent will be processed and decontaminated prior to releasing the body to the funeral home (or SJRH if Coroner Services orders an autopsy). Label body bag as being cleared of contamination (Green Label – as per Section 5.12.13).</p>
<p>iii. The decedent is contaminated, with or without an embedded object containing radioactive material, with a reading of greater than 1,000 $\mu\text{Sv}/\text{hour}$ and cannot be handled without guidance from an NB Power health physicist or PLNGS radiation protection qualified staff.</p>	<p>This type of decedent will need to be moved to a temporary morgue (on-site or off-site). An NB Power health physicist, the Coroner and the Medical Officer of Health on-call will determine how to manage the remains. This may require allowing time for radiation levels to drop below 1,000 $\mu\text{Sv}/\text{hour}$ through natural radioactive decay so that it can be handled for decontamination. Within the possible scenarios of a nuclear emergency at PLNGS, this is an unlikely event. Label body bag as contaminated (Red Label - Section 5.12.13).</p> <p>After decontamination, the decedent will be re-surveyed for radiation contamination and will be managed according to the remaining level, as per scenario (i), (ii) or (iv), in this table. If radiation levels remain above 2X background level, the decedent will be placed in a sealed 21 gauge metal casket and buried in an in-ground metal or concrete vault without going to the funeral home, under the direction of the funeral home and Medical Officer of Health on-call, and under the guidance of an NB Power health physicist.</p>
<p>iv. Decontamination is unsuccessful because the decedent is internally contaminated.</p>	<p>For this type of decedent the body bag will be labeled as contaminated (Yellow Label - see Section 5.12.13). If dose rate is $<10\mu\text{Sv}/\text{hour}$ above background level, the remains will be released to the funeral home, in accordance with Department of Health direction, guidelines and protocols.</p> <p>If dose rate is $>10\mu\text{Sv}/\text{hour}$ above background level, the decedent will remain in the temporary morgue at PLNGS until natural radioactive decay brings the dose rate below 10 $\mu\text{Sv}/\text{hour}$ before releasing to the funeral home. If this is not possible within 10 days (the normal limit for holding human remains until burial), PLNGS radiation protection qualified staff under the direction of the funeral home and the Medical Officer of Health on-call, will place the decedent in a 21 gauge metal casket to be sealed and buried without going to the funeral home.</p>

5.12.5 Management of Contaminated Decedents in the Hospital Setting

At the direction of the SJRH a temporary morgue (two refrigerated trucks) will be established on hospital grounds at least 30 feet from the hospital, its workers and the public, with support from and in coordination with NB EMO (via the Regional Emergency Operations Centre) and PLNGS. Depending on the emergency situation and in consultation with the PEOC or NB EMO, the temporary morgue setup will be triggered by the declaration of a Radiation Alert or Site Area Radiation Emergency by PLNGS.

Any death in hospital involving radiation contamination or exposure will trigger an alert to Coroner Services and the Medical Officer of Health on-call.

Decedent with a Dose Rate <1,000 μ Sv/hour

Any decedent contaminated with a dose rate of < 1,000 μ Sv/hour, who dies in hospital, whether originating from PLNGS, the Emergency Evacuation Zone or an MDC, will be decontaminated to the extent possible and re-surveyed for contamination. Decontamination will proceed at the SJRH's request, by a PLNGS radiation protection qualified staff, using the SJRH decontamination resource. If successfully decontaminated, the decedent will be bagged and labeled as clear of contamination (Green Label – as per Section 5.12.13) and processed as per standard procedure.

Those who remain internally contaminated with any radiation level over background level will be labeled with a yellow label (as per Section 5.12.13) and transferred to the SJRH temporary morgue. These decedents are safe for PLNGS radiation protection qualified staff to handle and must therefore be kept in a separate truck from those with high levels of contamination above 1,000 μ Sv/hour (see next paragraph below), which will be labeled with a red label (as per Section 5.12.13).

Similar to the procedure described for a death outside of the hospital, the dose rate of an internally contaminated decedent must decrease to less than 10 μ Sv/hour before the remains can be released to the funeral home. If rates remain above 10 μ Sv/hour after decontamination and storage (if necessary) at the SJRH temporary morgue (for a maximum 10 days), the decedent will be buried without first going to the funeral home. A funeral home(s) will be designated at the time of such an event, through consultation between the Public Health New Brunswick and the NB Funeral Directors and Embalmers Association. The direct burial will be carried out under the guidance of an NB Power health physicist and under the direction of the designated funeral home and Medical Officer of Health.

Decedent with a Dose Rate >1,000 μ Sv/hour

Decedents with a dose rate > 1,000 μ Sv/hour above background levels cannot be decontaminated or otherwise handled without guidance from an NB Power health physicist or PLNGS radiation protection qualified staff. These decedents will be labeled as such (Red Label – as per Section 5.12.13) and transferred to a second refrigerated truck designated for this dose rate threshold. A PLNGS radiation protection qualified staff or NB Power health physicist will need to determine how long to store the remains until safe to handle and collaborate with the Medical Officer of Health and the designated funeral home to develop a case-specific death care plan. As for the procedure described for a death outside of the hospital, the dose rate must decrease to below 10 μ Sv/hour

within 10 days of death otherwise a burial will be required without going to a funeral home, as described above. If the dose rate remains above twice background level, the casket must be buried in an in-ground concrete or metal vault.

Decedent with Embedded Radioactive Object

As part of decontamination in the hospital setting, any embedded object containing radioactive material must be removed prior to releasing a decedent to a funeral home. The medical team responsible for removing radioactive shrapnel will require METER²¹ training, as requested by the Coroner Services and in consultation with the Medical Officer of Health on-call. Planning such a task will require guidance from a PLNGS radiation protection qualified staff to ensure safety of health personnel and the working environment.

- **AUTOPSIES**

Autopsies will not be performed on internally contaminated decedents unless absolutely necessary, as ordered by Coroner Services, because of the risk to the pathologist who may receive a significant radiation dose to the hands. Coroner Services will use other means of determining cause of death, wherever possible. If required, autopsies for an internally contaminated decedent will only be performed at the SJRH. The remains will be stored until a PLNGS radiation protection qualified staff and/or NB Power health physicist is available to provide guidance in planning the autopsy, as necessary.

