FINAL EPREV REPORT

PEER APPRAISAL OF THE ARRANGEMENTS IN LITHUANIA ON PREPAREDNESS FOR RESPONDING TO A RADIATION EMERGENCY

1–11 October 2012
Vilnius, Lithuania

International Atomic Energy Agency

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The mission team gained access to all principal organizations, which provided excellent cooperation and valuable input at all levels. The time spent with the Lithuanian organizational counterparts was extremely productive. The professional interest and involvement on the part of representatives from critical response organizations with whom the mission team interacted was vital to the success of this mission. Mr. Albinas Mastauskas, Director of the Radiation Protection Centre (RSC), welcomed the mission team and provided support and information throughout the mission.

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FOREWORD

Within the United Nations system, the International Atomic Energy Agency (IAEA) has the statutory functions of establishing standards of safety for the protection of health against exposure to ionizing radiation, and of providing for the application of these standards. In addition, under the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention) [1] the IAEA has a function, if requested, to assist Member States in preparing emergency arrangements for responding to nuclear accidents and radiological emergencies.

In response to a request from the Lithuanian Government, the IAEA fielded an Emergency Preparedness Review (EPREV) mission to Lithuania to conduct, in accordance with Article III of the IAEA Statute, a peer review of Lithuania's radiation emergency preparedness and response arrangements vis-à-vis the relevant IAEA standards.

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1. INTRODUCTION

1.1. BACKGROUND

The obligations, responsibilities and requirements for preparedness for and response to radiation emergencies are set out in the IAEA Safety Standards, in particular in the Requirements publication Preparedness and Response for a Nuclear or Radiological Emergency [2]. The IAEA General Conference, in resolution GC(46)/RES/9, encouraged Member States to "implement the Safety Requirements for Preparedness and Response to a Nuclear or Radiological Emergency".

In 2003, the IAEA published Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency [3] (EPR-METHOD 2003) with the aim of fulfilling in part the IAEA's function under Article 5 of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (the 'Assistance Convention') to provide a compendium of best practices for emergency planners aiming to comply with the IAEA Requirements [2].

With a view to addressing the lessons learned from the nuclear emergency following the East-Japan earthquake and tsunami, the IAEA Board of Governors adopted the Action Plan on Nuclear Safety, which encourages Member States to review their emergency preparedness capabilities and to invite corresponding review services offered by the IAEA. In February 2012, the Ministry of Energy of the Republic of Lithuania submitted a request for an Emergency Preparedness Review (EPREV) mission to assess the prevailing situation in the country, with special regard to the country's declared intention to embark on the use of nuclear energy. An EPREV is the service the IAEA offers to assess a country's nuclear and radiological emergency preparedness arrangements vis-à-vis the relevant international standards.

As a result of the request by Lithuania and following the relevant IAEA guidelines (EPREV Guidelines) a well-defined appraisal procedure was initiated. This included the following steps:

- The IAEA sent a specifically designed self-assessment questionnaire to the Lithuanian counterpart with the request to update it. This questionnaire contained information which had been obtained during the most recent Regional Coordination Meeting of the TC regional project RER9118, held in Vienna, Austria, in March 2012. Subsequently, after the self-assessment questionnaire had been upgraded to reflect the lessons learned from the Fukushima accident, a second version of this document was sent to the Lithuanian counterparts, with the request to amend the original questionnaire. The updated questionnaire was returned to the IAEA prior to the conduct of the mission.
- The Terms of Reference (ToR) memorandum was drafted in May and was finalized in September 2012.
- The mission took place between 1 and 11 October 2012.

The overall objectives of this mission were:

1. To provide an assessment of the Member State's arrangements and capabilities to respond to nuclear or radiological emergencies regardless of the cause.

2. To assess the Member State with regard to international standards for emergency preparedness and response.

3. To assist the Member State in the development of interim arrangements to promptly respond to a nuclear or radiological emergency. This included suggesting steps that can be taken immediately to better use existing capabilities.

4. To assist the Member State in providing a basis upon which it can develop a longer term programme to enhance its response capability. This included recommendations in the areas of arrangements, decrees, equipment, staff, and related functional areas.

1.2. SCOPE

The review focused on Lithuania's ability to respond to a nuclear or radiological emergency and was based on an assessment of existing response provisions and capabilities. The mission was carried out in accordance with the guidelines developed for the EPREV services (EPREV Guidelines). As part of the methodology a Self-Assessment Questionnaire was filled out, addressing the main issues and requirements of Ref. [2].

The review consisted of:

- reviewing and verifying the statements (Performance Indicators) made by the Lithuanian counterparts in the Self-Assessment Questionnaire;
- determining if the arrangements for preparedness and response for radiation emergencies in Lithuania were in conformity with the international requirements;
- proposing methods and means of corrective steps towards meeting the international requirements where deviations from the IAEA standards were observed and identifying good practices whenever such examples are found. The EPR-METHOD publication [3] and the expertise of the mission team members provided the basis for these suggestions;

The review mission was designed to cover all aspects of the arrangements for emergency preparedness and response and included: on-site (facility), off-site, local and national emergency response and preparedness arrangements for all radiation emergencies that may affect Lithuania. When determining the scope of the mission, certain limitations had to be taken into consideration (the review part of the mission had to be completed within five workdays, which also included some time to be allocated for the visits to different agencies and licensees). In order to focus the effort and to provide mission findings that would be generally applicable to the existing Lithuanian preparedness and response system, the arrangements for dealing with three different types of situations warranting emergency preparedness were examined:

- The capability for responding to an emergency at a facility in threat category I[1] (note that Lithuania has two RBMK power reactor units under decommissioning at the Ignalina nuclear power plant (NPP) site).

- Arrangements to cope with a potential emergency in practices in threat category III: several major source users belong to this category.

- The capability to respond to a radiation emergency that might occur anywhere in the country (threat category IV). These arrangements include local (municipality level) emergency

[1] The different threat categories (I through V) are defined in the IAEA requirements [2] and guidance [3].

services having the basic ability to recognize a radiation emergency and take appropriate immediate action as well as the ability of national officials to support local response organizations.

The reviews were used to benchmark emergency preparedness arrangements for these three different regulatory and operational environments, and generalized findings were subsequently developed.

The review considered the emergency arrangements at the local and national levels in the following areas:

- Emergency management
- Emergency preparedness
- Radiation protection
- Law enforcement
- Medical response
- Public information
- National capability to support and provide training to local response teams.

The members of the mission team (see Appendix I) were selected on the basis of their relevant experience in the above areas.

The following levels of radiation emergency preparedness were covered during the EPREV mission:

(a) Review of the national emergency preparedness and response capabilities: This activity reviewed the response of national level organizations that initiate national response or support local response and the ability of facilities in threat categories I, III, IV and V.

(b) Local and facility response review: This part of the mission reviewed the ability of first responders (on-site and off-site) to promptly and effectively identify and respond to nuclear and radiological emergencies, including the availability of facility and on-site plans in relevant cases, and medical preparedness and response.

The collected data and analysis contained in this report rely on presentations and discussions with representatives of key response organizations and on personal impressions obtained during these discussions. The mission concentrated on those areas that the team viewed as crucial to establishing and maintaining a solid emergency response capability.

1.3 PROCESS

The general schedule for the mission established in agreement with the counterparts in Lithuania is shown in Appendix II. The mission team visited sites of licensees, local and national authorities and first responding organizations, conducted interviews, and reviewed the relevant legal documents and emergency plans.

The mission team interacted with the representatives of the following organizations:

1. Ministries and other state institutions and agencies:

1.1. Ministry of Health (MoH),
1.2. The Fire and Rescue Department under the Ministry of the Interior and the agencies subordinate thereto (hereinafter referred to as the "Fire and Rescue Department (FRD) and the agencies subordinate thereto").
1.3. Police Department under the Ministry of the Interior,
1.4. State Border Guard Service (SBGS) under the Ministry of the Interior,
1.5. State Nuclear Power Safety Inspectorate (VATESI),
1.6. Radiation Protection Centre (RSC) under the Ministry of Health,
1.7. Environmental Protection Agency (EPA) under the Ministry of the Environment,
1.8. State Food and Veterinary Service (SFVS),
1.9. National Emergency Operation Centre,
1.10. Health Emergency Situation Centre of the Ministry of Health,
1.11. State Enterprise Radioactive Waste Management Agency (RATA).
2. Municipal emergency commissions.
3. Municipal institutions and agencies.
4. Economic entities, other agencies.
5. Emergency operations centres.
6. Forces of the civil protection system.

1.4 INPUTS AND GUIDANCE FOR THE ASSESSMENT

The EPREV mission was conducted in accordance with the **ToR**, developed and adopted in May – September 2012.

The **self-assessment questionnaire**, containing the evaluation coordinated by Mr. Albinas Mastauskas and his team, provided an important contribution to the assessment of the country's radiological emergency preparedness and response capabilities.

A set of documents (laws, government resolutions, hygiene standards, orders of directors of institutions, plans and procedures etc.) as well as presentations on the roles and functions of the agencies visited were obtained during the mission.

From the point of view of emergency response at the national level, the following national authorities and organizations should be considered relevant in the national nuclear and radiological emergency response plan:

1. Ministry of Energy

2. Ministry of the Environment

2.1. Environmental Protection Agency (EPA) under the Ministry of the Environment

2.2. Lithuanian Hydrometeorological Service under the Ministry of the Environment

3. Ministry of National Defence

4. Ministry of Health

4.1. Health Emergency Situation Centre under the Ministry of Health

4.2. Radiation Protection Centre (RSC) under the Ministry of Health

5. Ministry of the Interior

5.1. Fire and Rescue Department under the Ministry of the Interior (FRD)

5.2. Police Department under the Ministry of the Interior

5.3. State Border Guard Service under the Ministry of the Interior

6. Ministry of Agriculture

7. Ministry of Education and Science

8. Ministry of Economy

9. Ministry of Foreign Affairs

10. Ministry of Social Security and Labour

11. Ministry of Transport and Communications

12. State Nuclear Power Safety Inspectorate (VATESI)

13. Food and Veterinary Service

14. State Enterprise Radioactive Waste Management Agency (RATA)

15. Director of Municipality Administration

16. Lithuanian Red Cross Society.

According to the IAEA categorization of radiation related threats in Ref. [2], Lithuania is currently a country with facilities and practices belonging to threat categories I, III, IV and V (no facility is identified which would belong to threat category II). The country's two RBMK type power reactor units in the Ignalina NPP site were shut down in 2004 and 2009 and are under decommissioning, but still considered to belong to facilities and activities in category I. In addition, Lithuania has plans to build new power reactors (2 units of the ABWE reactor type) on the Ignalina site. This means that the emergency preparedness arrangements in Lithuania have to be maintained in the long term, to meet the requirements for a country with facilities and activities in category I and the emergency preparedness and response conditions in this country have been assessed with this in mind.

2. SUMMARY OF FINDINGS

2.1. INTRODUCTION

The EPREV mission team formulated *recommendations and suggestions* for Lithuania based on the information provided by Lithuania and its own observations, insights and analysis. These *recommendations and suggestions* are listed in this section. As a part of the appraisal methodology, the responses in the self-assessment questionnaire (submitted shortly before the implementation of the mission) were re-examined during the drafting of the present report. The EPREV team – based on the facts, interviews and documents obtained – made an independent judgement on the prevailing situation in Lithuania for all appraisal criteria.

Regarding the *recommendations and suggestions*, the *recommendations* need to be addressed in order to comply with the IAEA Requirements [2]; these are therefore stated as actions that *must* be implemented (with the specific corresponding paragraph in the IAEA Requirements shown in a separate paragraph entitled 'BASIS'). To help implement the recommendations, the mission team put forward *suggestions* for better meeting the IAEA requirements. The team also highlighted *good practices*, whenever this was deemed justified.

Overall, the EPREV mission team found that Lithuania has established impressive structures – both legal and physical – to respond to nuclear and radiological emergencies, in accordance with the relevant IAEA standards [2] and associated guidance documents. The legislative framework assigns appropriate responsibilities for all types of radiation emergencies and the essential governmental organizations appear well versed in this legislative framework. The overall response concept is based on an integrated, all-hazard approach. In addition, staffs at all agencies appear to be trained and their equipment and facilities appear to be adequate.

The EPREV team recognized the level of knowledge and dedication of the counterparts and very much appreciated their strong commitment to further improve their capabilities and harmonize them with the international standards and guidance. The mission team appreciated the efforts it observed at the facility and local levels to develop capabilities, including plans and procedures, to cope with radiation emergencies within their jurisdiction.

The mission observed many particularly good practices. These include a very **advanced warning system** for the public using the mobile telephone system; a **respected nuclear regulator and Radiation Protection Centre** that works effectively and cooperatively with other government agencies; a **clear understanding of the relevant laws**, rules and regulations throughout the government; knowledgeable staff throughout the government and the stockpiling of TLDs in case of a radiation emergency. In addition, **first responders** appear to be ready for a radiation emergency.

As in any country, some ambiguities exist in the system and problems need to be fixed. For the existing category I facility, it is important that it adopt an **emergency classification system** in line with international guidance. This would facilitate the use of a common language and facilitate regional and international cooperation during an emergency. More broadly, while the governmental emergency system is well defined, the system **needs to be tested through demanding exercises** to determine whether the **public communication** and **decision making** system is adequate. In the area of decision making, the group found many of the basic laws, regulations and orders are relatively new and based on assumptions regarding governmental behaviour that have not been fully tested. At various points, officials at the national and local levels seemed to assume that decisions during an emergency would

be clear and **derived directly from technical analysis**; that decision makers could just follow the recommendations of scientists. In reality, emergencies are rarely so clear.

In Lithuania, the **predictions on radiological consequences** in the case of a nuclear accident are made by a number of organizations (RSC, VATESI, EPA, INPP) and there is little recognition that these predictions will likely be ambiguous and very sensitive to the assumptions made. One Ministry needs to be clearly the lead on this analysis. Moreover, the system assumes that all **decisions and communications will come from the central government**, but in a real emergency, local officials will also be pressured for their own opinions. This needs to be tested and more effort put into an integrated (national and local) public communications strategy if the assumption is false.

Because Lithuania currently has two RBMK reactors under decommissioning (currently considered threat category I) as well as several highly active radioactive sources and plans to construct two BWR reactors in the future, it is very important that they **maintain and improve this infrastructure for emergency preparedness**.

The EPREV mission team has formulated the following summary recommendations and suggestions, as well the observations of good practices.

2.2. RECOMMENDATIONS

R.5.1: Lithuania should adopt an emergency classification system in line with international guidance for the threat category I facility (INPP), which would enable the use of a common language, regional harmonization and better compliance with the IAEA standards in case of a nuclear accident in the INPP.

R.7.1: The decision making process for implementing protective actions in the event of a nuclear or radiological emergency should be clearly addressed in the specific legislation. The roles of local municipality and of State organizations should be clearly addressed concerning who is responsible for deciding on urgent protective actions in case of a nuclear or radiological emergency. Lithuania should consider whether extending decision making to the municipal Emergency Management Commissions (at the local level) could accelerate the implementation of the urgent protective actions.

R.7.2: The predictions on radiological consequences in the event of a nuclear accident should be based on a joint assessment of INPP, VATESI, EPA and RSC. Lithuania should clarify in its regulations and its organization, which agency is the lead in this regard. The roles of these organizations in dose projection and formulating recommendations should be tested and examined in a specially designed exercise and lessons learned should be used when updating the relevant plans.

2.3. SUGGESTIONS

S.5.1: RSC should consider the expansion of its own on-call system for receiving notifications in case of radiation emergencies in such a way that those nominated for this job not be overwhelmed by acting continuously as on-call duty officers.

S.5.2: Lithuania is encouraged to ensure that it has adequate early notification and exchange of information arrangements with its neighbours in case of radiation emergency.

S.5.3: The Border Control Points (BCPs) of the SBGS should be provided with portable radiation detection equipment for radionuclide identification in order to improve the current radiation monitoring process at all relevant BCPs.

S.5.4: Given that Lithuania has two entities authorized to request international assistance from the IAEA, FRD and VATESI should examine/exercise their specific roles in requesting assistance to ensure there is no redundancy or conflict.

S.5.5: In the event of a radiological emergency of threat category IV, it cannot be certain that the responders arriving first at the site are equipped with dose and dose rate measurement devices. It is suggested that at least every vehicle that can be used for transporting first responders to the site of an emergency should contain a simple dose rate meter or counter sensitive to elevated levels of radiation and capable of producing a warning signal above a preset reference level.

S.6.1: Specific working procedures should be established for initiating a prompt search in case of the loss of a dangerous radioactive source.

S.6.2: The arrangements for taking mitigatory actions should be tested in Visaginas municipality at the level of both municipality and operator levels.

S.8.1: While the team finds the Lithuanian emergency communication system to be a good practice, Lithuania should consider taking the necessary steps to extend the warning system to all regions in the emergency planning zones for the Ignalina NPP.

S.9.1: The first responders, especially the units of the County Fire and Rescue Board (under the FRD) should be provided with sufficient personal dosimeters and they should wear these devices always when acting in emergencies.

S.10.1: While the team recognizes that Lithuania does not control activities outside of its jurisdiction, given the close proximity of Lithuania's category I facility to its border, the team believes that Lithuania should take steps to exchange the radiological data of the environmental monitoring systems with the neighbouring countries.

S.11.1. The training of medical practitioners for emergency medical services in the hospitals should be addressed more systematically.

S.11.2. The option of sending a patient with severe radiation injuries for medical treatment abroad should be an advanced planned procedure. The HESC of MoH, FRD and VATESI should cooperate to ensure that a corresponding assistance request will be promptly channelled to the IAEA.

S.12.1: Lithuania should exercise its public communications system with realistic scenarios and press inquiries. In order to provide consistent information to the public, it is essential that all actors provide a single, coordinated message.

S.13.1: Laboratories of the Radiation Protection Centre and those belonging to other institutions (State Food and Veterinary Service, appropriate university departments

etc.) should participate in regular intercomparison exercises in order to test the capacity and accuracy of their methodologies.

S.15.1: There are three actual emergency plans in use in Lithuania. One of them is the general national plan for all kinds of emergencies; the nuclear emergency plan is subsidiary to it. It is suggested that the third plan which is nominally a code of "regulations" for radiological emergencies – pertinent to threat category IV events as declared in the self-assessment questionnaire – should be either included into the nuclear emergency plan or should have the form of a general radiological emergency plan. It should be examined whether every aspect of threat category III events is covered by the instructions in this plan.

S.15.2:
The licensee of threat category III radioactive sources should set up fixed, permanently operating control devices that indicate the actual position and status of radiation sources that are considered "dangerous" according to the relevant IAEA publication on dangerous quantities of radioactive material [4].

2.4. GOOD PRACTICE

GP.2.1: Lithuania has established a comprehensive, transparent and effective legislative framework that defines and allocates responsibilities for the management of all types of emergencies, including radiation emergencies. Based on the review of documents and interviews conducted, the EPREV team found that the distribution of roles and responsibilities is well understood and implemented by the different 'stakeholders'.

GP.4.1: A well-defined emergency management is in place at all levels of public administration in Lithuania. The adoption in the current legislation of an incident command and operations system enables a high level of efficiency and flexibility to respond to different types and scales of radiation emergencies.

GP.5.1: The existence of a specific legislative framework dealing with radiation monitoring at scrap metal facilities and the Border Control Points is recognized as a good practice. Enhanced regulatory control is realized through the officially established requirements for monitoring procedures and actions to be performed in case of detection of radiation at scrap metal facilities and at the Border Control Points. In addition, specific provisions are included in the current legislation which provide that all costs for the management of all orphan sources or contaminated objects found are covered by the State budget. This is a good system for the prevention, identification and management of radiological incidents involving orphan sources, radioactive contaminated materials and the illicit trafficking in radioactive sources or materials.

