Preparedness and Response for a Nuclear or Radiological Emergency in Lithuania

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Radiation Protection Centre

Radiation Protection Centre (RSC) is the regulatory authority for radiation protection, implementing regulatory control of exposure of the public and environment and the practice of using **sources of ionizing radiation**, except practice with sources in the nuclear energy field; and taking part in the formulation of the state policy in the field of radiation protection.

Mission – to ensure the radiation protection of public of Lithuania and environment against the harmful effects of ionizing radiation.

Legal Base for Preparedness and Response to a Nuclear or Radiological Emergency

- **All basic** infrastructure and functional **requirements** for preparedness and response to nuclear or radiological emergency **are approved in the Republic of Lithuania**.
- The Council Directive 2013/59/Euratom (Basic Safety Standards Directive) and IAEA General Safety Requirements No. GSR Part 7 **are fully transposed to Lithuania's legal bases.**

Laws of the Republic of Lithuania

- Law on Crisis Management and Civil Protection;
- Law on Radiation Protection;
- Law on Nuclear Safety;
- Law on Nuclear Energy;
- Law on the Management of Radioactive Waste;

Resolutions of Government

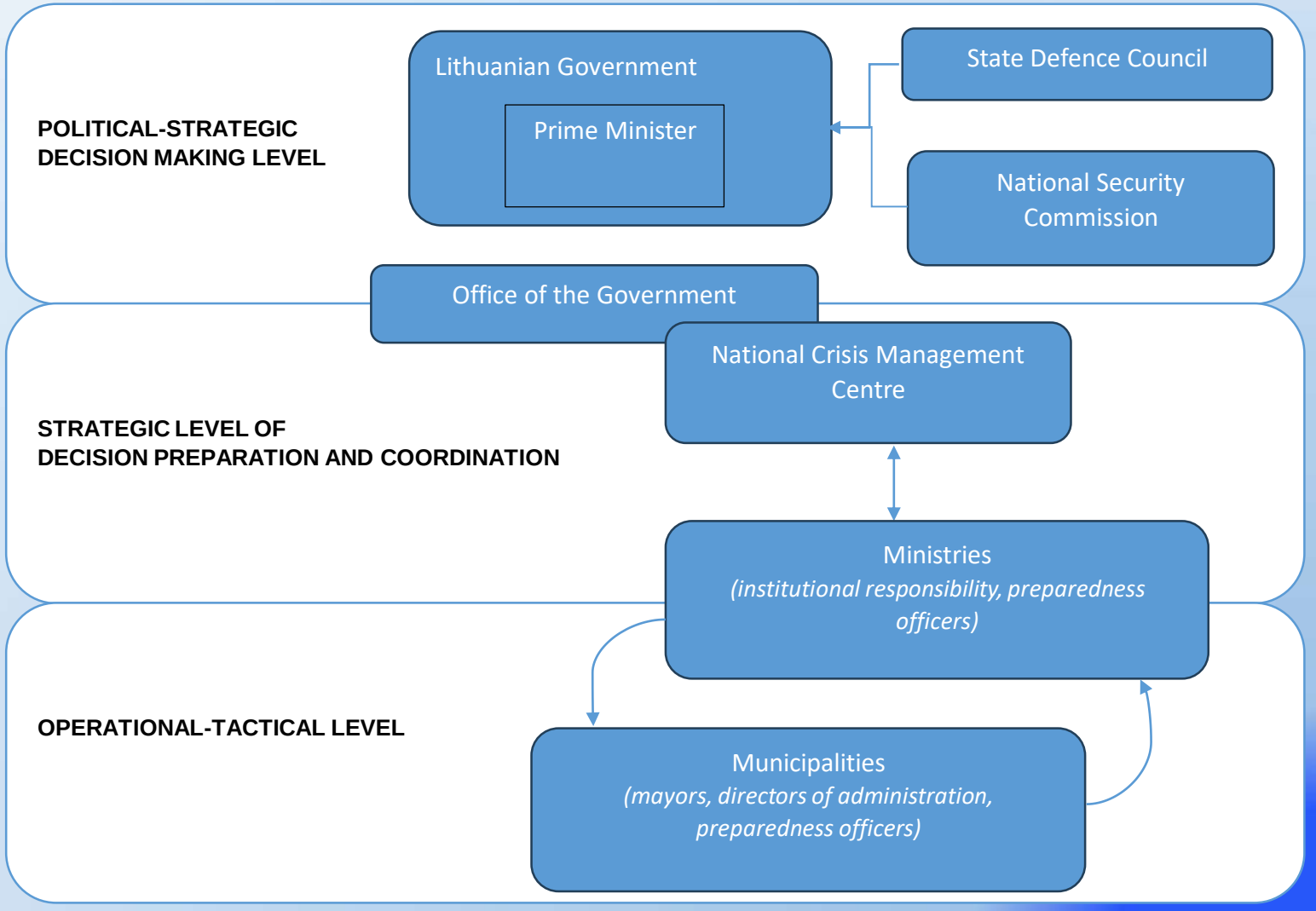
- The State Emergency Management Plan;
- The State Plan of Public Protection in Case of Nuclear or Radiological Emergency;
- The Rules for the Management of Orphan Sources, Orphan Nuclear Fuel Cycle Materials, Orphaned Nuclear and Fissile Materials, and Objects Contaminated with Radioactive Substances...