5.12.6 Funeral Homes

Funeral homes will not receive a decedent that has not first been externally decontaminated or where the dose rate of an internally contaminated decedent is unknown. Internally contaminated decedents will have been surveyed for radiation and labeled appropriately by a PLNGS radiation protection qualified staff. As discussed under Section 5.12.1, decedents will not be released to funeral homes until radiation levels fall below 10 $\mu\text{Sv}/\text{hour}$ above background levels. At this level, it would take 100 hours of close contact (touching) to reach the public dose limit (1 mSv/year or 1,000 $\mu\text{Sv}/\text{year}$). This will allow for the maximum time required for funeral homes to expedite a burial.²² Even at dose rates under 10 $\mu\text{Sv}/\text{hour}$, standard procedures will be restricted for internally contaminated decedents. If the funeral home is required to perform high risk procedures on an internally contaminated decedent, a PLNGS radiation protection qualified staff will provide guidance and on-site monitoring in planning these procedures, for the safety of workers and the public.

- **RESTRICTIONS ON FUNERAL PRACTICES**

Protocols for managing internally contaminated decedents, must respect the dignity of the deceased and of bereaved families and communities, while ensuring their safety. Funeral practices will however be limited to protect the health of the public; the dose limit for the public must be kept below 1 mSv/year (= 1,000 $\mu\text{Sv}/\text{year}$).

²¹ Health Canada's training program for first responders and hospital first receivers, for responding to a radiological or nuclear event, *Medical Emergency Treatment for Exposures to Radiation*

²² As per consultation with NB Funeral Directors and Embalmers Association.

Below the 10 μ Sv/hour limit

The decedent may be released to the funeral home; some restrictions will apply however, if there are any measurable levels of radiation (above background levels) after placing the decedent in a body bag and further restrictions if measurable levels are detected after being sealed in a 21 gauge metal casket (see lists below).

Restricted practices for contaminated decedents with dose rates above background radiation levels, measured outside of the closed body bag:

- No cremation;
- No embalming;
- No open casket funeral;
- No washing of the decedent by family or community member.

Additional restricted practices for contaminated decedents with dose rates above background radiation levels, measured outside of the hermetically sealed 21-gauge metal casket:

- Cannot have body present at the funeral;
- Cannot sit with the decedent (for the purposes of ensuring they are not left unattended);
- Cannot release remains to the community for burial;
- Most religious or cultural timeline requirements for burial can be respected; however burial must be expedient.

Above the 10 μ Sv/hour limit

The decedent will not be released to the funeral home if the dose rate measures above 10 μ Sv/hour. Depending on the type of isotopes involved and where possible, decedents will be held in a temporary morgue until the dose rate drops through natural radioactive decay to below 10 μ Sv/hour above background levels. If this radioactive decay allows acceptable levels to be reached within 10 days of death (10 days is the normal limit for holding human remains until burial) the decedent will be released to funeral home with restrictions (see list above for dose rates below the 10 μ Sv/hour limit).

If levels cannot decrease to below 10 μ Sv/hour within 10 days of death, the decedent will be placed in a hermetically sealed 21 gauge metal casket at the temporary field morgue or temporary hospital morgue and buried without going to a funeral home, under the direction of the Medical Officer of Health and designated funeral home. Families will be offered a memorial service, without the body present.

Any specific religious or cultural requirements for positioning or wrapping the body can be done by designated PLNGS personnel under direction of the funeral home and the Medical Officer of Health, as long as it is performed prior to shrouding, bagging, placing the remains into the casket and sealing, and as long as the dose rate of the decedent is below 1,000 μ Sv/hour.

5.12.7 Embalming

Embalming of internally contaminated decedents will be avoided for decedents with dose rates above background levels, as it increases radiation dose to funeral home staff.

5.12.8 Cremation

Internally contaminated decedents will not be cremated due to the high risk of contamination to the facility and the environment.

5.12.9 Burial

Although burial of a body with internal contamination poses only a minimal health risk to humans or the environment, internally contaminated decedents with dose rates above background levels will be buried in a sealed 21-gauge metal casket to minimize the release of radioactive material into the environment. A metal casket will be used with a seal that releases pressure from the inside, retarding the entry of ground water.

For dose rates greater than twice background levels, an in-ground, sealed metal or concrete vault will be required. Such a vault must be labeled on the exterior to indicate dose rate and the date and time of measurement.

5.12.10 Transportation of Remains

Prior to transporting, the decedent should be free of any loose surface contamination or shrapnel. The packaging and transport of human remains is an exception to the special requirements in the federal Packaging and Transport of Nuclear Substances Regulations. Transportation of the deceased within the province is normally done by funeral home personnel and does not require embalming as a prerequisite. To prevent the release of radioactive material into the environment, decedents must be transported in a sealed 21-gauge metal casket. The casket must be labeled accordingly with appropriate radiation level, as per labels found in Section 5.12.13. Embalming is required for shipping of human remains out-of-province, by any mode of transportation. Due to restrictions on embalming, out-of-province shipping will not be permitted for decedents with dose rates above background levels, as per Section 5.12.7.

5.12.11 Mass Fatalities Management

A nuclear emergency at PLNGS is not expected to be a mass fatality event.²³

5.12.12 Public Messaging

Public messaging will be managed by the NBHEOC in accordance with the *Provincial Health Nuclear Emergency Plan* and in collaboration with the Provincial EOC's Joint Information Centre, as described in the NB EMO *Point Lepreau Nuclear Generating Station Off-site Nuclear Emergency Plan*. Key messages should consider that despite the planning assumptions, the general public may perceive any death in the context of a nuclear emergency to be caused by deterministic effects (direct mortality from radiation exposure). Key messages should address this perception.

²³

There were 30 deaths related to the Chernobyl nuclear generating station accident in 1986, two of which were due to the explosion and the remaining 28 were firefighters who died of acute radiation syndrome. Although some plant workers received a significant dose of radiation, Fukushima Daiichi accident in 2011 did not result in any deaths directly related to radiation exposure.

5.12.13 Sample Body Bag and/or Casket Labels for Decedents in a Nuclear Emergency

All labeling of body bags and/or casket referenced throughout Section 5.12 is the responsibility of PLNGS. Labels for body bags and/or caskets will be provided by PLNGS along with an instruction guide for their proper application.