GP.5.2: The training of all first responders and close cooperation in between FRD, Emergency Medical Stations, SBGS and RSC is recognized as a good example.

GP.6.1: The RSC has knowledgeable staff available around the clock that is capable of performing on-the-scene radiation measurements and providing advice to local authorities and rescue teams on the required recovery procedures.

GP.7.1: The elaboration and adoption of such comprehensive legislation on urgent protective actions and emergency management in case of nuclear accident, based on the most recent international recommendations, is recognized by the EPREV team as a good practice.

GP.8.1: The team finds the public warning system through the cell phone system to be a particularly advanced and good practice. This system will need to adapt over time to changing technology.

GP.9.1: Stockpiling TLDs that are ready to use in the event of an emergency is a good practice.

GP.11.1: RSC organizes on a regular basis seminars and training courses on the medical symptoms of radiation exposure for emergency medical personnel of the Emergency Medical Stations. RSC also publishes and disseminates booklets for doctors on how to recognize radiation injuries.

3. DETAILED FINDINGS

3.1. INTRODUCTION

Lithuania has in place a comprehensive legislative framework that defines and allocates responsibilities for the management of all types of emergencies, including radiation emergencies.

Five types of legally binding documents are used to regulate emergency preparedness and response in Lithuania:

- Laws
- Resolutions of the Government of the Republic of Lithuania
- Orders of the Ministers
- Hygiene Standards
- Orders of the Directors of the relevant institutions.

The following laws are to be considered as the basic legal documents on preparedness for and response to any nuclear or radiological incident or emergency:

- **Law No. VIII-971 of the Republic of Lithuania on Civil Protection** was adopted on 15 December 1998 and last amended on 22 December 2009. This Law establishes the legal and organizational framework for the organization and functioning of the civil protection and rescue system, the rights and duties of State and municipal institutions, economic entities, public organizations and residents in the sphere of civil protection.

- **Law No. VIII-1019 of the Republic of Lithuania on Radiation Protection** was adopted on 12 January 1999 and amended on 28 June 2011.This Law regulates relations of legal entities and natural persons, other organizations, affiliates of legal entities and other organizations arising from practices involving sources of ionizing radiation and radioactive waste management. This Law establishes the legal framework for protecting people and the environment from the harmful effects of ionizing radiation.

- **Law No. I-1613 of the Republic of Lithuania on Nuclear Energy** was adopted on 14 November 1996 and last amended on 28 June 2011. This Law regulates the use of nuclear energy for generation of electricity and heat. It provides a legal basis for the activities of natural and legal persons in the nuclear energy sector. The Law establishes the functions of State and municipal authorities in implementing nuclear energy policy as well as public administration, State regulation, supervision and control of the activities in the area of nuclear energy. The purpose of the Law is to ensure nuclear safety when nuclear energy is used for peaceful needs and to prevent proliferation of nuclear arms by illegal disposal of nuclear materials (including nuclear fuel and nuclear waste). The provisions of this Law are to ensure protection of people and the environment from the harmful effects of radiation.

- **Law No. XI-1539 of the Republic of Lithuania on Nuclear Safety** was adopted on 28 June 2011. This Law establishes the legal framework for ensuring nuclear safety; the duties, rights and liability of persons engaged in nuclear energy activities and dealing with nuclear and/or nuclear fuel cycle materials in ensuring nuclear safety, as

well as the functions of State institutions in the field of the national regulation of nuclear safety.

- **Law No. X-1231 of the Republic of Lithuania on Nuclear Power Plants** was adopted on 28 June 2007. This Law lays down the provisions and creates legal, financial and organizational preconditions for the implementation of a new nuclear power plant project.

- **Law No. VIII-1190 of the Republic of Lithuania on the Management of Radioactive Waste** was adopted on 20 May 1999 and last amended as No. XI-1541 on 28 June 2011. This Law regulates public relations arising during the management of radioactive waste, and establishes the legal framework for them.

Among the Resolutions of the Government of Lithuania, the **State Emergency Management Plan** has special significance, as it defines the legal and organizational framework, in general terms, of emergency management in Lithuania. This plan was approved by Resolution No. 1503 of the Government of the Republic of Lithuania on 20 October 2010. The Plan establishes the management of material and human resources in case of a threat of or actual State-level emergency. It contains the following sections: Warning and informing the public; arrangements for rescue operations and coordination of action; arrangements for communications; provision of material resources. It also contains sections on arrangements for public protection (evacuation, provisions of personal protective measurements, social, psychological aid and other necessary services).

Two further government resolutions define the roles and responsibilities of the different government agencies, authorities, non-governmental organizations and licensees:

- **The State Residents Protection Plan in Case of Nuclear Accident** was approved by Resolution No. 99 of the Government of the Republic of Lithuania on 18 January 2012. This plan identifies at the State level the measures of civil protection to be taken while organizing and implementing protective actions, which seek to protect and (or) minimize the risk of deterministic and stochastic effects of ionizing radiation, and to protect the property of residents as well as the environment from radioactive contamination due to a nuclear accident in the nuclear power facility (irrespective of whether it is in the Republic of Lithuania or beyond its boundaries). It also covers radiation accidents (in a nuclear power facility of threat categories I and III), when it is forecast that a transboundary release of radioactive materials will take place beyond the boundaries of sanitary protection zone under the threat of a State level emergency or in the event of a State level emergency.

- **The Rules on the Handling of Orphan Ionizing Radiation Sources, Substances of Orphan Nuclear Fuel Cycle, Orphan Nuclear and Fissile Substances and Objects Contaminated with Radionuclides** was approved by Resolution No. 280 of the Government of the Republic of Lithuania on 16 March 2005, last amended on 25 January 2012. The Rules determine the actions of State and local authorities, managers of radioactive waste after the discovery, identification and suspension of ionizing radiation sources, orphan substances of the nuclear fuel cycle, orphan nuclear and fissile substances and objects contaminated with radionuclides, products or materials of consumption containing natural radionuclides, and the identification of ionizing radiation sources in the body on or the skin of a person, that emit ionizing radiation in excess of 0.2 μSv/h (20 μR/h), or upon receipt of notification to this effect.

The following Orders of Ministers have major significance in regulating preparedness for and response to radiation emergencies:

- **The Regulation on Provision of Information to Residents in Case of Radiological or Nuclear Emergency** approved by Resolution No. 559 of the Government of the Republic of Lithuania on 22 April 2002. The Regulation determines the general public information procedures and measures that will ensure the timely provision of operational information on health protection measures for residents in the event of a nuclear or radiological accident.

- **The Regulation on the Organization of the Evacuation of Residents** was approved by Resolution No. 1502 of the Government of the Republic of Lithuania on 20 October 2010. The Regulation determines the organization of the evacuation of residents under the threat of, or in the event of an emergency.

- **The Regulation on Training for Civil Protection** was approved by Resolution No. 718 of the Government of the Republic of Lithuania on 7 June 2010. The Regulation establishes the purposes and goals of training for civil protection. Also, the Regulation determines the organization and planning of the training for civil protection organizations, its frequency and duration, etc. It establishes the programmes of civil protection training for people who work in State, municipal and other institutions.

- **The Regulation on the Organization of Civil Protection Exercises** was approved by Resolution No. 1295 of the Government of the Republic of Lithuania on 8 September 2010. The Regulation establishes the types, levels, purposes and goals of the exercises of civil protection. The Regulation also determines the organization, planning and assessment of such exercises. The Regulation applies to State, municipal and other institutions whose leaders must prepare the emergency management plan and establish the operation centre for the emergency.

- **The Regulation on Dosimetric Control in the Event of a Nuclear or Radiological Accident** was approved by Resolution No. 578 of the Government of the Republic of Lithuania on 12 May 1998. The Regulation establishes general requirements for dosimetric control of residents, the environment and people who are in the area of an accident.

- **The Rules on the Licensing of Practices with Sources of Ionizing Radiation** was approved by Resolution No. 653 of the Government of the Republic of Lithuania on 25 May 1999, last amended in 2011. The Rules establish the general requirements for licensing practices with source of ionizing radiation. Also, the Rules determine the rights, duties and responsibilities of holders of sources of ionizing radiation. Chapter IV of these Rules contains a list of documents required for obtaining a license; one of the requirements is to prepare a plan for preparedness and response to radiological accidents and incidents.

Some Orders of the Minister of Health also apply in matters relating to radiation emergency preparedness and response:

- **The Regulation on Control of High Activity Sealed Ionizing Radiation Sources and Orphan Ionizing Radiation Sources** was approved by Order No. V-1020 of the Minister of Health on 23 December 2005. The Regulation establishes control of high activity sealed ionizing radiation sources and orphan ionizing radiation sources to protect employees and people from the possible harmful impact of ionizing radiation.

- **The Rules for Sampling in Case of Radiological or Nuclear Accident was** approved by the Order No. V-584/486 of the Minister of Health and the Minister of Environment on 6 October 2003. The Rules establish sampling methods and protocols for evaluating sources of ionizing radiation, for measurement of the environment, ambient gamma dose rate, alpha, gamma, in-situ gamma, gross alpha and gross beta in air and water, strontium activity concentration and tritium activity concentration. Sampling methods and sampling protocols that are determined in the Rules are obligatory for all State, municipal and other institutions and laboratories that are responsible for performing sampling and measurements in the event of a radiological or nuclear accident.

- **The Residents Exposure Monitoring Programme for 2012-2016** was approved by Order No. V-6 of the Minister Health on 4 January 2012. The Programme's purpose is to assess exposure of the residents of Lithuania, track it and make recommendations on how to reduce it with a view to ensuring protection of public health from the harmful impact of ionizing radiation and decreasing the number of oncological diseases and genetic variations.

- **The Regulation on Obligatory Training and Instruction in Radiation Protection** was approved by Order No. V-1001 of the Minister of Health on 22 November 2011. This Regulation establishes obligatory radiation protection training and instruction for persons responsible for radiation protection, as well as employees who work with sources of ionizing radiation and specialists of the Customs of the Republic of Lithuania, State border guard service, Police department, Fire and rescue department, municipalities, etc.

The following hygiene standards provide the radiation protection basis for interventions during radiation emergencies:

- Hygiene Standard **HN 73:2001 "Basic Standard of Radiation Protection"** was approved by Order No. 663 of the Minister of Health on 21 December 2001. The Hygiene Standard establishes basic standards of radiation protection and related requirements.

- Hygiene Standard **HN 99:2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident"** was approved by Order No. 380 of the Minister of Health on 4 July 2000 and amended on 7 December 2011. This standard establishes the general criteria and operational intervention levels and requirements for implementing protective actions for the population. It is obligatory for State and municipal institutions, natural and legal persons, etc., who are responsible for determining the plan and protective actions for the population in the event of a radiological or nuclear accident.

The following Orders of the Directors of the relevant national institutions also need mentioning:

- **Order of the Head of the State Nuclear Power Safety Inspectorate (VATESI):**
    - **Emergency Preparedness and Response Requirements for Operators of Nuclear Facilities** was approved by Order No. 22.3-107 of the Head of the State Nuclear Power Safety Inspectorate on 24 October 2008. The requirements establish generic criteria for emergency preparedness. They are obligatory for operators of nuclear facilities.

- **Order of the Director of the Radiation Protection Centre (RSC):**
  - **The Rules of Dosimetric Control in Case of Nuclear or Radiological Accident** were approved by Order No. 57 of the Director of the Radiation Protection Centre on 13 December 2002. The Rules establish the requirements for dosimetric control for liquidators, vehicles, equipment, etc. in the event of a nuclear or radiological accident. The Rules also determine methods for dosimetric control to avoid unnecessary exposure of liquidators and the spread of radioactive material from contaminated areas. The Rules establish the protocols of dosimetric control with a view to facilitating collection, registration and estimation of the data.

- **Orders of the Director of Fire and Rescue Department:**
  - **The Methodical Recommendations for Actions to be taken by Institutions Working for the Fire and Rescue Department in the Event of a Radiation Accident** was approved by Order No. 1-160 of the Director of the Fire and Rescue Department on 20 April 2006. The Recommendations describe actions for eliminating the consequences of a radiation accident for the institutions under the FRD. The Recommendations do not describe decontamination as it is described in other regulations.

  - **The Procedure for Warning and Provision of Information to Residents, State and Municipal Institutions, Legal Persons, etc. About an Emergency or Threat of Emergency, the Possible Consequences of an Emergency, Measures for Eliminating the Emergency and Protective Means** was approved by Order No. 1-193 of the Director of the Fire and Rescue Department on 28 June 2010. The Procedure establishes technical and organizational measures to ensure transmission of the warning audio signal and information to residents, state and municipal institutions, legal persons and etc. in all or part of the country. It describes how residents and individuals of the civil protection system would be informed about an emergency at the State, municipality or site level.

English language translations of all these documents were provided to the EPREV team prior to the mission.

The institutional framework for radiation emergency preparedness and response is described in detail in the above regulatory documents. The roles and responsibilities of the different licensees, local and national authorities and first responding organizations are discussed in Section 3.2 below.

The following sections address the main requirements of IAEA safety publication GS-R-2 [2] concerning basic responsibilities, assessment of threats, response functions and infrastructure.

3.2 BASIC RESPONSIBILITIES

Regarding the requirements set out in Ref. [2] for basic responsibilities, the following appraisal criteria were investigated:

i. Establish or identify an existing governmental body or organization to act as a national coordinating authority (NCA).

ii. Clearly assign the functions and responsibilities of users and response organizations and ensure they are understood by all response organizations.
iii. Establish a regulatory and inspection system that provides reasonable assurance that emergency preparedness and response arrangements are in place for all facilities and practices.
iv. Establish an appropriate management system and that all organizations that may be involved in the response to a nuclear or radiological emergency have adopted appropriate management arrangements to meet the timescales and to ensure an effective and coordinated response throughout the emergency.

3.2.1. Current situation

Ref. to (i): According to the Law on Civil Protection (2009), the Fire and Rescue Department (FRD) under the Ministry of Interior is the designated National Coordinating Authority (NCA), which directs the activities of the civil protection system, coordinates the organization of emergency prevention, the activities of residents, State and municipal institutions and agencies, other agencies and economic entities in the sphere of civil protection and plans national preparedness for the implementation of civil protection tasks in the event of an emergency. FRD is responsible for the preparation of the State Emergency Management Plan.

FRD supervises and controls the activities of the State and municipal institutions and agencies in the field of civil protection and provides them with methodological support.

Ref. to (ii): The existing legislation establishes in detail the responsibilities of the operator (licensee) to ensure emergency preparedness, and defines the obligations of governmental authorities having responsibilities in providing for preparedness and response in the event of a nuclear or radiological emergency according to their competencies, which are defined in the State Residents Protection Plan in Case of Nuclear Accident.

The main responsibilities of operators and response institutions to ensure emergency preparedness are defined in the Law on Civil Protection, in the Law on Radiation Protection, in the Law on Nuclear Energy and in the Law on Nuclear Safety.

Detailed responsibilities and obligations for operators are defined in the Governmental Resolution No. 1347, Rules on the Licensing of Practices with Sources of Ionizing Radiation (adopted on 16 November, 2011); in the Order of the Director of the RSC (2011-11-28, No. 82V); and in the Order of the Head of the VATESI No. 22.3-107, Emergency Preparedness and Response Requirements for the Operators of Nuclear Facilities".

The main responsibilities of governmental institutions (including, but not limited to FRD, RSC, VATESI, MoH, MoI, MoE, SFVS and SBGS) are defined in the following legal documents: 1) Government Resolution No. 99 "On Approval of the National Plan for Protection of the Population in Case of Nuclear Emergency (Off-Site Plan)"; 2) Government Resolution No. 1503 "On Approval of the State Emergency Management Plan (all hazards)"; and 3) Government Resolution No. 280 "On Approval of the Regulations on Handling of Orphan Sources of Ionizing Radiation, Orphan Nuclear Materials and Materials of Nuclear Cycle and Contaminated Objects". (A detailed list of the 'stakeholders' of the emergency

response, with their roles and responsibilities in the event of radiation emergency, is given in Appendix III).

Ref. to (iii): The regulatory and inspection system has been established and properly functioning:

- The Radiation Protection Centre (RSC) is the designated regulatory body in the area of radiation protection, excluding nuclear facilities;
- The State Nuclear Power Safety Inspectorate (VATESI) is the national nuclear power safety regulator (nuclear, radiation, physical safety and non-proliferation issues).

The obligation for the users of sources of ionizing radiation to establish an emergency preparedness and response plan is set out in Government Resolution No. 653 "Rules on the Licensing of Practices with Sources of Ionizing Radiation".

The obligation for nuclear facilities to establish an emergency preparedness and response plan is set out in the Law on Nuclear Energy and the Order of the Head of VATESI "Emergency Preparedness and Response Requirements for the Operators of Nuclear Facilities".

RSC and VATESI conduct regular inspections to check that the licensees under their regulatory oversight ensure that emergency preparedness and response arrangements are in place and the conditions of the license are fulfilled at the facility level.

Ref. to (iv): The "State Residents Protection Plan in Case of Nuclear Accident" requires the establishment of a management system for all organizations involved in response to nuclear or radiological emergencies, including response timescales.

3.2.2. Good practices

GP.2.1: Lithuania has established a comprehensive, transparent and effective legislative framework that defines and allocates responsibilities for the management of all types of emergencies, including radiation emergencies. Based on the review of documents and interviews conducted, the EPREV team found that the distribution of roles and responsibilities is well understood and implemented by the different 'stakeholders'.

3.3. ASSESSMENT OF THREATS

Regarding the requirements set out in Ref. [2] for threat assessment, the following appraisal criterion was investigated:

i. Perform threat assessments for the facilities and activities in the State; and categorize them in accordance with the five threat categories in Table I of Ref. [2].

3.3.1. Current situation

The threat assessment and categorization of all licensed facilities and practices are provided in Hygiene Standard HN 99: 2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident".

According to the Order of the Head of VATESI "Emergency Preparedness and Response Requirements for Operators of Nuclear Facilities", the threat assessment of the nuclear facilities has been made in full compliance with Table 1 of Ref. [2].

The categorization of threats for nuclear facilities is also provided in the "State Residents Protection Plan in Case of Nuclear Accident". According to this categorization the following facilities are identified in the higher threat categories (categories I-III):

Threat category	Present nuclear power facilities	Planned nuclear power facilities
I	Ignalina Nuclear Power Plant (hereinafter referred to as – INPP)	Visaginas Nuclear Power Plant (hereinafter referred to as – VNPP)
III	Maišiagala Radioactive Waste Repository	New Spent Nuclear Fuel Storage Facility of INPP
	Current Spent Nuclear Fuel Storage Facility of INPP	Solid radioactive waste removal, management and storage equipment
		Short-lived, very low activity radioactive waste buffer storage facility and landfill
		Short-lived low and average activity radioactive waste landfill

3.4. ESTABLISHING EMERGENCY MANAGEMENT AND OPERATIONS

Regarding the requirements set out in Ref. [2] for establishing emergency management and operations, the following appraisal criteria were investigated:

i. Make arrangements to coordinate the emergency response of all the off-site response organizations with the on-site response to include a command and control system for the local and national response to any nuclear or radiological emergency.
ii. Make arrangements for the appraisal of the information necessary for decision making on the allocation of resources throughout the emergency.

3.4.1. Current situation

Ref. to (i): A detailed legislative framework defines the crisis management system and the responsibilities and functions of different Governmental and municipal organizations, and also the responsibilities of the nuclear and radiological facilities in case of emergency situations.