Orders issued by the Minister of Health

- Hygiene Standard HN 73:2018 „Basic Standard of Radiation Protection”;
- Hygiene Standard HN 99:2019 „Protective Actions of General Public in Case of Radiological or Nuclear Accident”;

Emergency and crisis management in Lithuania

- **National risk assessment** *(last review in 2024).*
- The responsible state authorities are required **at least once in three years** to conduct a review of the hazard assessment.
- In a state-level nuclear or radiological emergency, the **National Crisis Management Centre** is authorized to **gather information** about the emergency, **prepare a forecast** of its development, **organize and implement protective actions** until the State Operations Commander is appointed, **organize and coordinate protective actions and other response actions** necessary to liquidate the emergency.



Hazard assessment of facilities and activities

Assessed hazards are grouped in the following emergency preparedness categories:

- **I emergency preparedness category:** –
- **II emergency preparedness category:** – Solid Radioactive Waste Management and Storage Complex
- **III emergency preparedness category:**
  - 11 radioactive waste storage facilities on the site of Ignalina NPP;
  - Maisiagala radioactive waste storage facility;
  - 2 blood irradiation facilities;
  - radiotherapy (Gamma knife);
  - 4 brachytherapy facilities;
- **IV emergency preparedness category:** activities involving mobile dangerous sources, transport of radioactive material, large scrap metal processing facilities, national border crossing points (4 International airports, State Klaipeda seaport, 24 land border control points, 3 railway control points)
- **V emergency preparedness category:** Belarus NPP.