Use the green label when dose rate does not exceed background level:

NOTICE

Surveyed and Cleared of any Radioactive Contamination

DOSE RATE EQUALS BACKGROUND LEVEL

Name _____ Badge # _____

Date _____ Time: _____

For guidance call _____

Comments: _____



PLGS Radiation Protection Technician or Health Physicist
X _____

DO NOT REMOVE EXCEPT BY PLGS RADIATION PROTECTION
TECHNICIAN OR HEALTH PHYSICIST

Use the yellow label when dose rate is 10 μ Sv/hour above background level but does not exceed 1,000 μ Sv/hour:

CAUTION

Radioactive Contamination

Check One:

SAFE TO HANDLE FOR 100 HOURS OF CLOSE CONTACT (Dose Rate < 10 μ Sv/hr above background)

MUST BE HANDLED BY PLGS RADIATION PROTECTION TECHNICIAN (Dose Rate > 10 μ Sv/hr to < 1000 μ Sv/hr above background)

At a distance of 1' dose rate = _____ μ Sv/h Time _____

Name _____

Badge # _____ Date _____

For guidance call _____


Comments: _____

PLGS Radiation Protection Technician or Health Physicist
X _____

DO NOT REMOVE EXCEPT BY PLGS RADIATION
PROTECTION TECHNICIAN OR HEALTH PHYSICIST


Use the red label when dose rate exceeds 1,000 $\mu\text{Sv}/\text{hr}$ above background level:

DANGER



Radioactive Contamination

Dose Rate exceeds 1,000 $\mu\text{Sv}/\text{hr}$ above background level



MUST BE HANDLED ONLY BY PLGS RADIATION PROTECTION TECHNICIAN

At a distance of 1' dose rate = _____ $\mu\text{Sv}/\text{h}$ Time _____

Name _____

Badge # _____ Date _____

For guidance call _____

Comments: _____

PLGS Radiation Protection Technician or Health Physicist
X _____

DO NOT REMOVE EXCEPT BY PLGS RADIATION PROTECTION TECHNICIAN OR HEALTH PHYSICIST

5.13 Public Communications

Communication in a nuclear emergency involves more than good media management. It is equally essential that all health system workers are able to communicate clear, simple, consistent, scientifically accurate messages to the patients who they serve. Consequently, reinforcing the key messages should be an integral part of health system education, training and exercises for nuclear emergencies.

5.13.1 Health Communications Objectives

- Ensuring all information concerning the event and all advice to the public is coordinated across the health system and with the JIC;
- Communicate health effects of radiation and put health risk in perspective for the general public;
- Direct public to appropriate health resources and points of service;
- Prevent and correct inaccuracies and misconceptions as rapidly as possible, regarding the public health risks;
- Be transparent, accurate and timely, communicating through a variety of methods, through all phases of the emergency;
- Be proactive in responding to themes emerging in social media, Tele-Care 811 and other sources of reflecting public concerns;
- Provide information in both official languages across all media types;
- Provide ongoing support and information throughout the recovery (transition) phase of the emergency and address the long-term health impacts of the nuclear emergency event.

5.13.2 Concept of Operations

When activated, the Emergency Information Services organization is the provincial lead agency for government communications. The Emergency Information Services organization comprises Executive Council Office, departmental communications staff including Health, and NB Power public affairs staff. They will operate at the JIC located at the PEOC Nuclear Control Group to assist in common messaging and coordination of all information to the public. For the duration of a nuclear emergency, the Emergency Information Services acts as coordinator and a clearing house for all government strategic communications, operational communications and emergency public information. There will however be a requirement for independent but coordinated health-specific messaging.

At the provincial health system level, the communication process will require close teamwork between the DH, RHAs and EM/ANB as well as coordination with the Emergency Information Services organization, to develop and disseminate timely, accurate and consistent messaging. In practice, an incident management structure is applied to achieve four-way coordination between the communications leads in the Horizon Health / SJRH EOC, EM/ANB EOC, and the DH through the NBHEOC and DH Communications liaison in the PEOC's Emergency Information Services. Health-specific queries will be directed as appropriate to DH, Horizon Health Network or EM/ANB communications leads. In addition, Tele-Care 811 will maintain up-to-date information and serve as an important element of reassurance for those who have individual health queries.

The PEOC Nuclear Control Group will establish an EOC operations cycle to assess, report and align situational awareness and prepare messaging for dissemination. News conferences and technical briefings will align with the Joint Information Centre EOC operations cycle. At any time, stakeholders from all levels of government (federal, provincial and regional), including the health system, may be actively involved in disseminating the resulting consistent, coordinated public messages about the emergency.