In Lithuania, emergency management in case of radiation emergencies is structured on two levels (Law on Civil Protection, Article 27; Hygiene Standard HN 73:2001 "Basic Standards of Radiation Protection", Chapter VII "Intervention"; State Residents Protection Plan in Case of Nuclear Accident, 2012):

- national (State) level, and
- municipal (local) level.

According to the Civil Protection Law, a very well-defined system of civil protection is established (Art. 3) for all-hazard situations and specific responsibilities for emergency management are designated to the different State ministries and

organizations, as well as to all municipalities in the country. This system is presented in Appendix IV.

A Governmental Emergency Management Commission is the State level decision making structure on preparedness and response in case of emergency situations. The composition and functions of the Governmental Commission are described in Appendix V. Sixty Municipal Emergency Management Commissions are established as local decisional structures for planning, preparedness and emergency response. The composition and functions of the Municipal Commissions are described in Appendix VI.

Emergency Operations Centres are established at all State level ministries and public central institutions and at local level as dedicated entities composed of civil servants and/or employees of State, municipal institutions and agencies or economic organizations. These civil servants have roles in: prevention activities, implementation of decisions made by an Emergency Management Commission, organization and coordination of the emergency response, mitigation of the consequences of the emergency and rescue of population and property. The list of established Emergency Operations Centres and the tasks they perform in emergency situations are presented in Appendix VII.

The National Emergency Operations Centre is established and maintained operational by the Fire and Rescue Department, in conformity with legal provisions (Law on Civil Protection, Article 12). At the local level, it is the responsibility of the director of municipal administration to set up the local emergency operations centre (Law on Civil Protection, Article 14).

The local level response is always activated in case of emergencies. The coordination of emergency response actions belongs to the municipal (local) level when the emergency affects one, two or at the most three municipalities. In such cases, the municipality where the incident or accident occurred is responsible with the activation of the Municipal Emergency Management Commission. By law, the Municipal Emergency Commission is the decisional structure at the local level responsible with the management of an imminent or actual emergency situation (Law on Civil Protection, Article 11). The Municipal Emergency Management Commission is chaired by the director of the municipal administration. It is the role of the director of the municipal administration to appoint a municipal operations commander in case of emergency, who becomes responsible with the incident command at the accident scene.

According to the discussions held during the mission, the common understanding of the EPREV team was that in most cases the incident commander is a representative belonging to the local Fire and Rescue Brigade or, when more than one Fire Brigades are involved in the response, the leadership of operations will belong to a representative of the County Fire and Rescue Board, which is subordinated to the Fire and Rescue Department.

When the emergency situation affects more than 3 municipalities, according to the Law on Civil Protection (Art. 26), the national response level will be activated. In such situations, the governmental Emergency Management Commission will be convened as the decision making structure at the State (national) level. The Minister of Interior, in his/her capacity as chair of the Governmental Emergency Management Commission, will appoint one representative from the Government structure or from one State organization as the State Commander of Operations. In most situations, the

Fire and Rescue Department is responsible for the management of emergency operations.

In accordance with current legislative provisions (Law on Civil Protection, Art. 27), decisions made by the Governmental Emergency Commission always prevail over the decisions made by the Municipal Emergency Commission. A simple scheme of the emergency management process at the national level is presented in Appendix VIII.

Specific requirements for all response organizations are set up in the State Emergency Management Plan approved by Governmental Decision No. 1503/2010 and in the State Residents Protection Plan in Case of Nuclear Accident approved by Governmental Decision No. 99/2012. According to the NEMP, the leading ministry for an emergency is identified at the time of the emergency, taking into consideration the type of the emergency. Two types of institutions are defined in the NEMP:

- **responsible institution:** responsible for the organization of national level emergency management and for the mitigation of emergency consequences;
- **supporting institution:** assists the responsible institution in the national level emergency management and in the mitigation of emergency consequences, provides available material and human resources.

For a radiological emergency involving radioactive contamination, incidents with dangerous radioactive source or any other radiological accident, the Radiation Protection Centre (RSC) is the responsible institution at the national level, which will organize the management of radiological incidents and accidents. In the event of a nuclear accident, the Ministry of Energy and VATESI are the responsible organizations for emergency management.

According to the existing legislative framework described above, emergency response plans and procedures are in place at all levels in order to convert the requirements into practical guidance. After visiting different response organizations (at the operator, local and national levels) the common understanding of the EPREV team was that the organizations are aware about their specific roles and duties in case of radiation emergency and that arrangements are in place at all levels for a coordinated emergency response.

Ref. to (ii): Arrangements are in place at the local and national level for the appraisal of the information necessary for decision making on the allocation of resources throughout the emergency. General requirements are described in the NEMP (Chapter III "Provision of material resources and usage of them"). Specific requirements are included in the National Plan for Protection of the Population in Case of Nuclear Emergency (Chapter XII, "Provisions on material resources") and in the Emergency Preparedness Plan of the Ignalina NPP (INPP EPP, latest approval in February 2011, No. Vis-62). In the planning phase, the size and the allocation of material resources is periodically updated, in accordance with risk re-evaluation.

As a consequence of the recently performed stress tests at the INPP (2012), systems and procedures have been changed to commensurate with the re-evaluated risk (BDBA scenarios at the spent fuel pool) and material resources have been reconsidered for an appropriate response in such situations.

3.4.2. Good practices

GP.4.1: A well-defined emergency management is in place at all levels of public administration in Lithuania. The adoption in the current legislation of an incident

command and operations system enables a high level of efficiency and flexibility to respond to different types and scales of radiation emergencies.

3.5. IDENTIFYING, NOTIFYING AND ACTIVATING

Regarding requirements set out in Ref. [2] for identifying, notifying and activating, the following appraisal criteria were investigated:

i. Establish 24 hours/day, 7 days/week contact point.
ii. Raise awareness about the radiological hazards for on-site managers of facilities (e.g. scrap metal processing facilities) and national border control authorities.
iii. Ensure first responders are aware of: the symptoms, the appropriate notification and other immediate actions warranted if an emergency is suspected.
iv. Establish a system for promptly initiating an off-site response in the event of an emergency.
v. Ensure response organizations have sufficient personnel.
vi. Make known to the IAEA and other States the State's single warning point of contact responsible for receiving emergency notifications and information from other States and information from the IAEA.
vii. Perform event classification and countermeasures following the requirements of international standards.
viii. Make arrangements for the prompt determination of the appropriate emergency class by the operator and of the level of response, as well as for notification and provision of updated information to the off-site notification point.
ix. Have arrangements in place to provide a response to an emergency for which detailed plans could not be formulated in advance.

3.5.1. Current situation

Ref. to (i): The emergency service 112 is established in Lithuania under the coordination of the Fire and Rescue Department, Ministry of the Interior. There are 7 centres on the territory of Lithuania belonging to the emergency service 112, which are connected and can support each other in special, overloaded situations. Future developments and upgrades are envisaged for improving the performance of the service. The emergency service 112 is continuously available 24 hours/day and 7 days per week; it is dedicated for receiving notifications of any type of emergency, including a radiological emergency.

In addition, the Fire and Rescue Department has in place its own 24/7 Situation Coordinating Centre, where all notifications involving fire and rescue actions are received. The Situation Coordinating Centre is connected to the emergency service 112 and continuously monitors all the notifications of accidental events. Moreover, the Situation Coordinating Centre of the Fire and Rescue Department is the contact point with relevant international organizations (see Appendix IX).

According to the specific requirements included in the current legislative framework, other State institutions have established permanent notifications points where information about a potential or actual emergency is received. The flow chart of notification and exchange of information in case of emergencies is presented in Appendix X.

Thus, the Ministry of Health operates 24/7 the Health Emergency Situations' Centre (HESC) as the national contact point for exchange of information between National Health System institutions, European Union institutions (EWRS, RAS-BICHAT), WHO and other international organizations in case of a health emergency. HESC implements the roles and responsibilities of National Focal Point (NFP) for the WHO International Health Regulations and communicates with WHO International Health Regulations Contact Points.

In order to ensure effective response in the event of a radiation emergency, both RSC and VATESI have established their own on-call systems for receiving notifications. In this connection, VATESI has designated communication means and a group of on-call duty officers who are ready to receive or to provide information around the clock about any radiological or nuclear accident. The VATESI Emergency Operations Centre is ready to start operations in less than one hour after receipt of a notification about a radiological or nuclear accident in Lithuania or any other country.

As the institution responsible for identifying, notifying and activating in the event of a radiological emergency, RSC has in place a similar communications means and notification system, available 24/7 to receive or send information concerning a potential or actual incident. At RSC, the group nominated to act as on-call duty officers is rather small, consisting of the director and two deputies.

Ref. to (ii): Specific regulations are in place for the control of radioactivity content at scrap metal facilities and at border control points (see Appendix XI). The regulations include special requirements for preparedness, training of staff and required response actions of the relevant bodies in the event of an emergency involving radioactive sources or radioactive material. Thus, the scrap metal collecting and/or processing facilities and the border control points belonging to the State Border Guard Service (SBGS) have radiation monitoring equipment, monitoring and emergency response procedures and operational response systems in place for notification and action in the event of radiological incidents.

The Governmental Decision No. 280 "On Approval of the Rules on Handling of Orphan Ionizing Radiation Sources, Orphan Substances of Nuclear Fuel Cycle, Orphan Nuclear and Fissile Substances and Objects Contaminated by Radionuclides" (adopted on 16 March 2005, last amended in 2012) establishes responsibilities, functions and actions of all State and local authorities involved in case of detection of orphan sources, orphan nuclear and fissile substances, radioactive materials and other radioactive contaminated objects which have a detectable radioactive content above 0.2 microSv/h.

A national programme for orphan source recovery was adopted in 2011 for the period 2011–2013. Under this national programme, orphan source recovery missions are performed at historical sites such as factories and military sites in Lithuania that had been in operation under the former Soviet Union.

At the external EU borders, SBGS is responsible for the control of goods which are imported, exported or in transit. Special legislation exists with respect to these activities:

- The rules of management of illegal sources of ionizing radiation and objects contaminated by radionuclides;
- Orders of the commander of the SBGS;

- Inter-institutional agreement on cooperation with the radiation protection centre (17.07.2008);
- Inter-institutional agreement on cooperation during detection of ionizing radiation materials (Vilnius airport).

Specific procedures for radiation monitoring and response actions in case of radiological incidents are in place at all these BCSs.
The general chart for interaction between SBGS, RSC and other State institutions in the event of detection of orphan sources or of illegal radioactive material is presented in Appendix XII. According to the experience of all responsible organizations, the notification and response actions flow seems to be quite effective.

In order to perform the respective tasks, fixed and portable radiation monitoring equipment exists at the border control points (BCPs) at the border with Belarus. New fixed portals for radiation detection were installed in the last years at this border, with the financial and technical support of the European Commission and the USA Department of Energy. There are altogether 43 fixed portals, of which 37 were installed with USA support and 6 with EU support. Portable radiation monitoring equipment for source searching and identification is available at some BCP of SBGS (see Appendix XV).

During the visit at the Lavoriskes Border Control Point, the EPREV team noted that that the personnel of the BCPs were aware and trained for performing radiation monitoring of all cargos, vehicles and people who cross the border to Lithuania. Nevertheless, not all BCPs have portable monitoring equipment for radiation identification. Therefore, portable radiation detection equipment for radionuclide identification is still needed in order to improve the current radiation monitoring process at all relevant BCPs.

Ref. to (iii): When the emergency service 112 is notified of an emergency event, the dispatcher uses predefined questionnaires for establishing a priority for the emergency and accesses the resource database for finding the most appropriate police unit, Fire Brigade and/or Ambulance Station for responding to this event. The first-response unit which is the closest to the location of the event is contacted immediately after receipt of the notification. When the accidental event involves a radiological threat, the emergency service 112 also notifies the County Fire and Rescue Board closest to the accident location and the Radiation Protection Centre. All relevant structures are activated immediately in order to support the local first responders in the field.

The basic responsibilities of the incident commander and of all first responders are defined in Article 28 of the Law on Civil Protection. Specific requirements are included in the NEMP and in Governmental Decision No. 280/2005 as amended in 2012.

Based on the information received, all first responders (police, fire and rescue service, ambulance service, border guard service) are aware of their roles in radiation emergencies. Basic training is provided annually to all first responders, in their own schools and training centres. Frequently, RSC experts are involved in providing lectures on radiation protection and the management of radiation emergencies.

The Fire and Rescue Department, the Emergency Medical Stations and SBGS have basics procedures on how to act in emergencies involving radiation. There are 56 Emergency Medical Stations and 247 ambulance brigades. Only very few ambulances

have portable equipment for radiation detection (for example, the Ambulance Station of Vilnius).

The County Fire and Rescue Boards have portable equipment for radiation detection, protective equipment for acting in radioactive and/or chemically contaminated areas and a very limited number of personal dosimeters.

However, according to the discussions held during the mission, the EPREV team realized that there might be cases when the radiation risk is not perceived in an appropriate way by those who have a first response role (i.e., first responders might not have prior warning about the presence of radioactive material): in such situations, first responders might be exposed to radiation levels without their knowledge, at least in the very first phase of the emergency.

Ref. to (iv): The system for promptly initiating the off-site response in the event of an emergency is in place and is fully operational, for both radiological events and nuclear accidents. The system is established according to the provisions included in the Law on Civil Protection, in the NEMP, in the National Plan for Protection of the Population in Case of Nuclear Emergency (Off-site Plan) and in the Rules on Handling of Orphan Sources of Ionizing Radiation, Orphan Nuclear Materials and Materials of the Nuclear Cycle and Contaminated Objects. The On-site Emergency Response Plans of the nuclear and radiological facilities includes provisions for immediate notification of the responsible local municipality and State organizations in the event of accidental events. The flow of notification/information in the event of a severe accident at a nuclear installation is described in the INPP EPP. The authorities to be notified in such cases are: the local municipality, the Ministry of Energy, VATESI, RSC, the Ministry of Health, Ministry of Environment and the Fire and Rescue Department. On-site prompt response actions are described in the Emergency Response Plans of the nuclear and radiological facilities.

Ref. to (v): According to the discussions carried out and after visiting different response organizations, the mission team concluded that arrangements are in place and the response organizations have qualified personnel available to perform their assigned initial response actions. However, for the time being, the available police and medical personnel may be not sufficient, especially in the event of a large scale radiological emergency, because of the limited number of protective equipment, personal dosimeters and portable radiation detection equipment.

Ref. to (vi): VATESI is the relevant State institution acting as National Warning Point, National Competent Authority for Domestic Accidents and National Competent Authority for Abroad Accidents (NWP, NCA(D), NCA(A)) in relation to the International Atomic Energy Agency and with respect to the conditions specified in the Convention on Early Notification of a Nuclear Accident. VATESI is responsible for receiving emergency notifications and information from other States and information from the IAEA around the clock, as prescribed by the Convention on Early Notification in the Event of Nuclear Accident and the bilateral agreements on early notification in case of a nuclear or radiological emergency entered into by Lithuania. Lithuania has signed bilateral agreements with Latvia, Denmark, Norway, Poland, Hungary, Germany and Sweden (agreement with Belarus under development). Lithuania also takes part in the ECURIE system (European

Community Urgent Radiological Information Exchange); VATESI is a National contact point for the ECURIE system.

According to Lithuanian legislation, the Fire and Rescue Department under the Ministry of the Interior is responsible for requesting international emergency assistance of all kind. It is also one of the competent authorities for domestic accidents nominated to the IAEA to request assistance under the Assistance Convention. VATESI is a second competent authority for this purpose.

Ref. to (vii): According to the National Plan for Protection of Population in case of Nuclear Emergency approved by Governmental Decision No. 99/2012, the event classification of nuclear accidents is not fully in compliance with international guidance. The emergency classification at INPP is also not fully compliant with international guidance. The Hygiene Standard HN 99: 2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident" includes the prescribed emergency classification consistent with IAEA standards.

Ref. to (viii): According to the discussions held during the mission, the operator of a nuclear or radiological installation is responsible for the prompt determination of the appropriate emergency class and of the level of response and for the notification and provision of updated information to the off-site response organizations.

Ref. to (ix): At present, the current legislative framework as described in the paragraphs above provides the basis for responding to an emergency for which detailed plans could not be formulated in advance. The Rules on Handling of Orphan Sources of Ionizing Radiation, Orphan Nuclear Materials and Materials of Nuclear Cycle and Contaminated Objects define the very specific arrangements which should be in place to provide extended response in emergencies for which detailed plans could not be formulated in advance.

3.5.2. Good practice

GP.5.1: The existence of a specific legislative framework dealing with radiation monitoring at scrap metal facilities and the Border Control Points is recognized as a good practice. Enhanced regulatory control is realized through the officially established requirements for monitoring procedure and actions to be performed in case of detection of radiation at scrap metal facilities and at the Border Control Points. In addition, specific provisions are included in the current legislation which provide that all costs for the management of all orphan sources or contaminated objects found are covered by the State budget. This is a good system for the prevention, identification and management of radiological incidents involving orphan sources, radioactive contaminated materials and the illicit trafficking in radioactive sources or materials.

GP.5.2: The training of all first responders and close cooperation in between FRD, Emergency Medical Stations, SBGS and RSC is recognized as a good example.

3.5.3. Recommendations

R.5.1: Lithuania should adopt an emergency classification system in line with international guidance for the threat category I facility (INPP), which would enable the use of a common language, regional harmonization and better compliance with the IAEA standards in case of a nuclear accident in the INPP.

BASIS:

GS-R-2, para. 4.19 states that: *"The operator of a facility or practice in threat category I, II, III or IV shall make arrangements for the prompt identification of an actual or potential nuclear or radiological emergency and determination of the appropriate level of response. This shall include a system for classifying all potential nuclear and radiological emergencies that warrant an emergency intervention to protect workers and the public, in accordance with international standards, which covers emergencies of the following types at facilities (1–4) and other emergencies such as (5) below:…"*

3.5.4 Suggestions

S.5.1: RSC should consider the expansion of its own on-call system for receiving notifications in case of radiation emergencies in such a way that those nominated for this job not be overwhelmed by acting continuously as on-call duty officers.

S.5.2: Lithuania is encouraged to ensure that it has adequate early notification and exchange of information arrangements with its neighbours in case of a radiation emergency.

S.5.3: The Border Control Points (BCPs) of the SBGS should be provided with portable radiation detection equipment for radionuclide identification in order to improve the current radiation monitoring process at all relevant BCPs.

S.5.4: Given that Lithuania has two entities authorized to request international assistance from the IAEA, FRD and VATESI should examine/exercise their specific roles in requesting assistance to ensure there is no redundancy or conflict.

S.5.5: In the event of a radiological emergency of threat category IV it cannot be certain that the responders arriving first at the site are equipped with dose and dose rate measurement devices. It is suggested that at least every vehicle that can be used for transporting first responders to the site of an emergency should contain a simple dose rate meter or counter sensitive to elevated levels of radiation and capable of producing a warning signal above a preset reference level.

3.6. TAKING MITIGATORY ACTIONS

Regarding the requirements set out in Ref. [2] for taking mitigatory actions, the following appraisal criteria were investigated:

i. Make arrangements to provide expertise and services in radiation protection promptly to local officials and first responders responding to actual or potential emergencies involving practices in threat category IV.
ii. The operator of a practice in threat category IV shall be given basic instruction.

iii. Make arrangements to initiate a prompt search and issue a warning to the public in the event of the loss of a dangerous source.
iv. Make arrangements for mitigatory action to prevent an escalation of the threat; to return the facility to a safe and stable state; to reduce the potential for releases of radioactive material or exposures; and to mitigate the consequences of any actual releases or exposures.

