Republic of Latvia National Report on the implementation of the obligations under the Convention on Nuclear Safety

for the 7^{t} Review Meeting of the Contracting Parties

Radiation Safety Centre of the State Environmental Service

August 2016

EXECUTIVE SUMMARY

This report has been prepared by the Republic of Latvia (hereinafter: Latvia) to meet the requirement of Article 5 of the Convention on Nuclear Safety (hereinafter: the Convention or CNS). This report demonstrates how the Latvia meets the main objective of the Convention to achieve and maintain a high level of nuclear safety worldwide by enhancing national measures and international cooperation. It also shows how the Latvia meets the obligations of the applicable articles established by the CNS.

Based on legal requirements and outcomes from the previous Review Meetings Latvia noted that there are two basic commitments for each Contracting Party:

- to prepare and make available a National Report for review,
- to submit National Report to a peer review by the other Contracting Parties.

Therefore, as it was done also in past (already six times), Latvia:

- prepared the report,
- made it accessible for other Contracting Parties by posting the National Report on the CNS web site,
- is ready to review National Reports of other Contracting Parties,
- after receiving the questions and comments about our report prepared and posted answers on CNS web site,
- actively participates in Review Meeting.

Latvia recognizes that preparation of the National Report includes a self-assessment and preparation of the safety enhancement measures to meet national and international obligations. We are sure, that international review provides plenty of opportunities for continuous learning from others and the review of the National Report by our peers ensure illumination of issues of special interest, which will improve Latvia's action program to enhance safety.

The scope of this report is limited to those articles from CNS, which is relevant to the particular situation in Latvia, as the Convention applies mainly to nuclear power reactors, but Latvia does not possess any nuclear power plant and the only research reactor is in stage of decommissioning.

The present report is structured according to the Guidelines regarding national reports under the Convention on Nuclear Safety established by the Contracting Parties to the Convention (INFCIRC/572/Rev.5).

Section 1 - Introduction - informs on national policy towards nuclear activities, provides statement on the commitment to the Convention and informs on main safety issues addressed in National Report as well as explains preparation, structure and main features of National Report.

Section 2 - Summary - addresses safety issues, which have been identified in previous National Report and responds to recommendations adopted at the plenary sessions of previous Review Meeting of the Contracting Parties.

Section 3 - Reporting article by Article.

TABLE OF CONTENT

A. INTRODUCTION

1. National Policy towards Nuclear Activities

The Radiation Safety Centre of State Environmental Service (hereinafter: RSC) is the national regulatory authority in the field of radiation and nuclear safety. Radiation Safety Centre is central structural unit of State Environmental Service, which according to Law on Radiation Safety and Nuclear Safety has licensing, supervisory and control functions, it also maintains relevant databases. RSC together with representatives from other institutions and professional associations deals with certification of radiation and nuclear safety officers and recognition of radiation and nuclear safety experts.

The main operator in Latvia (operator of the Salaspils Research Reactor and radioactive waste repository at Baldone site) is the state limited liability company „Latvian Environment, Geology and Meteorology Centre" (hereinafter: LEGMC). Monitoring of environmental radioactive pollution, measurements of individual dosimetry, dealing with issues related to decommissioned Salaspils Research Reactor and radioactive waste is responsibility of LEGMC.

There are no changes in national policy regarding nuclear activities in energy sector. Thus Latvia has no any nuclear power plant and there is no intention to build such plan in Latvia. Latvia always supports safety upgrades for existing nuclear facilities and, if such upgrades are not manageable in reasonable time, the relevant facilities shall be closed down and decommissioned.

2. National Nuclear Programme

In Latvia there are no nuclear installations as it is defined in Article 2(i) of the Convention and there are no plans to build any nuclear installation.

3. Commitment to the Convention

Latvia does not possess nuclear installations as defined in Article 2(i) of the Convention. Despite the fact that Salaspils Research Reactor are not formally covered by the Convention (see Art.2), Latvia (as also some other Contracting Parties of CNS) agreed to include them during the previous CNS peer review conferences. Latvia owns only one research reactor, which is permanently closed down and currently is in stage of decommissioning. The spent nuclear fuel has been returned to the country of origin in May 2008. In 2015 finance from state budget resources allocated for a project and permit for decommissioning of the Salaspils Research Reactor. Latvia has planned complete decommissioning of reactor by 2020. In 2015, Parliament (Saeima) allocated resources from the government budget to the decommissioning of the reactor for years 2017-2020.

Taking into account current nuclear framework in Latvia, the National Report is mostly oriented to the issues related to radiation safety and emergency preparedness. However other aspects from CNS are covered, but in limited degree, because many of the requirements relevant to the nuclear power are not explicitly introduced by the legal framework, thus main principles and requirements for any practice with the sources of ionising radiation are applied. Latvia's legal system will be further developed in the case if any new nuclear facility would be envisaged.

4. Information on preparation, structure and main features of National Report

National Report has been drafted taking into account recommendations defined in INFCIRC/572/Rev.5, structure of report reflects suggestions identified in abovementioned INFCIRC. Main attention has been paid to reflection of changes, which took place since last Review Conference, however, many paragraphs have been included without changes to ensure that stand-alone report rather than a report restricted to changes and updates is available.