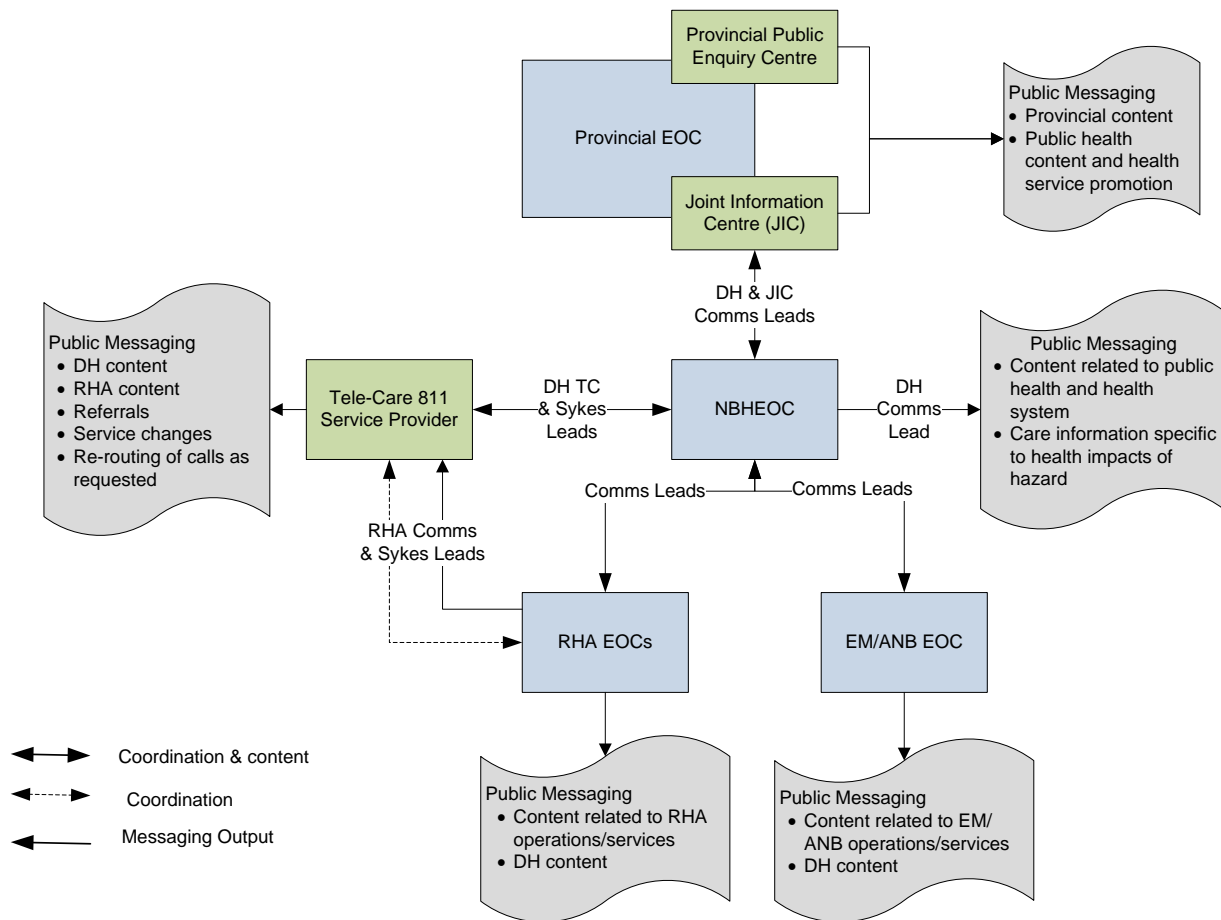


Figure 10. Concept of operations for public communications

5.13.3 Roles and Responsibilities

- **Emergency Public Information Services**

At the request of NB EMO, the Emergency Public Information Services is activated to meet the demands of the emergency at a provincial level. The Emergency Public Information Services coordinates the public communications activities of government and the utility, to ensure timely and accurate advice is provided to the public. The Director of the Emergency Public Information Services takes the leading role in the communications operations with strategic advice from the Executive Council Office. It also includes various departmental communications representatives and other organizations involved in the emergency response, co-located with NB EMO in the Joint Information Centre.

- **NB Department of Health**

The Department of Health, in coordination with other departments, disseminates timely, accurate and consistent health messages for communicating public health risk, air, water and food contamination, psychosocial response and public misunderstanding of risk and other nuclear issues.

- **Public Health Operations Lead**

The NBHEOC lead for Public Health New Brunswick (PHNB) and his/her team will provide the content expertise in all communications related to public health. The PHNB lead will work closely with NBHEOC Communications and where needed, may consult and collaborate with the Provincial Radiation Medical Advisor for radiation-related medical content.

- **Addictions and Mental Health Operations Lead**

The NBHEOC lead for Addictions and Mental Health provides content expertise in all communications related to the psychosocial emergency response and will work closely with PHNB and NBHEOC Communications leads to direct messaging and provide content.

- **Provincial Radiation Medical Officer**

The Provincial Radiation Medical Officer will be available for consultation to provide content expertise in all communications related to radiation-related medical issues, working collaboratively with the NBHEOC Communications and PHNB leads.

- **Tele-Care 811**

Tele-Care 811 will serve as one of the key providers of health care advice and health system navigation to residents of the province of New Brunswick in response a nuclear emergency event with potential or actual health impacts. The service will be utilized and advertised as a key resource to residents through public messaging from the Department of Health. The NBHEOC lead for Tele-Care 811 will work closely with Regional Health Authorities (for services changes), as well as NBHEOC leads for Communications, PHNB and Addictions & Mental Health to align messaging.

To manage the large surge in call volumes anticipated in a nuclear emergency event, a pre-recorded, automated system will be activated to provide information on frequently asked questions including: (1) health effects of radiation; (2) where to obtain information on reception centres; (3) food, air and water safety; (4) potassium iodide information; (5) referral for media inquiries, and; (6) an option to receive care advice and information from a registered nurse.

Through the NBHEOC decision-support function, Tele-Care 811 will also be a source of data for monitoring public concerns through call volume trends and emerging themes.

- **Horizon Health Network / Saint John Regional Hospital**

The Saint John Regional Hospital (SJRH), as the designated hospital for receiving contaminated casualties or radiation-related injuries, will serve as the responsibility centre for public communications within their regional jurisdiction. The SJRH will also be part of the distribution of information releases from the JIC and from the NBHEOC, to amplify the coordinated messaging.

- **Vitalité Health Network**

Although not directly involved in the response to a PLNGS nuclear emergency response, Vitalité Health Network will be impacted by the worried-well and an increased demand for information and psychosocial support to the community at large.

- **EM/ANB EOC**

EM/ANB will serve as the responsibility centre for public communication related to their operations. They will also be part of the distribution of information releases from the JIC and from the NBHEOC to amplify coordinated messaging.

- **Health Canada**

Health Canada is the lead federal department for nuclear emergencies in or affecting Canada, with the exception of nuclear war. They are the lead federal agency responsible for providing advice on the medical aspects of ionizing radiation exposures. Health Canada will provide the federal position with respect to the nuclear emergency. In an emergency at PLNGS, they will provide specialized support, keep federal public affairs informed and provide situational awareness regularly to federal offices. NBHEOC Communications will liaise with Health Canada through the Federal Health Portfolio Emergency Operations Centre as per the all-hazards Provincial Health Emergency Management Plan.

- **Public Health Agency of Canada**

The Public Health Agency of Canada (PHAC) will provide available public information material relevant to the nuclear emergency, such as technical communications products and an assessment of impacts for the Federal-Provincial/Territorial emergency communication functions. PHAC will assist in the dissemination and customization of information products on protective actions to target specialized audiences. NBHEOC Communications will liaise with PHAC Communications through the Federal Health Portfolio Emergency Operations Centre as per the all-hazards Provincial Health Emergency Management Plan.

5.13.4 Spokespersons

- **Department of Health**

There are two DH spokespersons for a nuclear emergency with off-site implications: The Chief Medical Officer of Health will be the official spokesperson for public health issues and the Radiation Medical Advisor for medical/clinical issues. As a best practice, both will be in attendance at news conferences. The DH Communications Director may also serve as a DH spokesperson. The role of spokesperson may be delegated under certain circumstances, to the Regional Medical Officer of Health.

- **Regional Health Authorities**

The official spokesperson for Horizon Health will be designated by the Executive Management Team. The spokesperson will provide information regarding the emergency to internal and external audiences including assigning their name to staff bulletins regarding the status of the emergency, participating in news conferences and media interviews. Depending on the nature of the communication requirement, this role may be served by the RHA Communications Director or Regional Health Authority Chief Executive Officer. Given that the designated hospital for receiving radiation contaminated and/or exposed casualties resides in Horizon Health Network, there will be a greater demand for public communications within their jurisdiction.

- **Health Canada**

Public affairs specialists and spokespersons from Health Canada may be assigned to the emergency and will convene at the Provincial JIC.