3.6.1. Current situation

Ref. to (i): Lithuania has a well-established and well-coordinated system to respond to actual or potential radiological emergencies involving radiation practices in threat category IV. The expertise and services in radiation protection available to local officials and first responders dealing with facilities/practices in threat category IV is ensured by the RSC, which has adequate capabilities and trained staff to provide these services. The RSC can provide support information by phone or send a team of 2–3 experts to the scene. Existing legislation includes clear provisions that the radiation protection expertise and services shall be provided promptly by the RSC at the request of the FRD units, State Police or SBGS.

Legislation obliges the operator of the practice in threat category IV to provide training and safety instructions to the workers dealing with the radiation practice. The relevant arrangements are addressed also in the licensing process, during which an applicant is requested to demonstrate its emergency response capability and emergency plan and/or instructions on actions in the event of a radiological accident.

Ref. to (ii): A description of local rules, emergency procedures and workplace monitoring are required by the licensing procedure. In accordance with the provisions of the Rules on the Licensing of Practices with Sources of Ionizing Radiation, the emergency response plans of practices in threat category IV contain instructions on mitigating the consequences of emergency situations. In case of need, RSC should provide additional advice.

Moreover, the personnel of threat category IV practices are regularly trained in emergency response to a radiological event. The Order of the Minister of Health "Procedure on Mandatory Radiation Safety Training and Instruction" approved on 22 November 2011 includes specific procedures with respect to the training of personnel working in radiological installations.

Ref. to (iii): The Law on Civil Protection and the Governmental Resolution No. 559 on informing the general public in the event of nuclear or radiological emergency (2002) establish provisions on setting up a warning system for the public. Detailed requirements on how to act in searching for and recovery of dangerous (orphan) sources are included in the specific Rules on Handling of Orphan Sources of Ionizing Radiation, Orphan Nuclear Materials and Materials of the Nuclear Cycle and Contaminated Objects.

However, the EPREV team noted that no specific requirements or working procedures are in place for initiating a prompt search in case of the loss of a dangerous radioactive source.

Ref. to (iv): Arrangements to take mitigatory actions have been established at the level of nuclear and radiological facilities. All necessary arrangements for taking mitigatory actions are described in the Law on Civil Protection, Law on Radiation

Protection, in the on-site emergency plans of licensees, in the State Emergency Management Plan (all hazards), in the State Residents Protection Plan in Case of Nuclear Accident, in the Rules on Handling of Orphan Sources of Ionizing Radiation, Orphan Nuclear Materials and Materials of Nuclear Cycle and Contaminated Objects and in the Rules on the Licensing of Practices with Sources of Ionizing Radiation.

Although such arrangements are referred in the current legislation and in the planning of the authorization holders, not all of them have been fully verified in exercises.

Ref. to (v): Based on the current legislative framework (Law on Civil Protection; Law on Radiation Protection; Law on Nuclear Energy; Rules on the Licensing of Practices with Sources of Ionizing Radiation) described above, the operators are responsible for taking mitigatory actions within the facility and to address in their emergency response plans all possible emergency situations. There is one facility in threat category I in the country, INPP, in which beyond design basis (severe accident) accidents are postulated to have severe consequences affecting the public. The obligation for the nuclear facilities to establish the emergency preparedness and response plan is set out in the Order of VATESI No. 22.3-107 Emergency preparedness and response requirements for the operators of nuclear facilities (adopted on 24 October 2008).

3.6.2. Good practice

GP.6.1: The RSC has knowledgeable staff available around the clock that is capable of performing on-the-scene radiation measurements and providing advice to local authorities and rescue teams on the required recovery procedures.

3.6.3. Suggestions

S.6.1: Specific working procedures should be established for initiating a prompt search in case of the loss of a dangerous radioactive source.

S.6.2: The arrangements for taking mitigatory actions should be tested in Visaginas municipality at the level of both municipality and operator levels.

3.7. TAKING URGENT PROTECTIVE ACTION

Regarding the requirements set out in Ref. [2] for taking urgent protective actions the following appraisal criteria were investigated:

i. Adopt national intervention levels for taking urgent protective actions in accordance with international standards.
ii. Make arrangements for effectively making and implementing decisions on urgent protective actions to be taken off the site.
iii. Make arrangements to ensure the safety of all persons on the site in the event of a nuclear or radiological emergency.

3.7.1. Current situation

Ref. to (i): The national intervention levels (generic criteria) for taking urgent protective actions are included in the Lithuanian Hygiene Standard HN 99:2011 "Protective actions for general public in case of radiological or nuclear emergency". They are in full compliance with the IAEA Safety Standards Publication No. GSG-2 [5].

Thus, two sets of intervention levels (generic criteria), expressed in terms of projected dose or dose that has been received are included in standard HN 99:

- Generic criteria for taking precautionary urgent protective actions under any circumstance in order to prevent the occurrence of severe deterministic effects and
- Generic criteria for protective actions and other response actions in emergency exposure situations in order to reduce the risk of stochastic effects.

In addition, operational intervention levels (OILs) in line with the international recommendations are adopted in Hygiene Standard HN 99:2011.

The urgent protective actions to be implemented to the population in case of nuclear accident are described in Chapter VII of Hygiene Standard HN 99:2011. Chapter VIII of this regulation includes specific provisions regarding decontamination actions during and after the emergency: decontamination of persons, vehicles, goods and places.

Ref. to (ii): For the facility in threat category I (INPP), detailed requirements and provisions for effectively making and implementing decisions on urgent protective actions are described in Hygiene Standard HN 99: 2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident", in the VATESI "Order No. 22.3 – 107 / 2008 regarding the approval of the requirements for emergency preparedness to the organization operating the nuclear facility" and in the "State Residents Protection Plan in Case of Nuclear Accident". The State Residents Protection Plan in Case of Nuclear Accident, approved in January 2012, transposes in practice the requirements of the above mentioned Hygiene Standard HN 99:2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident".

For the threat category I facility, emergency planning zones are defined in Hygiene Standard HN 99: 2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident" and in the State Residents Protection Plan in Case of Nuclear Accident; the relevant protective actions to be implemented in each emergency planning zone are described (see Appendix XVI). Detailed arrangements are described in the operator's emergency response plan and also in the planning of the municipality and in other relevant off-site plans.

According to current regulations (Chapter III, VATESI Order No. 22.3 – 107, 2008), in case of nuclear accident the nuclear facility is responsible to perform the initial assessment of the accident and to provide as soon as possible the State institutions and the local municipality situated in the precautionary and urgent protective action zones with recommendations on urgent protective actions for the population. The Director of Administration of the municipality has the responsibility (State Residents Protection Plan in Case of Nuclear Accident 2012, chapter VI "Warning the Residents, Provision of Information and Recommendations") to "immediately warn

State institutions, economic entities, other institutions and residents living or being present in the territory of the municipality and inform them about the protective actions which must be taken in the respective emergency situation". At the same time, according to the State Residents Protection Plan in Case of Nuclear Accident 2012 (Chapter VI "Warning the Residents, Provision of Information and Recommendations"), the warning of residents, provision of information and recommendations in case of nuclear and/or radiological emergency are organized at the State level by the Fire and Rescue Department.

During the discussions held with representatives of the Ignalina NPP, the Mayor of the Visaginas Municipality, the Director of Administration of the Visaginas Municipality and upon reading the different paragraphs of the State Residents Protection Plan in Case of Nuclear Accident 2012 as described above, the EPREV team noticed that the legal responsibilities are defined for deciding on urgent protective actions at both the local and national levels. For example, Chapter IV ("Urgent protective actions – Evacuation of residents") of the State Residents Protection Plan in Case of Nuclear Accident 2012 states: "in case of nuclear and/or radiological accident the evacuation of residents shall be coordinated at State level by the Fire and Rescue Department, the evacuation shall be organized by Municipality Residents Evacuation and Reception Commission." It seems that the legislative requirements are not clear when referring to the decision making process for implementing protective actions in the event of a nuclear or radiological emergency.

According to the information obtained during the discussions, the Municipal Emergency Management Commission will not decide on evacuation of residents, even if they receive such recommendations coming from the INPP. The Director of Administration of the Municipality of Visaginas will always await a decision at the national level. There might be situations in which a decision on evacuation of residents has to be made as quickly as possible. In such cases, a delayed decision when waiting for activation at the national level might cause unnecessary exposure of the population to high radiation doses.

Decision on implementing one or the other protective action in the urgent phase of a nuclear accident is based in many cases on predictions regarding the radiological consequences of the accident event. For making predictions, the source term (quantity of radioactive material released in the atmosphere) has to be estimated by the operator and re-assessed by VATESI, the meteorological prognosis has to be available and decision support systems, as ARGOS, have to be run in order to estimate the projected effective doses to the population in the vicinity of the NPP and at larger distances. In the State Residents Protection Plan in Case of Nuclear Accident 2012 (Chapter III "Organization of Management of Emergency, due to Nuclear Accident – Functions of Institutions in Case of Nuclear Accident"), both EPA and RSC have the responsibility to predict the radiological consequences of an accident. The overlapping roles could create confusion during and emergency. In addition, VATESI and INPP also plan to make similar dose predictions during an emergency, which could further create confusion. The EPREV team considers that a joint assessment of radiological consequences should be performed by all responsible institutions to develop a harmonized result of the projective calculations, with a clear definition of who is to lead this effort. Under this aspect, clear procedures should be written and agreed amongst INPP, VATESI, EPA and RSC.

Ref. to (iii): For installations of threat category III at which arrangements to ensure the safety of all persons on the site are needed, the operator is obliged to address this in its emergency plan or procedures, which need to be submitted when applying for a license. The requirements and arrangements to ensure the safety of all persons on the site in the event of a nuclear or radiological emergency are described in the on-site emergency plans of licensees. During the mission, the EPREV team was informed that, in principle, these are consistent with the requirements in Ref. [2]

3.7.2. Good practice

GP.7.1: The elaboration and adoption of such comprehensive legislation on urgent protective actions and emergency management in case of nuclear accident, based on the most recent international recommendations, is recognized by the EPREV team as a good practice.

3.7.3. Recommendations

R.7.1: The decision making process for implementing protective actions in the event of a nuclear or radiological emergency should be clearly addressed in the specific legislation. The roles of local municipality and State organizations should be clearly addressed concerning who is responsible for deciding on urgent protective actions in case of a nuclear or radiological emergency. Lithuania should consider whether extending decision making to the municipal Emergency Management Commissions (at the local level) could accelerate the implementation of the urgent protective actions.

BASIS:

GS-R-2, para. 4.48 states that: *"For facilities in threat category I or II arrangements shall be made for effectively making and implementing decisions on urgent protective actions to be taken off the site. This capability shall make use of existing public infrastructure to limit the occurrence of severe deterministic health effects and to avert doses, in accordance with international standards, for the full range of possible emergencies at those facilities."*

R.7.2: The predictions on radiological consequences in the event of a nuclear accident should be based on a joint assessment of INPP, VATESI, EPA and RSC. Lithuania should clarify in its regulations and its organization which agency is the lead in this regard. The roles of these organizations in dose projection and formulating recommendations should be tested and examined in a specially designed exercise and lessons learned should be used when updating the relevant plans.

BASIS:

GS-R-2, para. 4.48 states that: *"For facilities in threat category I or II arrangements shall be made for effectively making and implementing decisions on urgent protective actions to be taken off the site. This capability shall make use of existing public infrastructure to limit the occurrence of severe deterministic health effects and to avert doses, in accordance with international standards, for the full range of possible emergencies at those facilities."*

3.8. PROVIDING INFORMATION AND ISSUING INSTRUCTIONS AND WARNINGS TO THE PUBLIC

Regarding the requirements set out in Ref. [2] for providing information and issuing instructions and warnings to the public, the following appraisal criterion was investigated:

i. Make arrangements to promptly provide warning and instruction to the permanent, transient and special population groups or those responsible for them, and to special facilities in the emergency zones upon declaration of an emergency class.

3.8.1. Current situation

The requirements for public information are established by Governmental Resolution No. 559, on Informing the General Public in the Event of Nuclear or Radiological Emergency (2002).

Population warning and notification services are established. Lithuania has recently completed deployment of a public warning system that delivers emergency messages to all mobile phones in a region. This system is operated by the Fire and Rescue Department, which has primary responsibility during a radiological emergency. Messages are broadcast directly to mobile phone screens. According to Lithuanian officials:

- Mobile networks effectively cover the entire country;
- Mobile networks are divided to geographic cells, allowing flexible access to specific area;
- Messages are received within seconds – even when sent to millions
- The system is not affected by phone system overloads;
- The system was completed earlier this year and has been tested.

As the existing category I facility is near a border, a significant portion of the potentially affected population does not live in Lithuania and thus does not receive warning from this system. While the team recognizes that Lithuania does not control populations or territories outside of its jurisdiction, it nevertheless believes that Lithuania should take the steps that it can to notify promptly all potentially affected populations.

3.8.2. Good Practice

GP.8.1: The team finds the public warning system through the cell phone system to be a particularly advanced and good practice. This system will need to adapt over time to changing technology.

3.8.3. Suggestions

S.8.1: While the team finds the Lithuanian emergency communication system to be a good practice, Lithuania should consider taking the necessary steps to extend the warning system to all regions in the emergency planning zones for the Ignalina NPP.

3.9. PROTECTING EMERGENCY WORKERS

Regarding the requirements set out in Ref. [2] for providing protection for emergency workers, the following appraisal criteria were investigated:

i. Make arrangements for taking all practicable measures to provide protection for emergency workers and response personnel.
ii. Have arrangements in place to provide effective large scale radiation protection for workers on sites under severe accident conditions.
iii. Radiation workers are informed about the risks of radiation exposure and have the basic training to deal with an emergency in severe accident conditions.

3.9.1. Current situation

Ref. to all requirements i) – iii): The term "emergency worker" is defined in Laws on Radiation Protection, Nuclear Safety and Nuclear Energy, in full compliance with IAEA Standards. The permissible radiation dose incurred during emergency response activities, the pertinent limitations, the required measurement apparatus, the evaluation of doses, the registration and – if reasonable – medical follow-up procedures are described in relevant orders. All competent stakeholders are aware of their duties. There is a reserve of several thousands of dosimeters at the disposal of the Radiation Protection Centre to be distributed among emergency workers. Radiation workers are informed of the risks of radiation exposure and receive regular training to deal with an emergency in severe accident conditions.

Ref. to i): Several regulations set out requirements for radiation protection of emergency workers: the Hygiene Standard HN 73:2001 Basic Standards of Radiation Protection; Order of the Head of VATESI No. 22.3-107 Emergency preparedness and response requirements for the operators of nuclear facilities (2008)); the regulation on dosimetric control in case of a nuclear accident or radiological emergency (2002) establishes the dosimetric control procedure for emergency workers who are located in the area of a nuclear accident or radiological emergency, as well as for any vehicles, equipment, or other items and objects that may also be in this area. .

The practical arrangements and the relevant instructions for those involved in the emergency team are described in the on-site emergency plans of licensees; these arrangements and instructions are the major precondition for issuing a license.

Training for emergency response staff, including rescue workers, and medical staff appointed to work in the event of an emergency is performed on a regular basis.

Ref. to ii): Arrangements to provide dosimetry service to a larger number of emergency workers in case of a severe accident are set out in the following legal documents:
1) Law on Radiation Protection;
2) Law on Nuclear Energy;
3) Regulations on the Licensing of Practices with Sources of Ionizing Radiation;
4) Regulations of Dosimetric Control in Case of Nuclear Accident or Radiological Emergency, approved by the Order of the Director of RSC on 13 December, 2002;
5) Order of the Head of VATESI No. 22.3-107 Emergency Preparedness and Response Requirements for the Operators of Nuclear Facilities (2008);
6) On-site plans.

For the practical implementation of a dosimetric service in the event of an emergency, RSC has about 3000 TLD dosimeters ready for immediate distribution in case of need.

Ref. to iii): Training for emergency response staff, including rescue workers, and medical staff appointed to work in the event of an emergency is performed on a regular basis.

The types and periodicity of training courses and exercises are defined in the national legislation.

The Regulations of Dosimetric Control in Case of a Nuclear Accident or Radiological Emergency (2002) set out the dosimetric control procedure for emergency workers, vehicles, equipment and other items and objects in the area of a nuclear accident or radiological emergency.

The Order of the Minister of Health "Procedure on Mandatory Radiation Safety Training and Instruction" gives further guidance on training of emergency workers.

FRD have their training base and training programmes in place.

3.9.2. Good practice

GP.9.1: Stockpiling TLDs that are ready to use in the event of an emergency is a good practice.

3.9.3. Suggestions

S.9.1: The first responders, especially the units of the County Fire and Rescue Board (under the FRD) should be provided with sufficient personal dosimeters and they should wear these devices always when acting in emergencies.

3.10. ASSESSING THE INITIAL PHASE

Regarding the requirements set out in Ref. [2] for assessing the initial phase, the following appraisal criteria were investigated:

i. Establish default operational intervention levels (OILs) for radiation emergencies.
ii. Ensure the continued availability of radiation monitoring services to make assessments to be used for mitigatory actions, emergency classification, and urgent protective actions on and off the site.

3.10.1. Current situation

Ref to (i): Operational intervention levels (OILs) for nuclear or radiological emergencies are established in the Hygiene Standard HN 99: 2011, Protective Actions of Public in Case of Radiological or Nuclear Accident.

Ref to (ii): The Ignalina Nuclear Power Plant carries out gamma dose rate monitoring in the sanitary protection zone (3 km radius).

The Environmental Protection Agency carries out gamma dose rate monitoring in Lithuania outside of the sanitary protection zone (using the RADIS system) and environmental radiological monitoring.

The Radiation Protection Centre carries out public exposure monitoring and assesses internal and external exposure doses of the public. They have impressive laboratory services with well-trained staff.

The State Food and Veterinary Service carries out radiological monitoring of imported and exported food and feed.

Overall, Lithuania appears to have adequate radiation monitoring systems. However, the EPREV team did note that significant segments of the country are not covered by the RADIS system (in particular the north-west). In addition, any monitoring systems in the eastern part of the country are not integrated into the Lithuanian system.

3.10.2. Suggestions

S.10.1: While the team recognizes that Lithuania does not control activities outside of its jurisdiction, given the close proximity of Lithuania's category I facility to its border, the team believes that Lithuania should take steps to exchange the radiological data of its environmental monitoring systems with the neighbouring countries.

3.11. MANAGING THE MEDICAL RESPONSE

Regarding the requirements set out in Ref. [2] for managing the medical response, the following appraisal criteria were investigated:

i. Make arrangements for raising the awareness of general practitioners and emergency staff on the medical symptoms of radiation exposure and on the appropriate notification procedures if a nuclear or radiological emergency is suspected.
ii. Make arrangements, at the national level, to provide initial treatment for people who have been exposed or contaminated.

3.11.1. Current situation

Ref to i): The National Health System in Lithuania is organized at two levels in a health emergency: the national level and the local level. The Ministry of Health coordinates public and personal health care organizations, activates its Emergency Operations Centre and if necessary organizes the use of State medical reserve resources according to law.

According to the Article 28 of the Law on Civil Protection, "personal and public health care institutions must be prepared to organize their activities under the conditions of an emergency in compliance with the institution's emergency management plan (hereinafter – EMP) drawn up according to the recommendations approved by the Minister of Health and the methodological recommendations for the drawing up of emergency management plans approved by the Director of the Fire and Rescue Department."

The recommendations for the EMP of personal health care institutions were approved by Order of the Minister of Health No. V-157 of 6 March 6 2003. Currently these recommendations are being revised. Renewed recommendations will include guidelines for all institutions (including ambulatory) on how to make arrangements to

treat patients in the event of a chemical, biological, radioactive or nuclear incident. Renewed recommendations for EMP of public health care institutions were approved by Order of the Minister of Health No. V-394 of 4 May 2012. EMPs are based on a "multi-hazard" approach and address radiation accidents and incidents of other origins.