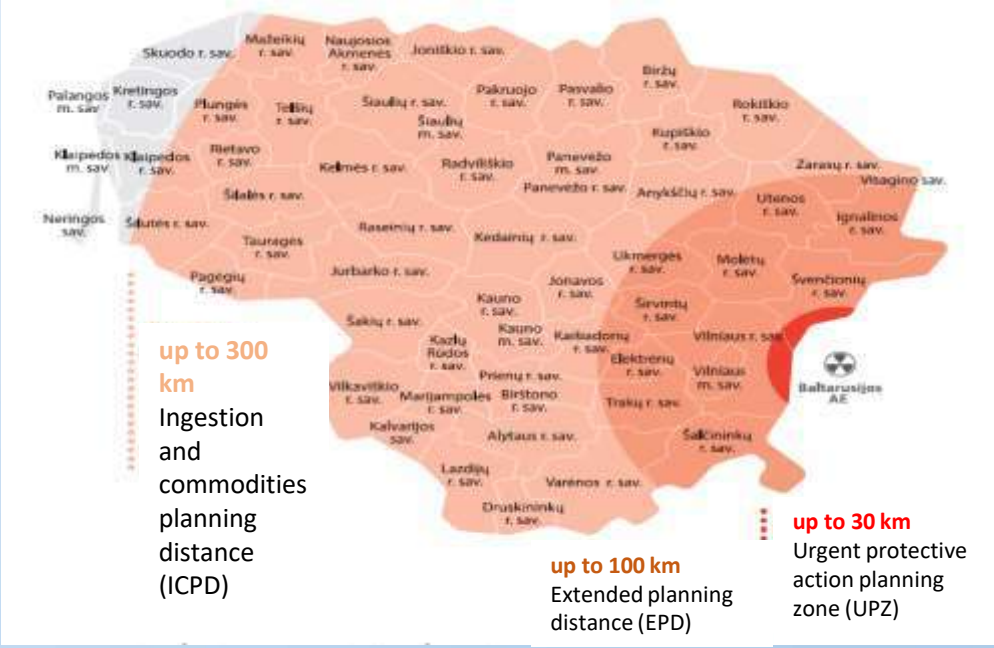
Reference levels

- **Reference levels for public annual effective doses** without prejudice to reference levels set in Lithuanian Hygiene Standard HN 99:2019 for equivalent doses, are these:
  - **1–20 mSv – for existing exposure situations**;
  - **20–100 mSv – (acute or annual) for emergency exposure situations.**
- **For the transition from an emergency exposure situation to an existing exposure situation**, upon the termination of long-term countermeasures such as relocation, **reference level is 20 mSv per year**.

Hygiene Standard HN 73:2018 „Basic Standard of Radiation Protection”

Emergency preparedness zones and emergency planning distances. Generic and Operational Criteria.

- Emergency preparedness **zones** and emergency planning **distances**:
  - Precautionary urgent protective action zone (PAZ) – 5 km;
  - Urgent protective action planning zone (UPZ) – 30 km;
  - Extended planning distance (EPD) – 100 km;
  - Ingestion and commodities planning distance (ICPD) – 300 km.
- **Generic and Operational Criteria.**



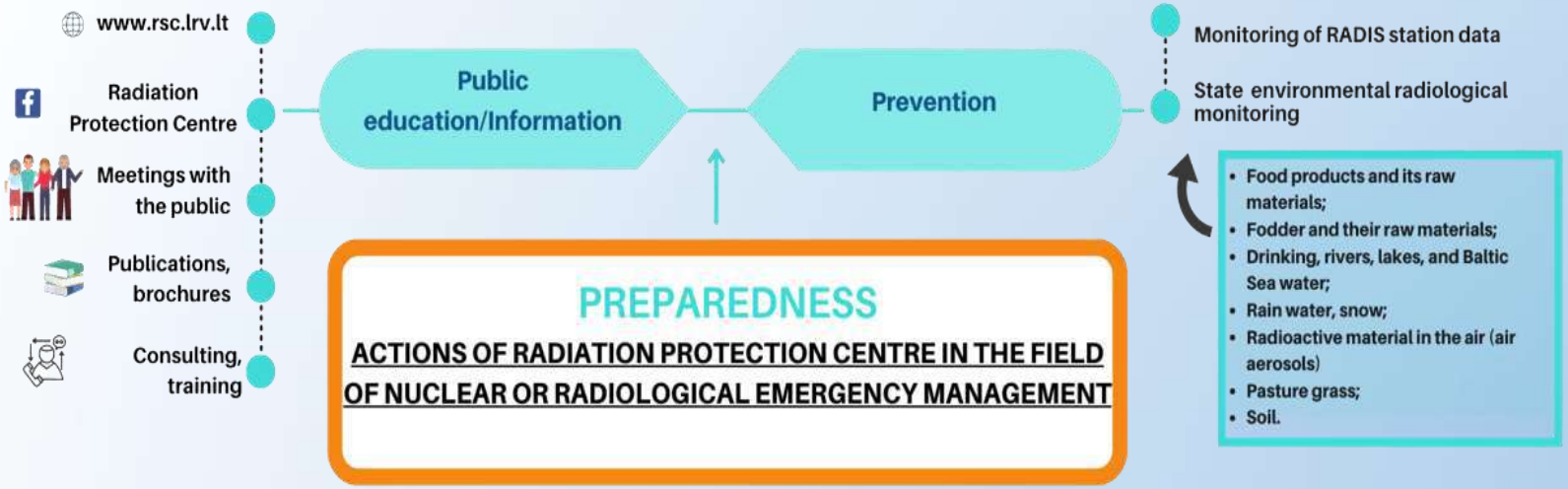
Protective actions and other response actions	OIL value	Comments
Sheltering; Evacuation; Decontamination; Restriction of consumption of food, milk and water; Register and provide for a medical examination	1000 µSv/h	**OIL 1**
Relocation, Stop consumption of local produce, Medical examination and evaluation	• 100 µSv/h (≤ 10 days after the release) • 25 µSv/h (>10 days after the release)	**OIL2**
Restriction of consumption of food, milk and water; Screen local produce, rainwater and milk; Consider providing **iodine thyroid blocking**; Estimate the dose of those who may have consumed food, milk or rainwater from the area	1 µSv/h	**OIL 3**
Decontamination	• 1 µSv/h (γ) • 1000 counts/s (β) • 50 counts/s (α)	**OIL 4**
Stop consumption of non-essential food, milk or water; Replace essential food, milk and drinking water	• 1000 Bq/kg of I-131 • 200 Bq/kg of Cs-137	**OIL7**
Iodine Thyroid Blocking	**Age <7 years – 0,5 µSv/h;** **Age > 7 years – 2 µSv/h**	**OIL 8γ**