- **Public Health Agency of Canada**

The Public Health Agency of Canada may provide support and spokespersons for the operation of a media centre and other communication functions.

- **Extra-Mural/Ambulance NB**

EM/ANB Communications will serve as the responsibility centre for public communication related to their own operations.

5.13.5 Target Audiences and Stakeholders

Information demands will come from beyond the local emergency and extend not only provincially and nationally but also internationally. Although the JIC will be the main source of information for the emergency, health-specific information will be required from the Department of Health, tailored to multiple target audiences and stakeholders. Communication products with health contents may need to flow through any number of channels listed below.

- Health care workers
- All residents of NB
- Individuals living or evacuated from the 20km Emergency Planning Zone
- Families and friends of individuals living or evacuated from the 20km Emergency Planning Zone
- Media and social media
- Other government departments and agencies
- Federal partners
- Non-governmental organizations

5.13.6 Communications by Emergency Phase and PLNGS Emergency Classification Levels

Regardless of the classification level of the emergency, DH Communications through the NBHEOC will provide any media response or health-related public communications content.

PLNGS Emergency Classification Level	Definition	Communications Lead	Health Support
WARNING PHASE			
Radiation Alert	An event has occurred leading to higher than normal radiation levels limited to the PLNGS site.	Led by PLNGS with ECO supporting routine government communications.	Not required
RESPONSE PHASE			
Site Area Radiation Emergency	An event affects territory within the PLNGS property perimeter only, requiring preparation to take protective actions off-site, should they be needed.	PLNGS remains the lead; however, it will be supported by NB EMO through the PEOC Nuclear Control Group, with the activation of the JIC.	<ul style="list-style-type: none"> ➤ NBHEOC • Tele-Care 811 • PHNB • Addictions & Mental Health • Communications ➤ SJRH (if any casualties)
General Radiation Emergency	<p>An event involving an actual or substantial risk of release of radioactive material or radiation exposure that warrants taking urgent protective actions outside the boundary of the Point Lepreau site (i.e. potential or actual public safety implications).</p> <p>Minister of DJPS will declare a provincial state of emergency with the classification of a general radiation emergency by PLNGS.</p>	Led by the JIC co-located with the PEOC Nuclear Control Group.	<ul style="list-style-type: none"> ➤ NBHEOC • Tele-Care 811 • PHNB • Communications • Provincial Radiation Medical Advisor • Addictions & Mental Health ➤ Horizon Health Network and SJRH ➤ EM/ANB ➤ Vitalité Health Network
RECOVERY (TRANSITION) PHASE			
General Radiation Emergency Classification rescinded: (1) release has ended; (2) no further chance of another release, and; (3) PLNGS is in a stable state.	<p>Clean up, repair, repatriation/relocation, return to normal operations</p> <p>Provincial state of emergency will continue to be in effect throughout recovery.</p>	Led by the JIC co-located with the PEOC Nuclear Control Group.	<ul style="list-style-type: none"> ➤ NBHEOC • Tele-Care 811 • PHNB • Comms • Provincial Radiation Medical Advisor • Addictions & Mental Health ➤ Horizon Health Network and SJRH ➤ Vitalité Health Network ➤ EM/ANB

5.13.7 Health Messaging Requirements, by Emergency Phase

Alert Phase

PLNGS Emergency Classification: RADIATION ALERT

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
PLNGS declaration of an emergency classification: Radiation Alert	NB Power	NB Power	Not applicable to Health	Not applicable to Health	Not applicable to Health

Response Phase

PLNGS Emergency Classification: SITE AREA RADIATION EMERGENCY

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
PLNGS emergency classification declaration	NBHEOC level 3 ramp up with some response for Communications and Tele-Care 811 leads	NB Power with PEOC / Health support	Media 811	<ul style="list-style-type: none"> • Media response to general inquiries on: <ul style="list-style-type: none"> ○ radiation & health ○ KI ○ potential health impacts on specific conditions e.g. pregnancy • Reactive social media response to above topics 	<ul style="list-style-type: none"> • 811 automated system • FAQs on radiation & health, KI, specific medical conditions • RHA service changes • Public health topics for social media – no public health risk or KI requirement at this time (coincide with PLNGS)
PLNGS or other casualty	NBHEOC level 3 ramp up, Comms and Tele-Care 811 response	NB Power with PEOC and Health support (DH and SJRH)	Media 811	<ul style="list-style-type: none"> • Media response to general inquiries on: <ul style="list-style-type: none"> ○ radiation & health ○ KI ○ potential health impacts on specific conditions e.g. 	<ul style="list-style-type: none"> • 811 automated system • FAQs on radiation & health, KI, specific medical conditions • Public health topics for social media – no public health risk, or KI

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
				pregnancy • Proactive social media response to above topics	requirement at this time (coincide with PLNGS and the SJRH)
Death related to PLNGS emergency	NBHEOC level 3 until recovery completed	NB Power with PEOC and Health support	Media	• Proactive media response • Targeted messaging related to funeral restrictions	• Key messages should consider that despite the actual risk, the general public may perceive any death in the context of a nuclear emergency to be caused by deterministic effects (direct mortality from radiation exposure). • Funeral practices may need to be restricted and targeted messaging may be needed for the bereaved.
Deactivation	NBHEOC level 3 until recovery completed	NB Power with PEOC and Health support	Media 811	• As above	• As above

PLNGS Emergency Classification: GENERAL RADIATION EMERGENCY

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
PLNGS declaration of an emergency classification: General Radiation Emergency	PEOC level 3 NBHEOC level 3 with full communications activation	PEOC with Health / NB Power support	Media	• Responses to inquiries on: <ul style="list-style-type: none"> ○ radiation & health ○ KI ○ potential health impacts on specific conditions e.g. pregnancy. KI allergy ○ Food, water safety 	• FAQs on radiation & health, KI, specific medical conditions • Web listing of service changes: http://en.horizonnb.ca/home/media-centre/notices.aspx and http://www.vitalitenb.ca/en/