According to the planning for emergencies, there are notification procedures in place and the Ministry of Health has established its own Emergency Operations Centre (see description in Chapter 3.5).

The education of medical students in disaster medicine, including the medical management of radiation accidents, is conducted by the Department of Disaster Medicine of the Faculty of Medicine of the Lithuanian University of Health Sciences. Post-graduate training courses are also available.

Seminars and training courses for emergency medical personnel on the medical symptoms of radiation exposure are organized on a regular basis by RSC. RSC also publishes and disseminates booklets for doctors on how to recognize radiation injuries.

In recent years, more than 500 ambulance personnel have completed the MIMMS (Major Incident Medical Management System) courses.

Ref. (ii): According to the current legislative framework, medical services are provided by hospitals in any emergency. In case of radiation emergencies, in the State Residents Protection Plan in Case of Nuclear Accident (2012), three hospitals at the national level are designated to provide medical care and treatment of patients exposed to radiation; these are:

- The Vilnius University Hospital Santariškių Klinikos (with 30 haematology beds)
- The Institute of Oncology of Vilnius University (with 72 beds for casualties of nuclear or radiological accidents)
- The Hospital of the Lithuanian University of Health Sciences Kauno Klinikos (with 30 haematology beds).

Procedures are in place for managing the medical response in the event of a radiation emergency. Patients with a whole-body radiation dose higher than the levels provided in Hygiene Standard HN 99:2011 shall be sent for treatment to the nearest multi-profile national or regional-level hospitals. Victims who are identified or suspected of presenting combined health disorders (such as radioactive contamination of the body in addition to injury and (or) poisoning), may, at the doctors' discretion, be sent to national or regional-level hospitals, for secondary or tertiary surgical, orthopaedics and traumatology, clinical toxicology or other necessary treatment.

The abovementioned hospitals have no special decontamination units for radiation emergencies. Nevertheless, basic arrangements exist inside the hospitals where decontamination might take place, for example there are rooms for isolation of patients when the situation so requires. In any accident, the decontamination of persons (injured or not) is mainly the responsibility of the Fire and Rescue Department Units. The medical staff of the ambulances always remains outside the contaminated area. For large scale emergencies, provisions are in place for FRD to support hospitals with a decontamination technique and equipment that can be set up

at the front of these. In general, hospitals do not have portable radiation detection equipment for checking the contamination of patients. When needed, radiation monitoring will be provided by specialists of RSC or by FRD units. Within its legal competence, RSC ensures control of radiation safety during treatment of exposed patients. Patients who do not need hospitalization shall be treated at outpatient health care facilities.

The EPREV team visited the Kaunas Clinics of the Lithuanian University of Health Sciences Hospital. A state of the art endowment and arrangements are in place at the Kaunas Clinics for all kind of medical investigations. Due to the fact that inside the hospital radiation practices are conducted in different departments, under the authorization and control of RSC, the hospital has a Radiation Protection Service, which can support the Emergency Department with advice, technical expertise and radiation monitoring equipment in the event of a radiation emergency.

Emergency doctors have little or no experience with real cases of serious radiation exposure. Therefore, the medical staffs of the Emergency Departments of designated hospitals do need adequate training in response to a radiation emergency or for providing early diagnosis and treatment of radiation injuries. In an accident situation involving overexposures or severe radioactive contamination of one or more persons, the Lithuanian authorities may need international medical assistance (e.g. through RANET).

3.11.2. Good practice

GP.11.1: RSC organizes, on a regular basis, seminars and training courses on the medical symptoms of radiation exposure for emergency medical personnel of the Emergency Medical Stations are organized. RSC also publishes and disseminates booklets for doctors on how to recognize radiation injuries.

3.11.3. Suggestion

S.11.1. The training of medical practitioners for emergency medical services in the hospitals should be addressed more systematically.

S.11.2. The option of sending a patient with severe radiation injuries for medical treatment abroad should be an advanced planned procedure. The HESC of MoH, FRD and VATESI should cooperate to ensure that a corresponding assistance request will be promptly channelled to the IAEA.

3.12. KEEPING THE PUBLIC INFORMED

Regarding the requirements set out in Ref. [2] for keeping the public informed, the following appraisal criterion was investigated:

i. Make arrangements for providing useful, timely, truthful and consistent information to the public, responding to incorrect information and rumours, responding to requests for information from the public and from news and information media.

3.12.1. Current situation

The requirements for public information are established in Government Resolution No. 559, "On Informing the General Public in the Event of Nuclear or Radiological Emergency" (2002) and described in the relevant on-site and off-site emergency response plans (State Emergency Management Plan, State Residents Protection Plan in Case of Nuclear Accident).

The operators and response organizations have established procedures on how to inform the public and media and have designated representatives for public relations, who have trained in this sphere.

While all organizations agreed that the governmental emergency operations centre has primary responsibility for messages to the public, several organizations have press offices for operation during an emergency and suggested they would transmit messages to the public, in particular the Ignalina Nuclear Power Plant.

Local elected officials near the category 1 facility were very well versed in the national plan and agreed that public messages would come from the governmental emergency operations centre and that local officials have essentially no role, but this approach needs to be exercised and tested to determine its adequacy. The issue of realistic exercises is particularly important in this regard. The assumptions of many officials appear to be that necessary communications during an emergency will be clear from technical decisions. In reality, an actual emergency is likely to evolve in uncertain ways and scientific analysis will not answer many questions.

3.12.2. Suggestions

S.12.1: Lithuania should exercise its public communications system with realistic scenarios and press inquiries. In order to provide consistent information to the public, it is essential that all actors provide a single, coordinated message.

3.13. TAKING AGRICULTURAL COUNTERMEASURES, COUNTERMEASURES AGAINST INGESTION AND LONGER TERM PROTECTIVE ACTIONS

Regarding the requirements set out in Ref. [2] for taking agricultural countermeasures against ingestion and longer term protective actions, the following appraisal criteria were investigated:

i. Adopt national intervention and action levels for agricultural countermeasures and make arrangements, concentrating on the use of existing capabilities, for taking effective agricultural countermeasures.
ii. Establish OILS for dose rates due to deposition and deposition densities, timely monitoring for ground contamination for temporary relocation and means for accomplishing and assisting those who have been relocated.

3.13.1. Current situation

Ref. to (i): National intervention levels identical to the Generic Criteria defined in the relevant IAEA Safety publication GSG-2 [5] have been adopted pursuant to Minister of Health Order V-1040.

National intervention levels for agricultural countermeasures are described in Hygiene Standard HN 99: 2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident"; action levels are approved in Hygiene Standard HN 73:2001 "Basic Standards of Radiation Protection". They are in full compliance with Ref. [5].

There are special recommendations and instructions for taking effective agricultural countermeasures, including monitoring procedures, restricting the consumption, distribution and treatment of locally produced foods, and other actions in the early and late phases of an emergency (such as soil decontamination, growing crops, hunting and fishing) etc. Appropriate measures in agriculture, animal breeding and fishery need to be taken in accordance with the advice of specialists in the corresponding fields.

The Radiation Protection Centre (RSC) and other associated laboratories (e.g. Food and Veterinary Service) are capable of conducting radioanalysis of various types of samples from agricultural products. The programme of environment sampling in the event of nuclear or radiological emergency is approved by RSC.

The performance of countermeasures and provision of assistance to persons who have been relocated are described in the national plan for protecting the population from the consequences of a nuclear accident.

Ref. to (ii): OILS for dose rates due to deposition and deposition densities are described in the Hygiene Standard HN 99: 2011 "Protective Actions of Public in Case of Radiological or Nuclear Accident". This Hygiene Standard also defines the procedure for the dosimetric control of evacuees. The Government Resolution On General Requirements of Dosimetric Control in Case of Radiation Emergency was approved on 12 May 1998.

3.13.2. Suggestions

S.13.1: Laboratories of the Radiation Protection Centre and those belonging to other institutions (State Food and Veterinary Service, appropriate university departments etc.) should participate in regular intercomparison exercises in order to test the capacity and accuracy of their methodologies.

3.14. MITIGATING THE NON-RADIOLOGICAL CONSEQUENCES OF AN EMERGENCY AND ITS RESPONSE

Regarding the requirements set out in Ref. [2] for mitigating the non-radiological consequences of an emergency and its response, the following appraisal criterion was investigated:

i. Make arrangements for responding to public concern in an actual or potential nuclear or radiological emergency.

3.14.1. Current situation

Lithuania appears to have adequate arrangements for mitigating the non-radiological consequences of an emergency. The Law on Civil Protection, the State Emergency Management Plan, the State Residents Protection Plan in Case of Nuclear Accident

and other documents describe the arrangements and responsibilities in relation to the non-radiological consequences of the emergency and the response. Evacuee Reception Commissions are established in municipalities for the reception of the evacuated inhabitants, their lodging and the provision of other services. Evacuee Reception Commissions consist of representatives of the administration of municipalities, of medical services, police services and of other services.

The Emergency Commission (at the municipality level) is responsible for promptly transmitting information to the appropriate group of the public and for countering misinformation.

However, the arrangements on information and communication as described in Sections 3.8 and 3.12 of the present report will have an important impact on the non-radiological consequences of a radiation emergency. The potential adverse psychological effects of a nuclear emergency to the public sphere can be positively influenced with the provision of timely, appropriate and truthful information, in plain language that is understandable for the target audience.

3.15. REQUIREMENTS FOR INFRASTRUCTURE

Regarding the requirements set out in Ref. [2] for infrastructure, the following appraisal criteria were investigated:

i. Develop emergency plans that are consistent with the threats and coordinated with all response organizations.
ii. Operating and response organizations shall develop the procedures needed to perform their response functions.
iii. Provide, concentrating on the use of existing capabilities, adequate tools, instruments, supplies, equipment, communication systems, facilities and documentation.
iv. Identify facilities at which the following will be performed: (a) coordination of on-site response actions; (b) coordination of local off-site response actions (radiological and conventional); (c) coordination of national response actions; (d) coordination of public information; (e) coordination of off-site monitoring and assessment.
v. Make arrangements, concentrating on the use of existing capabilities, for the selection of personnel and training.
vi. Conduct exercises and drills to ensure that all specified functions required to be performed for emergency response and all organizational interfaces for the facilities in threat categories I, II and III and the national level programmes for threat categories IV and V are tested at suitable intervals.
vii. Make arrangements to ensure the availability and reliability of all supplies, equipment, communication systems and facilities needed during an emergency.
viii. Establish mobilization plans to gather human resources in various fields for a prolonged radiation emergency with severe consequences.
ix. Provide an on-site emergency control centre for threat category I facilities, designed to remain operational for the range of postulated severe accident conditions.
x. The on-site emergency control centre has enough information available about essential safety related parameters and radiological conditions in the facility and its immediate surroundings.
xi. Make arrangements to conduct internal monitoring of emergency response workers and to ensure the availability of these under postulated emergency conditions.

3.15.1 Current situation

Ref. to (i): There are three main legal undertakings in place that establish emergency plans at the national, municipality and facility levels: The National Emergency Situation Management Plan for All Hazards; the State Residents Protection Plan in Case of Nuclear Accident; and the Regulations on Handling Orphan Sources of Ionizing Radiation. These plans are complete and regularly supervised at the national, municipality and facility levels.

Ref. to (ii): The required procedures are developed and included in the relevant on-site emergency response plans of the Ignalina NPP and in the plans of responding institutions (VATESI, RSC, Fire and Rescue Organization, medical centres, etc.)

Ref. to (iii): The required tools and equipment are provided and are in appropriate condition at the respective institutions.

Ref. to (iv): The coordinators for on-site actions, off-site local actions, national response actions, public information provisions and off-site monitoring assessment are identified. They are the following:

- Coordination of on-site response actions: the Emergency Response Organizations (ERO) which are to be established at facilities in threat categories I, II and III according to the legislation. On-site response actions will be coordinated at the ERO facilities.
- Coordination of local off-site response actions (radiological and conventional): the Municipal Emergency Commission, the Municipal Operation Leader, The Municipal Operation Centre. Local off-site response actions will be coordinated at the municipal facilities.
- Coordination of national response actions: the Government Emergency Commission, the State Operation Leader appointed by the Prime Minister, the State Operation Centre.
- Coordination of public information: the press centre at the Fire and Rescue Department facilities.
- Coordination of off-site monitoring and assessment: in accordance with the State Residents Protection Plan in Case of Nuclear Accident, the off-site monitoring coordinator and assessor is RSC.

Ref. to (v): All organizations involved in emergency preparedness and response implement their regular training programme on an annual basis, as stipulated in the Law on Civil Protection.

Ref. to (vi): The types, levels, preparation and conduct of emergency response exercises are determined in a governmental decree on the organization of civil protection exercises. The last full-scale exercise at the Ignalina NPP was performed in February 2011 (that is, already in its present shutdown state). Lithuania takes part in ECURIE, IAEA and other international exercises regularly.

Ref. to (vii): The competent authorities (VATESI and RSC) perform regular inspections in which they check the availability and the condition of required supplies, equipment and communication systems for adequate emergency response. Civil protection reserves are accessible.

Ref. to (viii): The plan of mobilization of necessary human resources applicable also for the case of a prolonged emergency with possible severe consequences is described in the national nuclear emergency plan, the Law on Civil Protection and in a governmental resolution.

Ref. to (ix): The on-site emergency control centre of the Ignalina NPP is designed to remain operational in severe accident conditions.

Ref. to (x): The on-site emergency control centre of the Ignalina NPP is capable of collecting all necessary information about essential safety related parameters and radiological conditions in the facility and its immediate surroundings.

Ref. to xi): The methods and implementation of dosimetric monitoring of emergency responders, including the control of internal exposure, are determined by governmental resolution and described in detail in a decree issued by the Director of the Radiation Protection Centre (RSC).

3.15.2. Suggestions

S.15.1: There are three actual emergency plans in use in Lithuania. One of them is the general national plan for all kinds of emergencies; the nuclear emergency plan is subsidiary to it. It is suggested that the third plan which is nominally a code of "regulations" for radiological emergencies – pertinent to threat category IV events as declared in the self-assessment questionnaire – be either included into the nuclear emergency plan or should have the form of a general radiological emergency plan. It should be examined whether every aspect of threat category III events is covered by the instructions in this plan.

S.15.2: The licensee of threat category III radioactive sources should set up fixed, permanently operating control devices that indicate the actual position and status of radiation sources that are considered "dangerous" according to the relevant IAEA publication on dangerous quantities of radioactive material [4].

GLOSSARY

arrangements (for emergency response): The integrated set of infrastructure elements necessary to provide the capability for performing a specified function or task required in response to a nuclear or radiological emergency. These elements may include authorities and responsibilities, organization, coordination, personnel, plans, procedures, facilities, equipment or training.

dangerous source: A source that could, if not under control, give rise to exposure sufficient to cause severe deterministic health effects. This categorization is used for determining the need for emergency response arrangements and is not to be confused with categorizations of sources for other purposes.

deterministic effect: A health effect of radiation effect for which generally a threshold level of dose exists above which the severity of the effect is greater for a higher dose. Such an effect is described as a 'severe deterministic effect' if it is fatal or life threatening or results in a permanent injury that reduces quality of life.

emergency: A non-routine situation or event that necessitates prompt action primarily to mitigate a hazard or adverse consequences for human health and safety, quality of life, property or the environment. This includes nuclear or radiological emergencies and conventional emergencies such as fires, release of hazardous chemicals, storms or earthquakes. It includes situations for which prompt action is warranted to mitigate the effects of a perceived hazard.

emergency action level (EAL): A specific, predetermined, observable criterion used to detect, recognize and determine the emergency class.

emergency class: A set of conditions that warrant a similar immediate emergency response. The term used for communicating to the response organizations and the public the level of response needed. The events that belong to a given emergency class are defined by criteria specific to the installation, source or practice, which if, exceeded indicate classification at the prescribed level. For each emergency class, the initial actions of the response organizations are predefined.

emergency classification: The process whereby an authorized official classifies an emergency in order to declare the applicable level of emergency class. Upon declaration of the emergency class, the response organizations initiate the predefined response actions for that emergency class.

emergency plan: A description of the objectives, policy and concept of operations for the response to an emergency and of the structure, authorities and responsibilities for a systematic, coordinated and effective response. The emergency plan serves as the basis for the development of other plans, procedures and checklists**.**

(emergency) preparedness: The capability to take action that will effectively mitigate the consequences of an emergency for human health, safety, quality of life, property and the environment.

emergency procedures: A set of instructions describing in detail actions to be taken by response personnel in an emergency.

(emergency) response: The performance of actions to mitigate the consequences of an emergency on human health and safety, quality of life, property and the environment. It may also provide a basis for the resumption of normal social and economic activity.

emergency services: The local off-site response organizations that are generally available and that perform emergency response functions. These may include police, fire and rescue brigades, Emergency Medical Stations, and control teams for hazardous materials.

emergency worker: A worker who may be exposed in excess of occupational dose limits while performing actions to mitigate the consequences of an emergency for human health and safety, quality of life, property and the environment.

emergency zones: The precautionary action zone and/or the urgent protective action planning zone.

exposure: The act or condition of being subject to irradiation. Exposure can be either external exposure (irradiation by sources outside the body) or internal exposure (due to a source within the body).

first responders: The first members of an emergency service to respond at the scene of an emergency.

generic intervention level: The level of avertable dose at which a specific protective action is taken in an emergency or situation of chronic exposure.

generic action level: The concentration (Bq/g) of specific isotopes in food or water at which consumption should be restricted if replacement food or water is available.

initial phase: The period of time from the detection of conditions warranting the implementation of response actions that must be taken promptly in order to be effective until those actions have been completed. These actions included taking mitigatory actions by the operator and urgent protective actions on and off the site.

intervention: Any action intended to reduce or avert exposure or the likelihood of exposure to sources which are not part of a controlled practice or which are out of control as a consequence of an accident.

intervention level: The level of avertable dose at which a specific protective action is taken in an emergency or situation of chronic exposure.

longer term protective action: A protective action, which is not an urgent protective action. Such protective actions are likely to be prolonged over weeks, months or years. These include measures such as relocation, agricultural countermeasures and remedial actions.

non-radiological consequences: Effects on humans or the environment that are not deterministic or stochastic effects. These include effects on health or the quality of life resulting from psychological, social or economic consequences of the emergency or the response to the emergency.

notification:

1. A report submitted to a national or international authority providing details of an emergency or potential emergency, for example as required by the Convention on Early Notification of a Nuclear Accident;
2. A set of actions taken upon detection of emergency conditions with the purpose of alerting all organizations with responsibility for taking emergency response actions in the event of such conditions.

notification point: A designated organization with which arrangements have been made to receive notification (meaning 2 in this glossary) and promptly to initiate predetermined actions to activate a part of the emergency response.

nuclear or radiological emergency: An emergency in which there is, or is perceived to be a hazard due to:

the energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction; or

radiation exposure.

off-site: Outside the site area.

on-site: Within the site area.

operational intervention level (OIL): A calculated level, measured by instruments or determined by laboratory analysis that corresponds to an intervention level or action level. OILs are typically expressed in terms of dose rates or of activity of radioactive material released, time integrated air concentrations, ground or surface concentrations, or activity concentrations of radionuclides in environmental, food or water samples. An OIL is a type of action level that is used immediately and directly (without further assessment) to determine the appropriate protective actions on the basis of an environmental measurement.