Protective actions and other response actions	Generic criteria	Comments
Sheltering; evacuation; decontamination; restriction of consumption of food, milk and water; contamination control; public reassurance	100 mSv in first 7 days	**projected effective dose or equivalent dose to fetus**
Iodine Thyroid Blocking	50 mSv in first 7 days	**projected equivalent dose to thyroid**
Relocation, replacement of contaminated food, milk and drinking water with safe ones, radioactive contamination control, decontamination, informing, psychological counseling, registration for the long term health monitoring	100 mSv per 1 year or for the full period of in utero development	**projected effective dose or equivalent dose to fetus**

*Lithuanian Hygiene Norm **HN 99:2019** "Protective actions of the public in case of nuclear or radiological emergency".*

Preparedness to Response to Nuclear or Radiological Emergency

Radiation Protection Centre organizes meetings with the public, participates in public events, provides interviews *(TV, radio)*, actively disseminates information in the social space and organizes meetings with governmental and non-governmental organizations in order to raise awareness on preparedness and response to a nuclear or radiological emergency.



The Rules on the Handling of Orphan Radioactive Sources

RADIATION PROTECTION CENTRE IN A CASE OF HANDLING ORPHAN RADIOACTIVE SOURCE

COORDINATES RESPONSE

Receive information about orphan radiation source

Response

Customs and State Border Guard Service
Cargo, person or vehicle, emitting increased ionizing radiation have been detected or detained

State, municipal institutions, the undertaking or person
Inform about orphan radioactive source

Emergency Response Centre 112
Collect information and dispatch first responders

State Fire and Rescue Board
- *Perform primary radiological measurements*
- *Define and mark the work area*

Police department
- *Activate „Skydas" (an explosion threat);*
- *Protect a designated working area*
- *Initiate pre-trial investigation*
- *Carry out an escort and protection of vehicle during the transport*