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
				<ul style="list-style-type: none"> • Proactive social media response to above topics • KI order • KI messaging based on status of order • Food/air/water advisories • Psychosocial – related to stress, traumatic events, resources and service access points. • RHA service changes • Tele-Care 811 automated system with pre-scripted messaging for a General Radiation Emergency 	<p>news/closures-and-cancellations</p> <ul style="list-style-type: none"> • Food and water safety messaging • KI advisory • Food, water and air advisory (Do and Do Not present risk messaging) • Psychosocial messaging on dealing with traumatic events and accessing services • Tele-Care 811 pre-scripted messaging for General Radiation Emergency • Spokesperson talking points • Public health topics for social media – no public health risk, or KI requirement at this time (coincide with PLNGS) • PHNB shadow site – to be considered.
Precautionary evacuation	Reception Centre Activation Increase in worried-well	PEOC with Health / NB Power support	News conference Media 811	<ul style="list-style-type: none"> • Responses to inquiries on: <ul style="list-style-type: none"> ○ radiation & health ○ KI ○ potential health impacts on specific conditions e.g. pregnancy. KI allergy ○ Food, water safety • Proactive and reactive 	<ul style="list-style-type: none"> • FAQs on radiation & health, KI, specific medical conditions • Web listing of service changes: http://en.horizonnb.ca/home/media-centre/notices.aspx and http://www.vitalitenb.ca/en/news/closures-and-

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
				social media response to above topics <ul style="list-style-type: none"> • KI order • KI messaging based on status of order • Psychosocial – related to stress, traumatic events, resources and service access points. • RHA service changes • Worried-well (support RHAs) • Tele-Care 811 redirecting to alternate service access points as per RHA 	cancellations <ul style="list-style-type: none"> • Food and water safety messaging • KI advisory • Food, water and air advisory (no present risk) • Psychosocial messaging on dealing with traumatic events and accessing services • Spokesperson talking points • Public health topics for social media – no public health risk, or KI requirement at this time (coincide with PLNGS) • PHNB shadow site
Shelter-in-place order	Increased stress level in affected residents Increase in worried-well KI advisory	PEOC with Health / NB Power support	News conference Media 811	<ul style="list-style-type: none"> • Responses to inquiries on: <ul style="list-style-type: none"> ○ radiation & health ○ KI ○ potential health impacts on specific conditions e.g. pregnancy. KI allergy ○ Food, water safety • Proactive social media response to above topics • KI order and messaging based on status of order • Psychosocial – related to stress, traumatic events, resources and service 	<ul style="list-style-type: none"> • FAQs on radiation & health, KI, specific medical conditions • Web listing of service changes: http://en.horizonnb.ca/home/media-centre/notices.aspx and http://www.vitalitenb.ca/en/news/closures-and-cancellations • Food and water safety messaging • KI advisory • Food, water and air advisory

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
				access points. • RHA service changes • Targeted public health risk messaging and precautions • Food/water/air safety	• Psychosocial messaging on dealing with traumatic events and accessing services • Do’s and don’ts (with NB EMO) • Spokesperson talking points • Public health topics for social media • PHNB shadow site
Evacuation with plume	Activation of Monitoring and Decontamination Centres and Reception Centres	PEOC with Social Development/ Red Cross support	811 News conference Media	• Update public health risk messaging • Psychosocial (worried well) • KI order • KI messaging based on order • Food/water/air safety • Reassurance monitoring and directing worried well to services • Proactive and reactive social media • Frequently Asked Questions document for health care workers at decontamination and reception centres • Radiation and health impacts	• Public Health brochure • FAQs on radiation & health, KI, specific medical conditions • Web listing of service changes: http://en.horizonnb.ca/home/media-centre/notices.aspx and http://www.vitalitenb.ca/en/news/closures-and-cancellations • Food and water safety messaging • KI advisory • Psychosocial messaging on dealing with traumatic events and accessing services • Public health topics for social media • Spokesperson talking points

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
					<ul style="list-style-type: none"> • PHNB shadow site
Death of PLNGS employee or resident of the 20km EPZ	<p>Public Health / PLNGS assessment for handling and burial considerations</p> <p>Increased fear and misinformation</p>	<p>PEOC</p> <p>PHNB Provincial Radiation Medical Advisor</p> <p>Coroner</p>	<p>811</p> <p>Media</p>	<ul style="list-style-type: none"> • Any death in the context of a nuclear emergency will be perceived as being caused by deterministic effects (direct mortality from radiation exposure). Key messages should address this perception. 	<ul style="list-style-type: none"> • Speaking points for DH spokespersons • Communication with NB Funeral Directors and Embalmers Association and/or implicated funeral home

Recovery (Transition) Phase

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
<p>Recovery (Transition) – short term, post-response</p> <p>Up to 2 weeks</p>	<p>Activation of Ingestion Planning Zone (57km perimeter around PLNGS)</p>	<p>PEOC</p>	<p>811</p> <p>News conference</p> <p>Media</p> <p>Town Hall</p>	<ul style="list-style-type: none"> • Psychosocial: displacement, financial/business disruption, social disruption, trauma, concerns/anxiety about exposure • Service updates (health) • Worried well diversion from hospitals • Potential health impacts • Reception centre information • KI pills 	<ul style="list-style-type: none"> • Resources and service points for psychosocial services and advice related to longer term concerns. • RHA web site service interruptions page • Reassurance monitoring locations/access points for worried well concerns • FAQs on radiation & health, KI, medical follow up, specific medical conditions • Air, food and water advisories

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
				<ul style="list-style-type: none"> • Public health risk assessment (for 20km and 57km zones, province of NB, etc.) • Food, air, water and soil (soil contact, local gardening, public spaces, wild edibles) advisories • Long term risks • What to expect – construction, traffic, clean up, etc. 	
<p>Recovery (Transition) – medium term, ingestion pathway monitoring</p> <p>2 weeks to 3 mos</p>	<p>Ingestion Planning and exclusion zones are specified</p> <p>Repatriation for some residents</p> <p>Food/water restrictions</p> <p>Land use restrictions</p>	<p>PEOC</p>	<p>811</p> <p>News conference</p> <p>Media</p> <p>Town Hall</p>	<ul style="list-style-type: none"> • Ingestion pathway monitoring and public health implications • Psychosocial • Food, air, water safety • KI • Worried well diversion from hospitals 	<ul style="list-style-type: none"> • FAQs on radiation & health, KI, medical follow up, specific medical conditions • Food, water and air advisory • Psychosocial messaging on dealing with traumatic events and accessing services • Spokesperson talking points • Public health topics for social media – long term public health risk, KI requirement, registry at this time (coincide with PLNGS) • PHNB shadow site

Trigger	Impact / Activation	Responsibility	Format / Medium	Messaging (Proactive and Reactive)	Pre-scripted Messaging Requirements
Recovery (Transition) – long term, repatriation or permanent displacement Beyond 3 mos	Repatriation for some or all residents Food/water restrictions Population monitoring Land use restrictions	PEOC	Media 811 News conference	<ul style="list-style-type: none"> • Repatriation – public health safety and risks • Displacements – rationale, psychosocial impacts • Food, air, water safety • Long term health impacts • Population monitoring process • Diversion of worried well, as needed • KI • Psychosocial: dealing with chronic health problems, permanent social dislocation, economic loss 	<ul style="list-style-type: none"> • FAQs on radiation & health, KI, medical follow up, specific medical conditions • Food, water and air advisory • Psychosocial messaging on dealing with traumatic events and accessing services • Spokesperson talking points • Public health topics for social media – long term public health risk, KI requirement, registry at this time (coincide with PLNGS) • PHNB shadow site • Population monitoring strategy

5.13.8 Pre-scripted Messaging

Due to the high demand for consistent, accurate, clear, bilingual public messaging in a nuclear emergency response, messaging requirements should be anticipated, pre-scripted and translated wherever possible. Pre-scripted messaging may be quickly modified as required to fit the actual situation. Messaging requirements and web links identified in Section 5.13.7 for each phase of a nuclear emergency response have been pre-scripted and translated.