operator (or operating organization): Any organization or person applying for authorization or authorized and/or responsible for nuclear, radiation, radioactive waste or transport safety when undertaking activities or in relation to any nuclear facilities or sources of ionizing radiation. This includes private individuals, governmental bodies, consignors or carriers, licensees, hospitals, and self-employed persons. This includes those who are either directly in control of a facility or an activity during use (such as radiographers or carriers) or, in the case of a source not under control (such as a lost or illicitly removed source or a re-entering satellite), those who were responsible for the source before control over it was lost.

practice: Any human activity that introduces additional sources of exposure or exposure pathways or extends exposure to additional people or modifies the network of exposure pathways from existing sources, so as to increase the exposure or the likelihood of exposure of people or the number of people exposed.

precautionary action zone: An area around a facility for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to reduce the risk of server deterministic health effects off the site. Protective actions within this area are to be taken before or shortly after a release of radioactive material or exposure on the basis of the prevailing conditions at the facility (EALs).

protective action: An intervention intended to avoid or reduce doses to members of the public in emergencies or situations of chronic exposure.

radiation emergency: A nuclear or radiological emergency.

radiological emergency: An emergency involving an actual or perceived risk from activities that could give rise to a nuclear or radiological emergency at an unforeseeable location. These include non-authorized activities such as activities relating to dangerous sources obtained illicitly. They also include transport and authorized activities involving dangerous mobile sources such as industrial radiography sources, radio thermal generators or nuclear powered satellites.

radiological dispersal device (RDD): A device constructed by terrorists to spread radioactive materials using conventional explosives or other means.

regulatory body: An authority or a system of authorities designated by the government of a State as having legal authority for conducting the regulatory process, including issuing authorizations, and thereby regulating nuclear, radiation, radioactive waste and transport safety.

response organization: An organization designated or otherwise recognized by a State as being responsible for managing or implementing any aspect of a response.

significant transboundary release: A release of radioactive material to the environment that may result in doses or levels of contamination beyond national borders from the release which exceed international intervention levels or action levels for protective actions, including food restrictions and restrictions on commerce.

site area: A geographical area that contains an authorized facility, activity or source, within which the management of the authorized facility or activity may directly initiate emergency actions. This is typically the area within the security perimeter fence or other designated property marker. It may also be the controlled area around a radiography source or a cordoned off area established by first responders around a suspected hazard.

source: Anything that may cause radiation exposure — such as by emitting ionizing radiation or by releasing radioactive substances or materials — and can be treated as a single entity for protection and safety purposes. For example, materials emitting radon are sources in the environment, a sterilization gamma irradiation unit is a source for the practice of radiation preservation of food, an X ray unit may be a source for the practice of radio diagnosis; a nuclear power plant is part of the practice of generating electricity by nuclear fission, and may be regarded as a source (e.g. with respect to discharges to the environment) or as a collection of sources (e.g. for occupational radiation protection purposes). A complex or multiple installations situated at one location or site may, as appropriate, be considered a single source for the purposes of application of international safety standards.

stochastic effect (of radiation): A radiation induced health effect, the probability of occurrence of which is greater for a higher radiation dose and the severity of which (if it occurs) is independent of dose. Stochastic effects may be somatic effects or hereditary effects, and generally occur without a threshold level of dose. Examples include thyroid cancer and leukaemia.

threat assessment: The process of analysing systematically the hazards associated with facilities, activities or sources within or beyond the borders of a State in order to identify:

1. Those events and the associated areas for which protective actions and emergency countermeasures may be required within the State; and
2. The actions that would be effective in mitigating the consequences of such events.

transnational emergency: A nuclear or radiological emergency of actual, potential or perceived radiological significance for more than one State. This includes:

1. A significant transboundary release of radioactive material (however a transnational emergency dose not necessarily imply a significant transboundary release or radioactive material);
2. A general emergency at a facility or other event that could result in a significant transboundary release (atmospheric or aquatic) of radioactive material;
3. A discovery of the loss or illicit removal of a dangerous source that has been transported across or is suspected of having been transported across a national border;
4. An emergency resulting in significant disruption to international trade or travel;
5. An emergency warranting the taking of protective actions for foreign nationals or embassies in the State in which it occurs;
6. An emergency resulting in or potentially resulting in severe deterministic health effects and involving a fault and/or problem (such as in equipment or software) that could have implications for safety internationally;
7. An emergency resulting in or potentially resulting in great concern among the population of more than one State owing to the actual or perceived radiological hazard.

urgent protective action: A protective action that, in the event of an emergency, must be taken promptly (normally within hours) in order to be effective, and the effectiveness of which will be markedly reduced if it is delayed. The most commonly considered urgent protective actions in a nuclear or radiological emergency are evacuation, decontamination of individuals, sheltering, respiratory protection, iodine prophylaxis, and restriction of the consumption of potentially contaminated foodstuffs.

urgent protective action planning zone: An area around a facility for which arrangements have been made to take urgent protective actions in the event of a nuclear or radiological emergency to avert doses off the site in accordance with international standards. Protective actions within this area are to be taken on the basis of environmental monitoring — or, as appropriate, prevailing conditions at the facility.

ABBREVIATIONS

EAL	emergency action level
EOC	emergency operations centre
EOF	emergency operations facility
EP	emergency planning
EPREV	emergency preparedness review
EPZ	emergency planning zone
ERC	emergency response centre
GAL	generic action level
GIL	generic intervention level
IAEA	International Atomic Energy Agency
ICP	incident command post
ICS	incident command system
IND	improvised nuclear device
INES	International Nuclear Event Scale
NPP	nuclear power plant
OIL	operational intervention level
PAZ	precautionary action zone
PIO	public information officer
RDD	radiological dispersal device
RMAC	radiological monitoring and assessment centre
TLD	thermoluminescent dosimeter/dosimetry
UN	United Nations
UPZ	urgent protective action planning zone
WHO	World Health Organization

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[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Convention on Early Notification of a Nuclear Accident (1986) and Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1987), Legal Series No. 14, IAEA, Vienna (1987).

[2] FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS OFFICE FOR THE CO-ORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, Preparedness and Response for a Nuclear or Radiological Emergency, Safety Standards Series No. GS-R-2, IAEA, Vienna (2002).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, Method for Developing Arrangements for Response to a Nuclear or Radiological Emergency, EPR-METHOD, IAEA, Vienna (2003).

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, Dangerous Quantities of Radioactive Material (D-values), EPR-D-VALUES 2006, IAEA, Vienna (2006).

[5] INTERNATIONAL ATOMIC ENERGY AGENCY, Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency, Safety Standards Series No. GSG-2, Vienna (2011).

Appendix I: MISSION TEAM COMPOSITION

ZOMBORI, Peter	IAEA Coordinator
STERN, Warren Michael	United States of America
BACIU, Adriana	Romania
ZAGYVAI, Peter	Hungary

Appendix II: MISSION SCHEDULE

No.	Subject	Time
1 October 2012 Introductory plenary meeting with IAEA experts and representatives of all organizations involved in the National EPR		
1.	IAEA expert's general information (IAEA expert group coordinator)	9:00 – 9:30
2.	Introduction of representatives of Lithuanian institutions	9:30 – 9:45
3.	General information on the civil protection system in Lithuania, emergency management. Presentation of the State Residents Protection Plan in Case of Nuclear Accident. (Fire and Rescue Department (FRD))	9:45 – 10:30
4.	VATESI functions: 1) in nuclear energy safety area with focus on emergency preparedness; 2) functions as NCA (VATESI)	10:30 – 11:00
5.	Environmental Protection Agency (EPA): information on gamma dose monitoring (RADIS monitoring); transfer of monitoring results in case of emergency; information on environmental radiological monitoring (Environmental Protection Agency (EPA))	11:00 – 11:30
6.	Health Emergency Situation Centre (HESC) of the Ministry of Health: information on personal and public health institutions preparedness for emergencies (HESC)	11:30 – 12:00
Lunch (or coffee break)		12:00 – 13:00
7.	State Food and Veterinary Service (SFVS) information on food, feed and water radiological control every day and in the event of a radiation emergency, and their other functions in the event of radiological or nuclear emergency (SFVS)	13:00 – 13:30
8.	State Border Guard Service (SBGS) under the Ministry of Interior, this agency's responsibility for ensuring nuclear and radiation security Nuclear Security Centre of Excellence (SBGS)	13:30 – 14:00
8.	Determination of the institutions to be considered for reviewing (Lithuanian proposals)	14:00 – 15:00
9.	General discussion	15:00 – 16:00

	(IAEA experts, all institutions)	
2 October 2012 Meeting with officials competent in radiological emergency management (with RSC). Review of legislation, plans and procedures, organizational structure, etc.		
1.	State Radiation Protection Infrastructure, legislation, plans and procedures for response to radiological emergencies (RSC)	9:00 – 9:20
2.	The system of prevention, identification and management of orphan sources (RSC)	9:20 – 9:40
3.	Public exposure monitoring in case of radiation emergency (RSC)	9:40 – 10:00
4.	Emergency preparedness and response training and exercices system in Lithuania (RSC)	10:00 – 10:20
5.	Radiation protection training system in Lithuania (RSC, I. Gatelytė)	10:20 – 10:40
Coffee break		10:40 – 11:00
6.	Organizational structure of RSC, its laboratory control base and equipment, emergency preparedness plan and procedures (RSC)	11:00 – 12:00
Lunch		12:00 – 13:30
7.	General discussion (IAEA experts, RSC)	14:00 – 17:00
3 October 2012 Visits at/discussions with responding organizations (national/local)		
1.	Visit to NCA – Fire and Rescue Department under the Ministry of the Interior (FRD) (FRD)	9:00 – 10:00
2.	Visit to Vilnius County Fire and Rescue Board: make acquaintance with Fire and Rescue Service preparedness to act in case of radiation emergency (Vilnius County FRB)	10:30 – 11:30
3.	Visit to Environmental Protection Agency under the Ministry of the Environment (EPA): make acquaintance with gamma dose rate monitoring (RADIS) (EPA)	12:00 – 12:30
Lunch		12:30 – 14:00
4.	Visit to State Nuclear Power Safety Inspectorate (VATESI): make acquaintance with Emergency Centre (VATESI)	14:30 – 15:30

5.	Visit to Vilnius Emergency Medical Station: evaluate medical first responder's preparedness to act in the event of a radiation emergency (Vilnius Emergency Medical Station)	16:00 – 17:00
4 October 2012 Visits at/discussions with operators and local responding organizations		
1.	Visit to Ignalina NPP (threat category I). (Ignalina NPP)	10:00 – 12:00
Lunch		12:00 – 13:00
2.	Visit to Visaginas Municipality (Visaginas Municipality)	13:15–14:00
3.	Visit to Visaginas Fire and Rescue Board (Visaginas FRB)	14:20 – 15:00
4.	Visit to Visaginas Hospital (Visaginas Hospital)	15:20 – 16:00
5.	Visit to Maišiagala Radioactive Waste Repository (threat category III)	17:00 – 17:30
5 October 2012 Visits at/discussions with operators and local responding organizations		
1.	Visit to Lavoriškės Border Control Point (activities of threat category IV)	9:00 – 10:00
2.	Visit to Hospital of Lithuanian University of Health Sciences Kaunas Clinics Blood Irradiation Centre, threat category III facility (Kaunas Clinics)	11:30 – 13:00
Lunch		13:00 – 14:00
2.	Visit to Kaunas Emergency Medical Station (Kaunas EMS)	14:30 – 15:30
6, 8, 9, 10 October 2012 Drafting the EPREV Mission Report		
11 October 2012		
1.	Final plenary meeting with representatives of all organizations involved in national EPR (IAEA experts; participated institutions)	10:00 – 12:00
Lunch		12:30 – 14:00

Appendix III: ROLES AND RESPONSIBILITIES OF DIFFERENT "STAKEHOLDERS" IN A RADIATION EMERGENCY

NATIONAL AUTHORITIES

Ministry of the Environment

In case of nuclear and (or) radiological accident beyond the boundaries of sanitary protection zone, support to Ministry of the Interior, which is responsible for management and coordination of emergency situation at State level by organizing and implementing urgent protective actions and early protective actions, specified in HN 99:2011. Support to State Emergency Operations Centre to coordinate at State level material technical provision in the event of a nuclear and (or) radiological accident.

Ministry of Health

Put forward proposals to the Government Emergency Commission and Municipality Emergency Commission on the application and cancellation of urgent protective actions, early protective actions and long-term protective actions, within the limits of its competence. Organize the control of exposure to the public, put forward proposals on reducing radiation exposure to individuals to institutions that perform sanitary cleaning/washing of evacuated residents. Following the data presented by responsible institutions, calculate the quantity of stable iodine preparations, required for civil protection system forces, specialists and employees of economic entities and other establishments, trained volunteers, participating in elimination of consequences of nuclear and (or) radiological accident (hereinafter referred to as liquidators), as well as for residents, which fall into precautionary action zone and urgent protective action zone. Determine the levels of exposure doses and contamination, applicable in case of nuclear accident.

Ministry of the Interior

Shall implement, in conjunction with other entities of the civil protection system, the tasks of the civil protection system, coordinate the activities of entities of the civil protection system, with the exception of the Government, in accomplishing the tasks of the civil protection system assigned to their competence. Manage and coordinate emergency situation at State level by organizing and implementing urgent protective actions and early protective actions specified in HN 99:2011.

Ministry of Agriculture

Participate in the emergency preparedness and response efforts, while organizing the implementation of agricultural protection measures at State level. Organize and coordinate the implementation of long-term agricultural remedial measures, determine special remedial measures, obligatory for holders of land. If necessary, coordinate mobilization of agricultural technique for elimination of consequences of nuclear and (or) radiological accident and implementation of agricultural remedial measures, provide recommendations, regarding the further operation of agricultural technique and other production means in the territory, contaminated with radionuclides. Following the information presented by competent institutions, assess the impact of a nuclear and (or) radiological accident on agriculture and food production at State level.

Ministry of Social Security and Labour

Submit proposals to the Government on the provision of social support for evacuated and injured residents.

Police Department under the Ministry of the Interior

Ensure traffic regulation during and after the evacuation of residents, regulate traffic by temporarily controlling transport through traffic regulation stations on the main and alternate evacuation routes while ensuring public order. Block access to any area contaminated with radionuclides ensuring the protection of its perimeter; if necessary, introduce a system of special permits to allow persons and vehicles to access this area and leave it only through intermediate evacuation stations. Together with elders, identify residents who do not have the possibility to come to resident collection stations or who refuse to evacuate. Register evacuated residents in places of temporary relocation; manage the accounting of evacuated residents.

Fire and Rescue Department under the Ministry of the Interior (FRD)

Direct the activities of the civil protection system, coordinate the organization of emergency prevention, the activities of residents, State and municipal institutions and agencies, other agencies and economic entities in the sphere of civil protection and plan national preparedness for the implementation of civil protection tasks in the event of an emergency. Ensure the activity of State Emergency Operations Centre, maintain contact with Emergency Operations Centres of other State institutions and establishments as well as municipalities. Warn and inform the residents, State and municipality institutions and establishments, economic entities and other institutions about a possible or existing State-level emergency situation, its potential consequences, measures of their elimination and methods of protection from State-level emergency situation. Organize initial assessment of radiological condition (performs equivalent or exposure dose rate measurements). Coordinate evacuation of residents. In case of potential or existing emergency, which can cause danger to residents and environment of neighbouring countries, present information to neighbouring countries about existing emergency situation. If necessary, call on Lithuanian Red Cross Society and other non-governmental organizations for help, organize the provision of help from foreign States, in accordance with the Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency and Description for Asking, Accepting and Providing International Assistance of Civil Protection.

State Border Guard Service under the Ministry of the Interior

Ensure the implementation of any Government decision to temporarily restrict or prohibit passage through certain border control stations. Monitor radiation background, explore the focus of the emergency from the air.

State Nuclear Power Safety Inspectorate (VATESI)

Assess the situation and forecast the course of nuclear and (or) radiological accident in nuclear power facilities. In case of nuclear and (or) radiological accident, provide urgent information about nuclear and (or) radiological accident, radiological status in nuclear power facility, forecasts of transboundary release of radioactive materials, technical circumstances of nuclear and (or) radiological accident, its development and liquidation course, consequences and other related information to State and municipality institutions concerned. Present information about technical circumstances of nuclear and (or) radiological accident, its liquidation course and consequences, forecasted or determined class of nuclear accident according to INES scale, and recommended protective actions to other States, European Commission and international organizations (IAEA and others).

Environmental Protection Agency under the Ministry of the Environment (EPA)

Implement gamma monitoring, collect and analyse data of gamma monitoring, perform forecast of transfer of radionuclides in the country and carry out the function of early warning.

State Food and Veterinary Service

Control the activity of economic entities that manage food products, drinking water in the territory contaminated with radionuclides. Assess the threat of a nuclear and (or) radiological accident for animals, determine measures for their protection. Organize risk assessment, implement State veterinary control and present findings on eliminating the noxiousness of food products, drinking water, or their destruction.

Health Emergency Situation Centre of the Ministry of Health

Collaborate with the World Health Organization (WHO), act as contact point 24 hours/day and 7 days per week for inside information and for contacts with WHO and the European Commission (DG SANCO). Collect stable iodine preparations, designed for liquidators, in State medical reserve, determines the procedure for their issue to liquidators.

State Enterprise Radioactive Waste Management Agency (RATA)

Decontaminate clothing, personal protective equipment, tools and other objects contaminated with radionuclides, organize the work of special work groups, formed for executing the planned works and manage and coordinate the work groups for environmental decontamination set up by municipality administrations.

Lithuanian Red Cross Society

Provide social and psychological support and social help for evacuees and victims of nuclear or radiological emergencies, organize the use of trained volunteers and specialists and coordinate their action. Participate in general education and training, pre-school education for evacuated children and victims of the emergency, etc.

LOCAL ORGANIZATIONS / RESPONDERS

Visaginas Municipality

Provide for and plan the measures of residents' protection, prepare recommendations for them, regarding residents' protection, personal protection equipment, usage of collective protection structures, acquisition, storage, renewal and usage of stable iodine preparations according to proposals of Ministry of Health. Provide for the main and alternate evacuation routes and plan the gathering locations for residents in these routes, the evacuation of residents, sanitary cleaning and the equipment of the reception points for residents. Organize the formation of groups for controlling the dosimetric of impact of ionizing radiation on residents and radioactive contamination, decontamination and execution of other special tasks. According to the information provided by nuclear power facility, warn and inform the residents of the municipality, State and municipality institutions, other establishments and entities about a nuclear and (or) radiological accident, a possible or existing emergency. Announce the start of the evacuation of residents and (or) application of other urgent protective actions through the media. Organize and implement the evacuation, reception, accommodation, provision of food and provision of essential services.

Visaginas Fire and Rescue Board

First responders in case of nuclear and (or) radiological accident in Ignalina NPP. Make a preliminary assessment of the State of radiation (measurements of equivalent or exposition dose rate). If necessary shall provide victims with first aid and shall participate on the spot in decontaminating persons contaminated with radionuclides. Deactivate personal protective gear and work equipment and vehicles belonging to the fire and rescue bodies. Provide radiological treatment services for persons who were in contaminated area.

Visaginas Hospital

Receiving hospital in case of nuclear and (or) radiological accident at the Ignalina NPP.

Vilnius County Fire and Rescue Board

Make a preliminary assessment of the State of radiation (measurements of equivalent or exposition dose rate) and determine and mark the dangerous area. If necessary provide victims with first aid and shall participate on the spot in decontaminating persons contaminated with radionuclides and deactivate personal protective gear and work equipment and vehicles belonging to the fire and rescue bodies.

Vilnius Emergency Medical Station

Provide first medical aid, medical triage near the emergency area, transport victims.