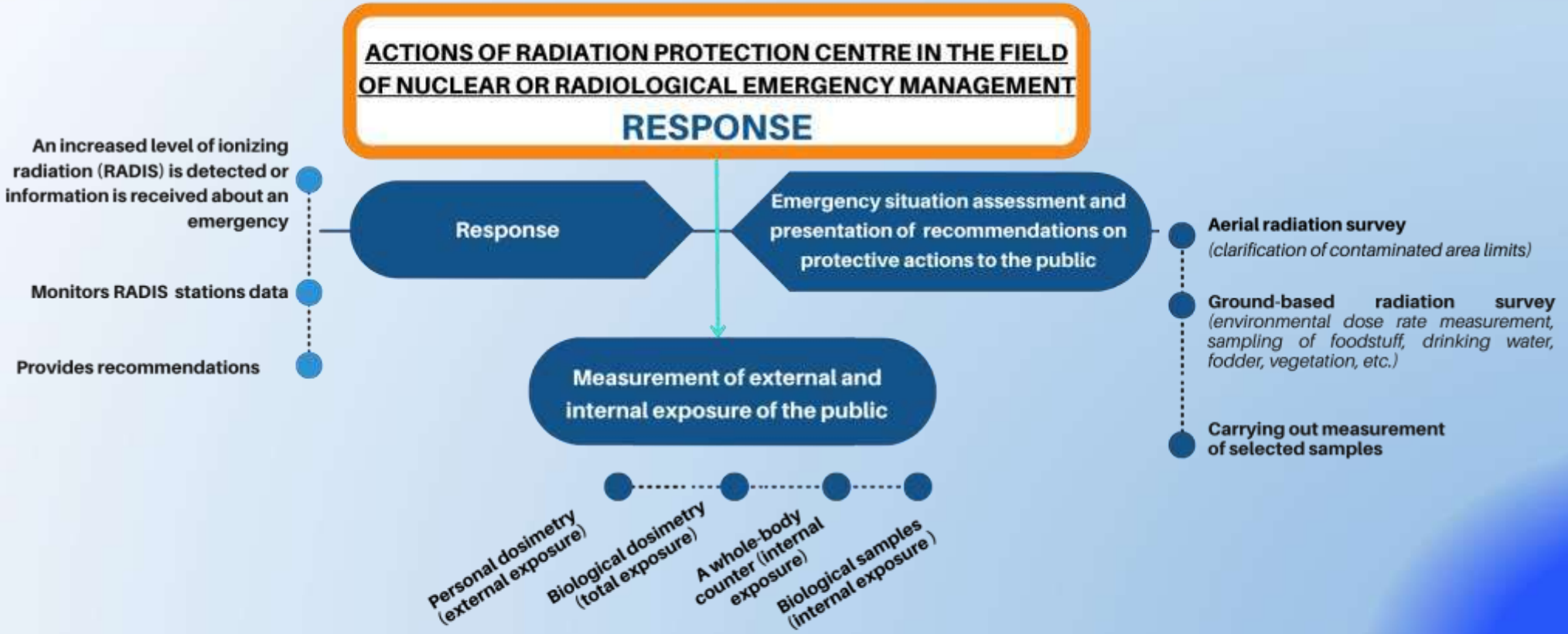
Emergency medical services
- *Provide medical care*

Radiation Protection Centre
- *Radiological measurement and assessment*
- *Provide state and municipal institutions requirements of radiation protection*
- *Control how these requirements are followed*
- *Provide information to VATESI*

Manager of radioactive waste
- *Perform decontamination*
- *Pick up the orphan radioactive source from the place of their discovery*

Nuclear or Radiological Emergency Management and Response

Radiation Protection Centre (RSC) is **responsible for management of radiological emergencies**, participate in the mitigation of their consequences and participate in the management and mitigation of the consequences of **nuclear emergencies**.



RSC organizes the state level radiation survey in a case of nuclear or radiological emergency

The Early Radiation Warning System (RADIS): (24/7) monitor the background radiation and react immediately to changes in the background radiation.

Aerial radiation survey: Clarification of contaminated area limits and dose rate measurement *(The State Border Guard Service survey teams),* provide recommendations for the places of ground-based radiation survey.

Ground-based radiation survey: Planning and coordination of ground-based radiation survey *(Fire and Rescue Department survey teams perform environmental dose rate measurement, sampling of foodstuff, drinking water, fodder, vegetation, etc.)*

Radiological measurement of environmental samples: Organizes, coordinates and take part in carrying out radiological measurement, if necessary, proposes to activate laboratories of the laboratory network.

Providing recommendations on protective actions

Thank You for Your Attention!

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