5.13.9 Social Media Strategy

- **Role of Social Media in Emergency Response**

- Communicating important, timely information to the community (this also includes dispelling/ correcting inaccurate information)
- Gaining situational information and insight from the community to inform emergency management and response
- Connecting communities with support services and each other
- Building preparedness in the community prior to an emergency

(LGA South Australia, 2016)

- **Strategy**

- With some exceptions, focus on public level responses not individual responses
- Divert inquiries to existing information sources such as 811, DH website, EMO hotline
- Provide information and proactively direct to existing resources
- Rely on pre-scripted messaging, web content and other existing resources
- Strategy for answering repeat questions
- Monitor and respond to emerging themes, through new releases and news conferences to address common concerns

5.13.10 Evaluation Measures

Evaluation of the effectiveness of public messaging will be particularly useful in the recovery (transition) phase of the emergency, which may be very lengthy and vulnerable to misinformation.

- Media monitoring to assess for incorrect information and rumour control
- Web visits
- Tele-Care 811 reports
- Evaluation of public knowledge and awareness (focus groups, surveys)

5.14 Community / Town Hall

Town Hall meetings will provide a means for health officials to engage communities by addressing public and mental health concerns and questions associated with a nuclear emergency at the PLNGS. This concept allows for the provision of public health information and advice to Town Hall attendees (public and media) relevant to nuclear / radiation population health risks as well as psycho-social support to the worried well in attendance at Town Hall sessions.

5.14.1 Designated Staff - Roles and Responsibilities

- **Public Health** – regional Medical Officer of Health (or alternate) to provide guidance and respond to general inquiries from attendees and media.
- **Mental Health** – appropriate RHA mental health staff (community in-crisis) to provide psycho-social support to worried well attendees.
- **Communications** – appropriate RHA Communications staff to serve as facilitator and moderator for the session(s).
- **Emergency Measures Organization** – appropriate Regional Emergency Action Committee coordinator to make arrangements for venue(s) and provide Town Hall logistical support, on request.
- **Department of Health, Emergency Preparedness and Response Branch Director via NB Health EOC** – in consultation with Provincial EOC / EMO, authorize activation of and deployment of designated health staff to the Town Hall session.

5.14.2 Activation Triggers / Criteria

- **PLNGS Site Area Emergency classification** – planning and ramp up by NB Health EOC, RHA EOC's and Provincial EOC for potential activation of Town Hall session(s), as required, at multiple locations during the recovery (transition) phase.
- **PLNGS General Radiation Emergency classification** – no activation.
- **Recovery (Transition) phase** – activation of Town Hall session(s) will be made, in accordance with the following criteria:
 - Steep upward trend in social media, media and Tele-Care 811 call volumes by regional area [during PLNGS General Radiation Emergency and Recovery (Transition) phases] related to population health risk and related guideline (KI, etc.) inquiries and concerns.
 - Activation of Town Hall sessions at one or more locations will be prioritized on the basis of need and resource availability (staff and venue).

5.14.3 Activation Authority

Activation of Town Hall sessions will be made by the NB Health EOC, in consultation with the Provincial EOC and RHA EOCs.

5.14.4 **Deployment Protocol**

- Department of Health and RHA designated staff will be notified of the activation order by the NB Health EOC Director via the NB Health Public Health lead and respective RHA EOC(s) and asked to remain on standby for the deployment order.
- Within two hours of notification of the deployment order by the NB Health EOC Director (or designate), Department of Health and RHA designated staff will be required to report for duty at assigned Town Hall session locations for appropriate briefings and set up, ie. one hour prior to opening of Town Hall session to the public and media.
- Town Hall sessions will typically be two hours in duration.

5.14.5 **Town Hall Session Public Announcement**

An announcement to the public will be made via the Provincial EOC upon activation of the Town Hall session(s) by the NB Health EOC. Up to 24 hours advance notice to the public/media may be required prior to the opening of session(s), to be determined in real-time.

5.15 Radiation Protection Qualified Staff - Resource Requirements

Setting	Function	Number of Teams	Comment
SJRH Emergency Department	See six stations within the SJRH Emergency Department	5-6 If worried-well concept is not activated, 5 teams may suffice	<ul style="list-style-type: none"> • 2 posts could use portal monitors, other 4 should have friskers • 2 will need to be able to assist and advise medical teams in unstable patient room and non-ambulatory decontamination room. The other 4 teams will be for radiation monitoring.
CCH Emergency Department	Screening and assistance with contaminated patient from the westerly MDC (pre-decontamination), requiring stabilization prior to transfer to SJRH	1, if deployment is requested	<ul style="list-style-type: none"> • Need frisker • Deployed through request to Off-site EOC
Ambulance	Patient handling and Decontamination of vehicles	1, shared resource with SJRH ED	<ul style="list-style-type: none"> • Will be prioritized with SJRH requirements
SJRH diagnostic imaging and operating room	Consultation for planning tests and surgery	1, shared resource with SJRH ED	<ul style="list-style-type: none"> • Will require access to health physicist for consultation
SJRH Laboratory	Radiation measurement of specimens to support clinical treatment and consultation for spills, etc.	1, shared resource with SJRH ED	<ul style="list-style-type: none"> • Will require access to health physicist for consultation
SJRH and CCH worried-well field radiation monitoring post	Radiation screening in field	1	
Reassurance monitoring	Screen 'worried-well' in a location established by NB EMO, away from hospitals and reception centres	1 per 2 sites	
Worried-well radiation screening	Screening at St Joseph's hospital for those who bypassed MDC and for 'worried-well'.	1	
<i>Requirements in later phase of response, after first 48 hours:</i>			
SJRH decontamination area	Decontamination of a contaminated patient deceased in hospital	1, shared resource with SJRH ED	
SJRH Morgue (Pathology Dept.)	Consultation for planning autopsy	1, shared with SJRH ED	
Field morgues (refrigerated trucks in proximity to the SJRH and MDC)	Radiation screening Decontamination	1 per each of 3 field morgues, shared resources	<ul style="list-style-type: none"> • MDC resources will be shared with field morgues near MDCs • SJRH ED resources will be shared with field morgue near the SJRH
Funeral homes	Consultation for planning funeral/burial	1, shared resource	
Burial ground	Escort for direct burials with special orders by the Chief MOH	1, shared resource	