Hospital of Lithuanian University of Health Sciences Kaunas Clinics

Receive for treatment victims whose whole body doses are or exceeds the levels provided in HN 99:2011.

Lavoriškės Border Control Point

After the detection of cargo or vehicle emitting ionizing radiation at the checkpoint, when the dose rate at any point on the surface exceeds 0.2 μSv/h (20 μR/h):

Shall examine the documents accompanying the cargo or vehicle, identify the content of radionuclides contained in the cargo and check whether the data corresponds to the one in the document issued by the competent institution, enabling the transport of radioactive or nuclear substances or testifying that the cargo contains natural radionuclides. If they match, allows the cargo or the vehicle to continue its travel. If the cargo or vehicle does not have accompanying documents, shall refuse entry of such cargo or the vehicle to the Republic of Lithuania or exit from the Republic of Lithuania and shall return the cargo or vehicle to the country of origin (location), or allow them to be transported to the destination country (place) in accordance with the specific radiation safety requirements of the Radiation Protection Centre.

Firefighters Training School (Vilnius District, Valčiūnai)

In accordance with various training programmes, provides not only basic training but also advanced training courses for the officers of various stages, and training for district municipality firefighters, the personnel of various enterprises and agencies, which are responsible for firefighting, industrial safety and civil protection.

OPERATORS (FACILITIES)

Ignalina NPP (threat category I)

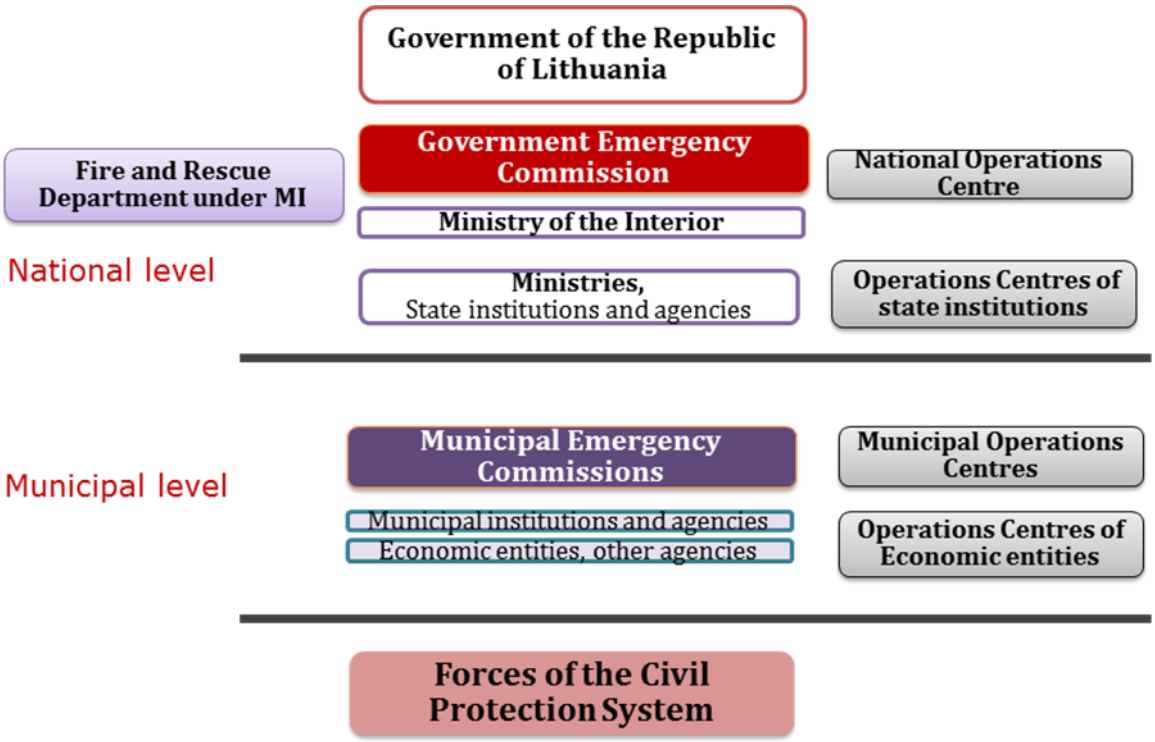
A nuclear and (or) radiological accident which occurs in a nuclear power facility shall be managed by the licence holder. The licence holder is also responsible for implementing within the sanitary protection zone the measures set forth in the Emergency Preparedness Plan of the nuclear power facility.

Maišiagala Radioactive Waste Repository (threat category III)

RATA, in cooperation with French specialists, developed the programme for environmental monitoring of this repository. The objective of this environmental monitoring programme consists in observing changes in the condition of the radioactive waste repository to ascertain whether or not it meets the established requirements. Water samples are taken from repository wells on a regular basis. In compliance with legal and standard documents of the Republic of Lithuania, RATA ensures that samples are taken from the repository's environment on time, and that the samples are analysed and results obtained are processed.

RATA also sees to it that reports on analyses are produced and circulated, and that analyses data are accumulated. Should any symptoms of contamination be observed, the necessary steps to eliminate it must be taken.

Appendix IV: THE CIVIL PROTECTION SYSTEM OF LITHUANIA



Appendix V: COMPOSITION AND FUNCTIONS OF THE GOVERNMENTAL EMERGENCY MANAGEMENT COMMISSION

I. Composition

Chairman:

- Minister of the Interior

Members:

- Vice minister of the Interior (Deputy Chairman)
- Vice ministers or chancellors of other ministries
- Chief of the Joint Headquarters of the Lithuanian Armed Forces
- Representative of the Prime Minister's Office
- Police Commissioner General
- Director of the Fire and Rescue Department
- Director General or Deputy Director General of the State Security Department
- Commander of the State Border Guard Service

II. Functions

- At least once a year, discusses the condition of the civil protection system, evaluate the preparedness of State and municipal institutions and agencies for emergency response and take measures to improve it.
- Provides to the public information on an imminent or actual emergency, emergency response and the measures taken to ensure the protection of residents and property.
- Takes the decisions required for the management of an imminent or actual emergency.
- Submits to the Government proposals on the use of civil protection supplies of the State reserve in the event of an emergency.
- Performs other functions as prescribed by the Government and relating to implementation of the tasks of the civil protection system.

Appendix VI: COMPOSITION AND FUNCTIONS OF THE MUNICIPAL EMERGENCY MANAGEMENT COMMISSION

I. Composition

Chairman – Director of municipality administration

Members of the Commission:

– members of the Municipal Council (for example, the Mayor's Deputy),

– employees of State and municipal institutions and agencies who can take a decision in the event of an emergency (for example, local fire brigades, hospital, food and veterinary service, local police, local environmental protection service, etc.).

II. Functions of the Municipal Emergency Management Commission

1) Coordinates preparedness of municipal institutions and agencies, other agencies and economic entities for emergency response and take measures to improve it.

2) Takes the decisions required for the management of an imminent or actual emergency.

3) Submits to the Fire and Rescue Department proposals on the use of civil protection supplies of the State reserve in the event of an emergency.

4) Provides to the public information on an imminent or actual emergency, emergency response and the measures taken to ensure the protection of residents and property;

5) Having regard to the nature or extent of an imminent or actual emergency, submits to the Fire and Rescue Department proposals on the convening of the Government Emergency Commission.

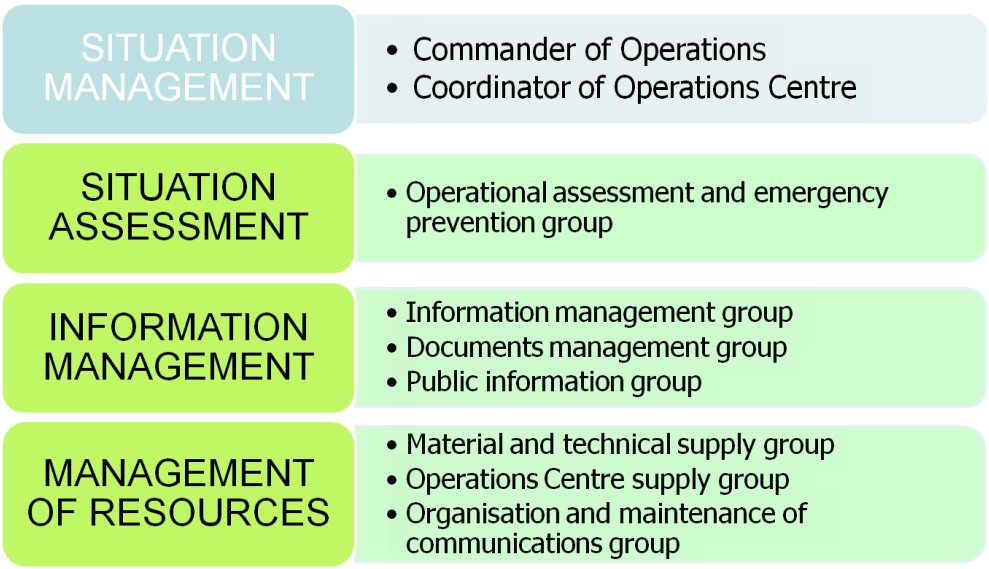
6) Performs other functions as prescribed in other legal acts and relating to implementation of the tasks of the civil protection system.

Appendix VII: EMERGENCY OPERATION CENTRES

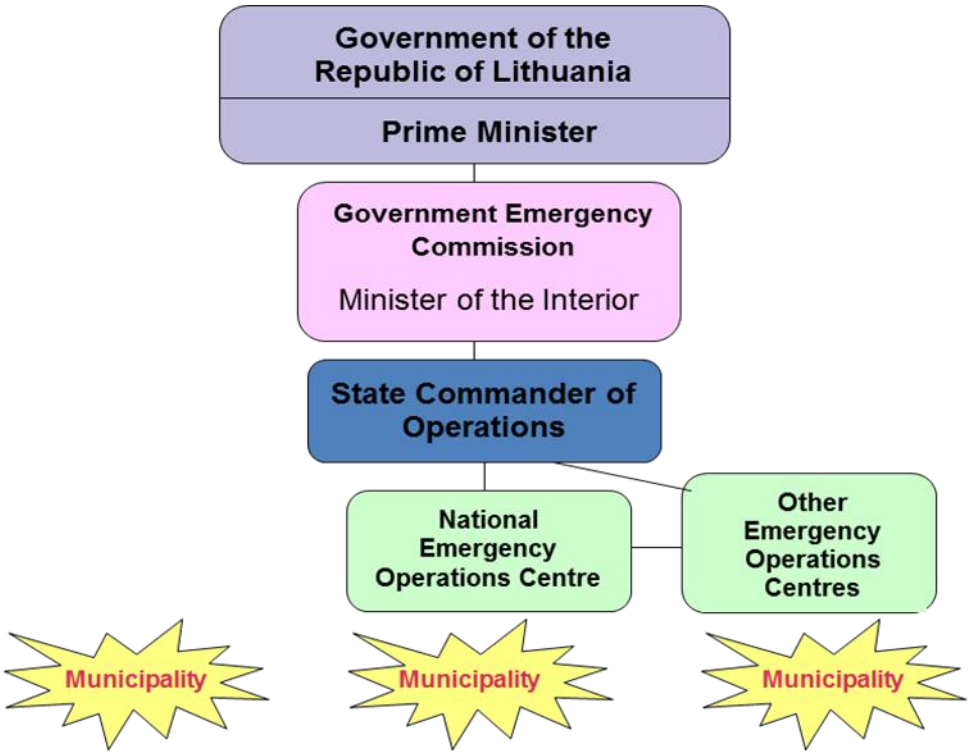
I. List of Emergency Operations Centres

- National Emergency Operations Centre
- 14 ministries and other State institutions
  - State Energy Inspectorate under the Ministry of Energy
  - State Border Guard Service under the Ministry of the Interior
  - Police Department under the Ministry of the Interior
  - Fire and Rescue Department under the Ministry of the Interior
  - Public Security Service under the Ministry of the Interior
  - State Food and Veterinary Service
  - State Nuclear Power Safety Inspectorate (VATESI)
  - Radiation Protection Centre (RSC)
- 60 municipalities
- Economic entities that conform to the requirements set up by the Fire and Rescue Department.

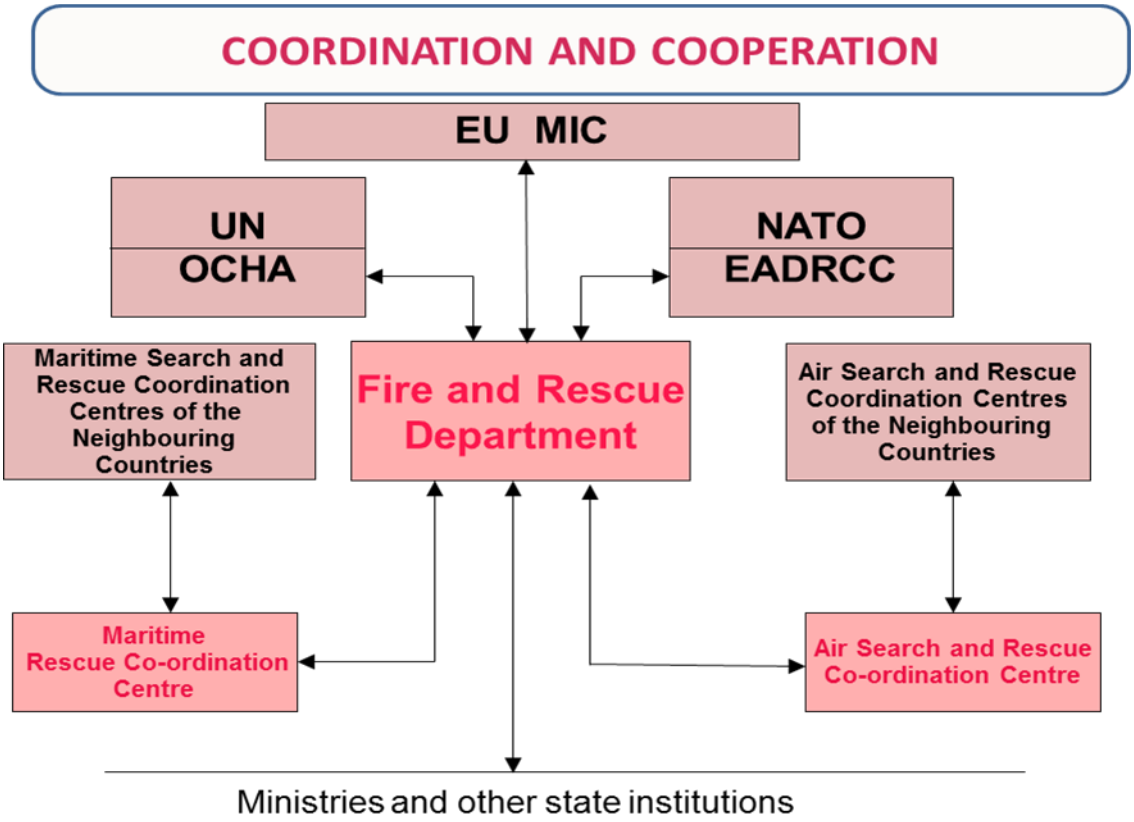
II. **Tasks of Emergency Operations Centres**



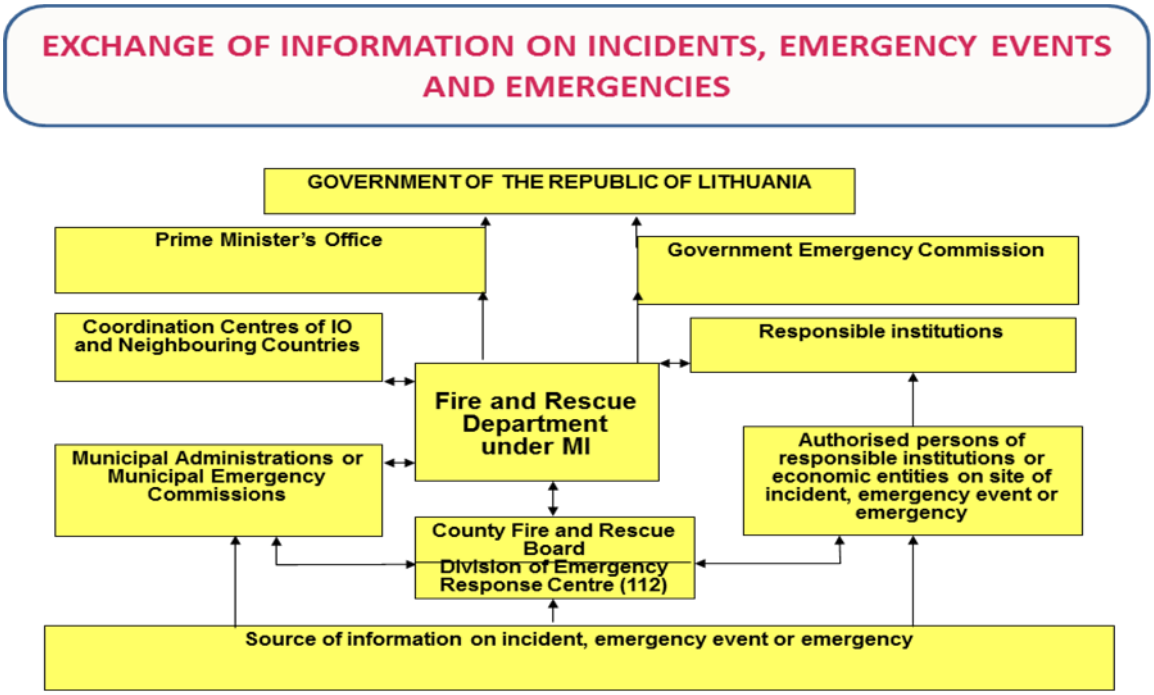
Appendix VIII: NATIONAL LEVEL EMERGENCY MANAGEMENT



Appendix IX: EUROPEAN AND INTERNATIONAL COOPERATION OF CIVIL PROTECTION ACTIVITIES, COORDINATED IN LITHUANIA BY THE FIRE AND RESCUE DEPARTMENT



Appendix X: FLOW CHART OF NOTIFICATIONAND EXCHANGE OF INFORMATION IN CASE OF EMERGENCIES

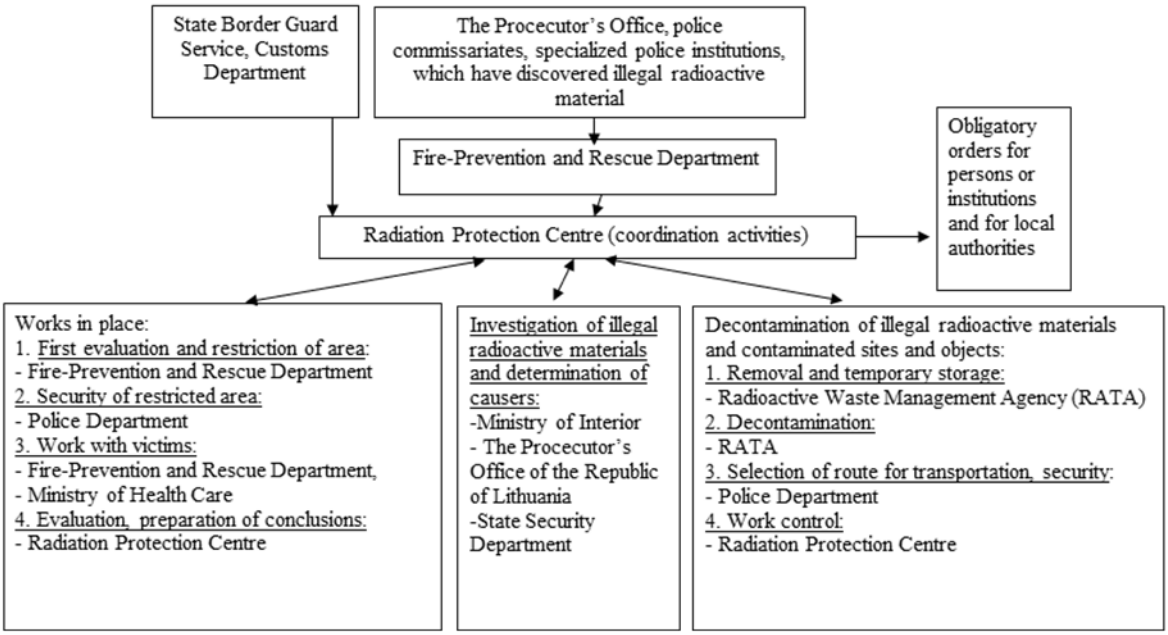


Appendix XI: SPECIFIC LEGISLATION FOR THE CONTROL OF RADIOCTIVE SOURCES AT SCRAP METAL FACILITIES AND BORDER CONTROL POINTS

- Law on Radiation Protection;
- Law on the Management of Radioactive Waste;
- Rules on the Licensing of Practices with Ionizing Radiation Sources;
- The Rules on Handling of Orphan Ionizing Radiation Sources, Orphan Substances of Nuclear Fuel cycle, Orphan Nuclear and Fissile Substances and Objects Contaminated by Radionuclides;
- Regulations on the Control of High-Activity Sealed Radioactive Sources and Orphan Sources;
- Regulations on Import, Export, Transit and Transport of Radioactive Materials, Radioactive Waste and Spent Fuel in the Republic of Lithuania;
- Procedures on Control of Radioactive Contamination of Metal Scrap, Waste and Metal Products in Scrap Yards and Reprocessing Plant Waste;
- Procedures on Mandatory Radiation Protection Training and Instruction.

Appendix XII: ROLES AND RESPONSIBILITIES OF STATE INSTITUTIONS IN THE EVENT OF DETECTION OF INCREASED LEVELS OF RADIOACTIVITY AT THE BORDER CONTROL POINTS

General Scheme of interaction between regulatory and other institutions of the Republic of Lithuania case of detection of illegal radioactive material and decontamination of contaminated sites and objects with them



Appendix XIII: LOCATION OF FIXED MONITORING EQUIPMENT AT THE BORDER CONTROL POINTS OF THE STATE BORDER GUARD SERVICE

Appendix XIV: PHOTOS OF FIXED RADIATION DETECTION EQUIPMENT INSTALLED AT THE BORDER CONTROL POINTS OF THE SBGS

- **VILNIUS AIRPORT BCP**

- **KENA RAILWAY BCP**

- **RAMONIŠKIAI ROAD BCP**

- **PANEMUNĖ ROAD BCP**

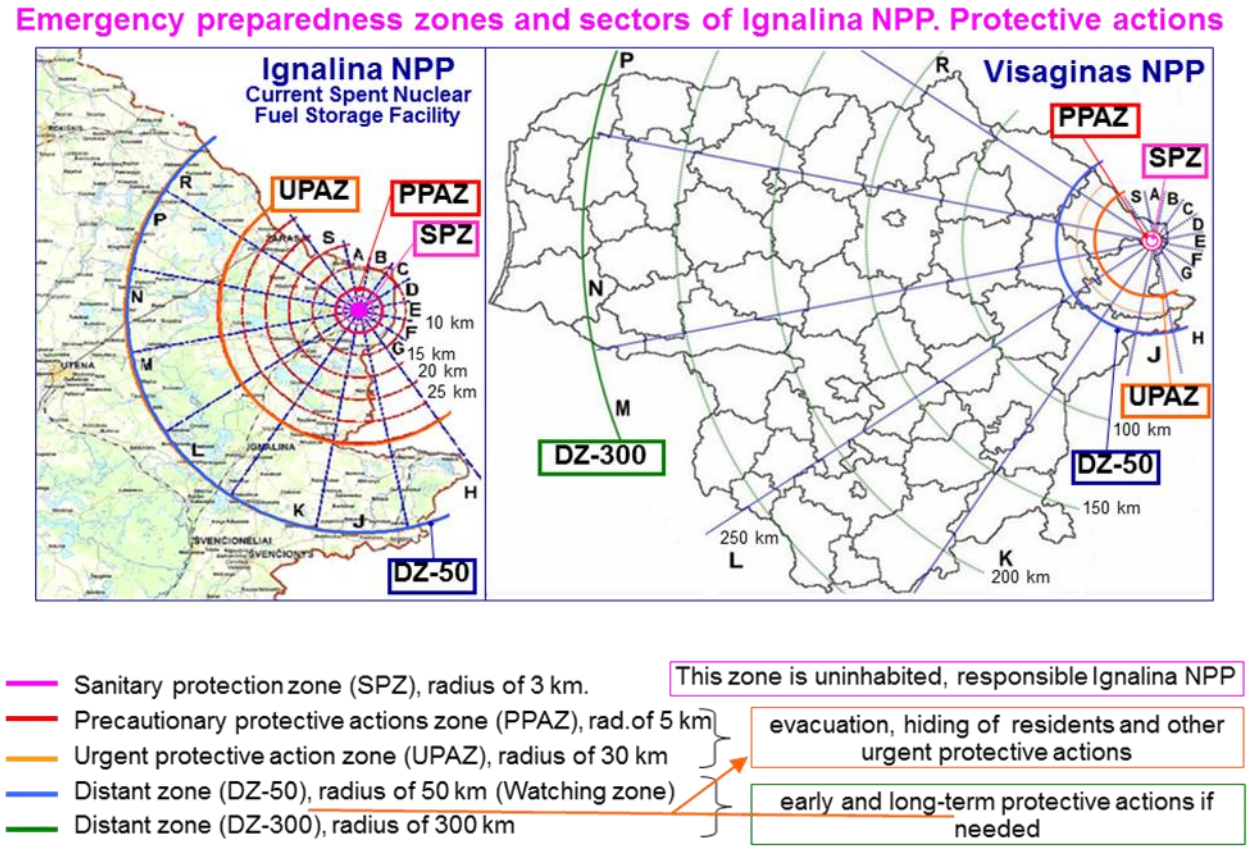
Appendix XV: PHOTOS OF PORTABLE RADIATION DETECTION EQUIPMENT AVAILABLE AT SOME BORDER CONTROL POINTS

Portable dosimeter PRM-470B

Exploranium GR-135

Thermo IdentiFINDER

Appendix XVI: EMERGENCY PLANNING ZONES AND RELEVANT PROTECTIVE ACTIONS FOR THE POPULATION IN THE INFLUENCE AREA OF THE IGNALINA NUCLEAR POWER PLANT



Appendix XVII: LIST OF ATTENDEES OF VARIOUS EPREV MISSION MEETINGS

1 October 2012			
1	Loreta Herbst	State Food and Veterinary Service	Deputy Head, Food Department
2	Egidijus Pumputis		Deputy Head, Emergency Response Department
3	Rasa Morkūniene	Environmental Protection Agency	Chief Specialist, Radiology Division, Environment Research Department
4	Emilis Baškys	State Nuclear Power Safety Inspectorate	Chief Inspector, Division of Transport and Radiation Safety
5	Michail Demčenko		Head
6	Vidas Paulikas		Deputy Head for Radiation Safety
7	Kristina Tumosienė		Head, Division of Transport and Radiation Safety
8	Vytautas Gailius	Health Emergency Situations Centre of the Ministry of Health	Director
9	Vladas Mireckas		Head, Planning and Control Division
10	Vaidotas Uselis	Environmental Protection Agency	Chief Specialist, Automatic Measurement Systems Division, Environment Status Assessment Department
11	Aleksejus Livšic	State Border Guard Service	Head, Nuclear Security Centre of Excellence
12	Sergėjus Iljusečkinas		Head of Security Service
12	Artūras Čeida		Chief Specialist, National Coordinating

			Centre, Border Control Organization Board
13	**Valdas Uscila**	**Ministry of Health**	**Chief Specialist, Public Health Care Division, Public Health Department**
14	**Viktoras Burbulis**	**Fire and Rescue Department**	**Chief Specialist, Division of Disaster Preparedness and Warning, Civil Protection Board**
15	**Tatjana Milkamanovič**		**Head, Division of Emergency Planning, Civil Protection Board**
16	**Danutė Šidiškienė**	**Radiation Protection Centre**	**Head, Division of Radiation Emergency Management**
17	**Albinas Mastauskas**		**Director**
18	**Rima Ladygienė**		**Head, Public Exposure Monitoring**
19	**Julius Žiliukas**		**Director, Department of Expertise and Exposure Monitoring**
20	**Rugilė Aganauskaitė**		**Chief Specialist, Division of Radiation Protection Supervision and Control**
21	**Justinas Siaurys**		**Chief Specialist, Division of Radiation Protection Supervision and Control**
22	**Mindaugas Lemežis**		**Chief Specialist, Division of Radiation Emergency Management**
23	**Kristina Mikalauskienė**		**Chief Specialist, Division of Radiation Emergency Management**
24	**Vaidas Statkus**		**Head, Division of Radiation Protection Supervision and Control**
25	**Ieva Gatelytė**		**Head, Division of Radiation Protection and Training**
26	**Ramunė Stasiūnaitienė**		**Deputy Director**

2 October 2012			
1	**Albinas Mastauskas**	**Radiation Protection Centre**	**Director**
2	**Ramunė Stasiūnaitienė**		**Deputy Director**
3	**Julius Žiliukas**		**Director, Department of Expertise and Exposure Monitoring**
4	**Danutė Šidiškienė**		**Head, Division of Radiation Emergency Management**
5	**Kristina Mikalauskienė**		**Chief Specialist, Division of Radiation Emergency Management**
6	**Mindaugas Lemežis**		**Chief Specialist, Division of Radiation Emergency Management**
7	**Rima Ladygienė**		**Head, Public Exposure Monitoring**
8	**Aušra Urbonienė**		**Head, Occupational Exposure Monitoring**
9	**Ieva Gatelytė**		**Head, Division of Radiation Protection and Training**
10	**Vaidas Statkus**		**Head, Division of Radiation Protection Supervision and Control**
11	**Rugilė Aganauskaitė**		**Chief Specialist, Division of Radiation Protection Supervision and Control**
12	**Justinas Siaurys**		**Chief Specialist, Division of Radiation Protection Supervision and Control**
3 October 2012			
1	**Rimantas Ramanauskas**	**Fire and Rescue Department**	**Head, Situation Coordination Division, Civil Protection Board**
2	**Neringa Brogaitė-**		**Chief Specialist, International**

	Karvelienė		**Relations Division**
3	**Vygandas Kurkulis**		**Deputy Director**
4	**Danutė Šidiškienė**	**Radiation Protection Centre**	**Head, Division of Radiation Emergency Management**
5	**Julius Žiliukas**		**Director, Department of Expertise and Exposure Monitoring**
6	**Tatjana Milkamanovič**	**Fire and Rescue Department**	**Head, Emergency Planning Division, Civil Protection Board**
7	**Algis Bolys**		**Chief Specialist, Disaster Preparedness and Warning Division, Civil Protection Board**
8	**Roaldas Kepalas**	**Vilnius County Fire and Rescue Board**	**Head, Operational Management Division, Vilnius County Fire and Rescue Board**
9	**Vitalijus Kapusta**		**Head, 3rd Command, Vilnius County Fire and Rescue Board**
10	**Algimantas Rukšėnas**		**Chief Specialist-chemist, 3rd Command, Vilnius County Fire and Rescue Board**
11	**Evaldas Tamašauskas**		**Head, Vilnius County Fire and Rescue Board**
12	**Andžej Romeiko**		**Deputy Head, 3rd Command, Vilnius County Fire and Rescue Board**
13	**Valdemaras Milinkevičius**	**Environmental Protection Agency**	**Chief Specialist, Automatic Measurement Systems Division, Environment Status Assessment Department**
14	**Michail Demčenko**	**State Nuclear Power Safety Inspectorate**	**Head**
15	**Kristina Tumosienė**		**Head, Division of Transport and Radiation Safety**
16	**Emilis Baškys**		**Chief Inspector, Division of Transport**

			and Radiation Safety
17	**Vanda Pumputienė**	**Vilnius Emergency Medical Station**	**Deputy Director**
4 October 2012			
1	**Žilvinas Jurkšus**	**State Enterprise Ignalina Nuclear Power Plant**	**General Director**
2	**Vasilij Fedorenko**		**Head, INPP EPO Headquarter**
3	**Aleksander Vnukov**		**Head, Technical Support Centre**
4	**Žydrūnas Jakštonis**		**Head, INPP EPO Support group**
5	**Arūnas Garubis**		**Expert, Control and Instrumentation of Devices**
6	**Jonas Jarutis**		**Engineer, Civil Security**
7	**Viktor Fiodorov**		**Engineer, Radiation Protection**
8	**Virginijus Andrius Bukauskas**	**Visaginas Municipality**	**Director, Visaginas Municipality Administration**
9	**Dalia Štraupaitė**		**Mayor, Visaginas Municipality**
10	**Konstantinas Bagdanavičius**		**Senior Specialist**
11	**Alvydas Jakseboga**	**Fire and Rescue Board of Visaginas**	**Head**
12	**Ramutis Milinaitis**		**Head, Operative Management Division**
13	**Antanas Povilavičius**		**Deputy Head**
14	**Audrius Alėjūnas**		**Head, State Fire Supervision Division**

15	**Kastytis Matulevičius**	**Visaginas Hospital**	**Head Doctor**
16	**Svetlana Pimšina**		**Deputy Head Doctor for Medicine**
17	**Robertas Juknevičius**		**Deputy Head Doctor for Property**
5 October 2012			
1	**Edvardas Černevskis**	**State Border Guard Service**	**Deputy Commander, Vilnius Frontier District**
2	**Romualdas Lipeika**		**Commander, Lavoriškės Control Post, Vilnius Frontier District**
3	**Andrius Kazlauskas**		**Deputy Commander, Lavoriškės Control Post, Vilnius Frontier District**
4	**Gediminas Čižauskas**	**Hospital of Lithuanian University of Health Sciences Kaunas Clinics**	**Doctor, Emergency Department**
5	**Irena Račienė**	**Radiation Protection Centre**	**Head, Kaunas Division of Radiation Protection Supervision and Control**
6	**Nerijus Spancerna**	**5th Command, Fire and Rescue Board of Kaunas County**	**Deputy Head**
7	**Albertas Ziminskas**	**Fire and Rescue Board of Kaunas County**	**Head, Civil Protection Division**
8	**Rytis Rimdeika**	**Hospital of Lithuanian University of Health Sciences Kaunas Clinics**	**Clinical Director for Surgery**
9	**Algidas Basevičius**		**Director for Development, Head of Radiology Clinic**
10	**Inga Cibulskaitė**		**Head, Radiation Protection Service**
11	**Laimonas**		**Head, Radiotherapy Division,**

	Jaruševičius		**Oncology and Haematology Department**
12	**Danguolė Vaikšnienė**	**Kaunas Emergency Medical Station**	**Deputy Director (Head Doctor) for Medicine**
13	**Irena Dabulskienė**		**Deputy Director (Head Doctor) for Nursing**
8 October 2012			
1	**Juozas Molis**	**Environmental Protection Agency**	**Head, Automatic Measurement Systems Division, Environment Status Assessment Department**
2	**Valdemaras Milinkevičius**		**Chief Specialist, Automatic Measurement Systems Division, Environment Status Assessment Department**
3	**Vaidotas Uselis**		**Chief Specialist, Automatic Measurement Systems Division, Environment Status Assessment Department**
4	**Gediminas Markauskas**		**Head, Emergency Prevention and Management Division**
11 October 2012			
1	**Rimantas Steponavičius**	**Vilnius County Fire and Rescue Board**	**Head**
2	**Vanda Pumputienė**	**Vilnius Emergency Medical Station**	**Deputy Director**
3	**Konstantinas Bagdanavičius**	**Visaginas Municipality**	**Senior specialist**
4	**Vasilij Fedorenko**	**State Enterprise Ignalina Nuclear Power Plant**	**Head, INPP EPO Headquarter**
5	**Nikolaj Pekutko**		
6	**Antanas Povilavičius**	**Fire and Rescue Board of Visaginas**	**Deputy Head**
7	**Juozas Molis**	**Environmental Protection Agency**	**Head, Automatic Measurement Systems Division, Environment Status**

			Assessment Department
8	Vaidotas Uselis		Chief Specialist, Automatic Measurement Systems Division, Environment Status Assessment Department
9	Loreta Herbst	State Food and Veterinary Service	Deputy Head, Food Department
10	Algirdas Vaidotas	Radioactive Waste Management Agency	Deputy Director
11	Julius Žiliukas	Radiation Protection Centre	Director, Department of Expertise and Exposure Monitoring
12	Valdas Uscila	Ministry of Health	Chief Specialist, Public Health Care Division, Public Health Department
13	Inga Cechanovičienė		Chief Specialist, General Medical Care Division, Public Health Department
14	Arūnas Tamašauskas		Adviser, Public Security and Public Order Division, Public Security Policy Department, Ministry of the Interior
15	Ernestas Trunovas	Fire and Rescue Department	Head of Division
16	Viktoras Burbulis		Chief specialist, Disaster Preparedness and Warning Division, Civil Protection Board
17	Dalius Kunigėlis		Chief specialist
18	Vytautas Gailius	Health Emergency Situations Centre, Ministry of Health	Director
19	Vladas Mireckas		Head, Planning and Control Division
20	Asta Einikienė	Ministry of Health	Chief Specialist
21	Inga Tamulaitytė - Morozovienė	Health Emergency Situations Centre of	Chief Specialist

		the Ministry of Health	
22	**Rasa Morkūniene**	**Environmental Protection Agency**	**Chief Specialist, Radiology Division, Environment Research Department**
23	**Egidijus Pumputis**	**State Food and Veterinary Service**	**Deputy Head, Emergency Response Department**
24	**Inga Cibulskaitė**	**Hospital of Lithuanian University of Health Sciences Kaunas Clinics**	**Head, Radiation Protection Service**
25	**Vladislav Legenis**	**State Nuclear Power Safety Inspectorate**	**Chief Inspector**
26	**Asta Mensonė**		**Chief Specialist**
14	**Michail Demčenko**		**Head**
15	**Kristina Tumosienė**		**Head, Division of Transport and Radiation Safety**
16	**Emilis Baškys**		**Chief Inspector, Division of Transport and Radiation Safety**
17	**Giedrius Krilavičius**	**State Border Guard Service**	**Chief Specialist**
18	**Romualdas Lipeiko**		**Head**
19	**Antanas Sermontis**		**Senior Specialist**
20	**Aleksėjus Livšic**	**Nuclear Security Centre of Excellence**	**Head**
21	**Neriojus Mikelionis**	**Kaunas Emergency Medical Station**	**Director**
22	**Albinas Mastauskas**	**Radiation Protection Centre**	**Director**
23	**Ramunė Stasiūnaitienė**		**Deputy Director**
24	**Danutė Šidiškienė**		**Head, Division of Radiation**

			Emergency Management
25	**Kristina Mikalauskienė**		**Chief Specialist, Division of Radiation Emergency Management**
26	**Mindaugas Lemežis**		**Chief Specialist, Division of Radiation Emergency Management**
27	**Rima Ladygienė**		**Head, Public Exposure Monitoring**
28	**Aušra Urbonienė**		**Head, Occupational Exposure Monitoring**
29	**Ieva Gatelytė**		**Head, Division of Radiation Protection and Training**
30	**Justinas Siaurys**		**Chief Specialist, Division of Radiation Protection Supervision and Control**