5.16 Post-Emergency Recovery (Transition) and Deactivation

5.16.1 Health System Recovery (Transition)

Emergency exposure situation defines the emergency response phase (urgent and early response phases) as well as the Recovery (Transition) phase that follows. The Recovery (Transition) phase will occur after the release of radioactive material from PLNGS has ended, PLNGS is in a stable state, there is no further chance of another release, and all necessary protective actions have been executed in the 20km Emergency Planning Zone. To end the Recovery (Transition) phase there would need to be a termination of the emergency, which in turn would lead to a planned or existing exposure situation. During a planned or existing exposure situation long-term recovery efforts would continue. Activities in this phase focus on preparations to enable the resumption and restoration of normal activities and capabilities.

For the purposes of this plan, the recovery (transition) phase is subdivided as follows:

The **Short-term recovery (transition) phase** occurs in the first two weeks post-emergency. Although the public is out of harm's way, the need for multi-agency coordination will remain for the management of recovery activities such as handling of mass displacements, measurement of radiation levels, defining of the exclusion zone, ingestion pathway monitoring and public messaging requirements. The Provincial EOC and NBHEOC would remain at full activation and the Provincial State of Emergency would remain in effect. Other health system EOCs would remain activated.

The **Medium-term recovery (transition) phase** occurs between 2 weeks and three months post-emergency. During this time, the ingestion pathway monitoring will be ongoing. The elevated need for public communications, psychosocial support, public health risk assessment and messaging, will necessitate continued activation of the emergency response organization, both provincially and within health.

The **Long-term recovery (transition) phase** occurs beyond three months post-emergency. During this time, evacuees will be repatriated wherever possible with the potential for permanent displacement for some residents. Long-term health impacts will be monitored for those who required decontamination. Communication and psychosocial support requirements are expected to remain high for an extended period of time.

5.16.2 Deactivation

This document supplements the all-hazards emergency management plans of its participating organizations and as such, the health nuclear emergency aspects of post-event activities are to be incorporated into the respective organizational all-hazard recovery processes. This includes, but is not limited to, deactivation processes, debriefing and post-incident reporting, record management and long-term recovery actions. The trigger for the deactivation of emergency operations centres will depend on the individual organizations' remaining impacts.

5.16.3 Population Served

Medical follow-up will be provided by the family physician with support from Health Canada and PHNB. It is incumbent on health services to ensure post-emergency health actions, including advice, counselling, and medical follow-up.

5.16.4 Registry of Evacuees

In the recovery (transition) phase of the emergency, the DH will establish a registry through the acquisition of demographic data collected by NB EMO in the process of registering evacuees as they exit the Emergency Evacuation Zone. This registry will contain sufficient information to enable the identification of individuals who were in the Emergency Evacuation Zone. It will be stored by the DH through the NB Cancer Network, the parameters of which will fully comply with the Personal Health Information Privacy and Access Act. The collection of additional data elements for epidemiological purposes is a responsibility of the PHNB.

If an evacuee bypassed MDC registration due to a requirement for urgent transport to hospital prior to decontamination, the EM/ANB Command Post lead will provide the evacuee's name and destination information to Red Cross registration staff in the MDC. Any missing information can be acquired retrospectively from the hospital and added to the registry.

6. RESOURCE MANAGEMENT & DECISION SUPPORT

6.1 Resource Management

6.1.1 Principles

Management of human, physical, informational and financial resources is governed by the respective all-hazards emergency plans.

6.1.2 Provincial Emergency Stockpile

The DH maintains a provincial emergency stockpile of supplies, including personal protective equipment and other health supplies for use by Health Networks in emergency situations. In a nuclear event, the *Provincial Emergency Stockpile Management Plan* may be activated to meet a surge in demand by Horizon Health. Activation will be a multifactorial, real time decision based on factors such as a surge in demand, evidence of supply chain disruption, and/or manufacturers imposing ordering restrictions. Activation will be triggered through a decision by the NBHEOC Management Group in consultation with Horizon Health and Service NB (Health Services). The NBHEOC Director (or designate) will initiate deployment through communication with Service NB (Health Services). EM/ANB is responsible for maintaining its own emergency stockpile of supplies.

6.1.3 National Emergency Strategic Stockpile

As part of the PHAC National Emergency Strategic Stockpile (NESS), the federal Health Portfolio maintains a supply of medical countermeasures for the treatment of internal radiological contamination. These supplies can be made available to provinces and territories upon request for use in response to a nuclear emergency. For NB during a nuclear emergency event, a request for these supplies must be made through the NBHEOC Director (or designate) as the provincial authority for NESS access. To minimize deployment time, the DH Emergency Preparedness and Response Branch will place NESS on standby with the declaration of a Site Area Radiation Emergency classification by PLNGS.

6.2 Decision-support

A key function of the DH through the NBHEOC Management Group is to provide decision-support to decision makers at both the operational and policy levels. A significant challenge will be carrying out this responsibility in the context of the significant uncertainty that will likely accompany a nuclear emergency event.

The Decision Support function includes:

- collecting and analyzing data about the event, estimating its impact on the health system and assessing the capacity of the health system to respond;
- working with Departmental staff to use the gathered information to inform decision making.

The information collected and the analysis undertaken will also assist in providing situational awareness to key stakeholders.

Carrying out the Decision Support function may require the utilization of a variety of resources, tools, and processes:

- **information** about the event and its impact, and the capacity of the health system to respond; information will be shared with the DH by its partner organizations.
- the **decision support system** is a password protected, web-based data electronic system that was developed to facilitate the collection of data from the Health Networks, Ambulance New Brunswick and Tele-Care 811 to the NBHEOC. The decision support system will be used primarily as a tool to house and display information, and not as a primary data collection tool; the decision support system may also be used to support trending and strategic planning as well as historical data comparisons of some data elements (e.g. # emergency room visits, # admissions).