The Radiation Safety Centre of State Environmental Service prepared this report in consultation with and incorporating contributions from Ministry of Environmental Protection and Regional Development.

B. SUMMARY

Since the previous report submission Latvia is provided for the implementation of the EU nuclear safety and radioactive waste management requirements in national legislation, as well as continued to deal with the issues of nuclear safety and radiation safety.

Additionally, new Cabinet of Ministers Regulations have been prepared, concerning licencing, and constructing sources of ionising radiation of national importance (including nuclear facilities). There has been ongoing work on decommissioning of the Salaspils Research Reactor and expanding the radioactive waste depository „Radons", to accommodate for the radioactive waste created by said decommissioning. Decommissioning of the Salaspils Research Reactor and upgrade of the radioactive waste infrastructure is on-going. Financing from state budget resources for decommissioning package of measures (including the radioactive waste vault and interim storage in radioactive waste repository "Radon") has been allocated. It is planned to complete the decommissioning process of the reactor by 2020. At the same time Latvia deals with safety and security improving in both objects.

Strengthening of institution (including the regulator) expertise and skills has been carried out by taking advantage of IAEA technical cooperation programmes, as well as opportunities offered by other foreign institutions and organisations.

In 2014, the Cohesion Fund project No 3DP/3.5.1.4.0/11/IPIA/VARAM/004 „Modernization of early warning radiation monitoring system" was completed. As a result, the former monitoring system, which was created in the 90s, has been completely replaced. 24 new monitoring stations have been set up, providing a constant stream of information on radiation levels in the country, as well as forwarding this information to *EURDEP (European Radiological Data Exchange Platform).*

In 2014, the European Commission performed verification of environmental monitoring requirements from article 35 of the European Atomic Energy Community (*Euratom*) Treaty. The verification activities that were performed demonstrated that the facilities necessary to carry out continuous monitoring of levels of radioactivity in the air, water and soil in Latvia are adequate. Some recommendations and suggestions are included in the final technical report.

In compliance to European Union (EU) requirements, in 2016 preparations have begun for the self-assessment and international assessment of nuclear safety and radioactive waste management system (Integrated Regulatory Review Service (IRRS) and Integrated Review Service for radioactive waste (ARTEMIS) Mission), which could be performed in 2018-2019.

This report and previous convention reports are available online at www.vvd.gov.lv (*State Environmental Service homepage*).

C. IMPLEMENTATION OF THE CONVENTION

Article 6: Existing nuclear installations

There is no any nuclear installation according the definition[1] of the CNS in Latvia.

There is a Soviet designed pool type research reactor located in Salaspils, which had maximum thermal power 5000 kW utilising U-235 with 90% enrichment. Reactor was operated from 1961 to 1998. It is permanently shut down and it is in stage of decommissioning. The spent fuel has been shipped back to the country of origin in 2008.

As the research reactor was built long time before introduction of probabilistic safety assessment (PSA) for such facilities and decision to shutdown was already envisaged at the time when Latvia introduced current legal framework, no specific legal requirements for PSA have been elaborated. There are also deviations from IAEA recommendations about time and content of periodic safety review (PSR) - as both operator (LEGMC) and regulator (RSC) have limited capabilities to use full scope PSR and research reactor is in the phase when many changes are introduced frequently (activities related D&D), then it is not justifiable to use 10 years period for PSR as in case of operating NPP or research reactor.

Recommendations from IAEA Nuclear safety standards regarding periodic safety reviews are incorporated in national legal system by means of re-licensing - regulations on licensing[2] provides requirements for reviews of all safety aspects of radiation facility, including on-site and off-site emergency planning, accident management and radiation safety. Regulations stipulate that re-licensing (application for new license and review by regulatory authority) shall be done on until 10 years base (re-licensing is valid for 10 years).

Initial concept for decommissioning was approved by the Government in 1998, then actualized in 2004 and amended in 2007. Currently all steps of decommissioning prescribed in document remain the same, however dates will change.

According to the Environmental Policy strategy 2014-2020, approved by the Government in 26 March 2014, the decommissioning of the research reactor was envisaged up to the end of year 2020. In 2015, funding from the government budget was allocated to the development of documentation for decommissioning of the reactor (building permit, project, decommissioning plan), along with greenlighting funding for decommissioning works starting in 2017, with the goal of finishing them in 2020. Total cost for decommissioning is approximately 5,6 million EUR. This cost includes such works: reactor building decontamination, licence documentation, infrastructure modernisation, decommissioning, radioactive waste management.

There was small radioactive waste storage on the site of research reactor (in operations from 1980-2005) where some parts dismantled from reactor core and internals were stored after reconstruction activities of research reactor in 1980.

All the waste after characterisation and re-packing were transferred to the radioactive waste repository „Radons" at Baldone.

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[1] „*any land-based civil nuclear power plant under its jurisdiction including such storage, handling and treatment facilities for radioactive material as are on the same site and are directly related to the operation of the nuclear power plant. Such a plant ceases to be a nuclear installation when all nuclear fuel elements have been removed permanently from the reactor core and have been stored safely in accordance with approved procedure, and a decommissioning programme has been agreed to by the regulatory body*"

[2] The Cabinet Regulation No.752 „Procedures for Licensing and Registration Activities with Sources of Ionising Radiation" (adopted 22 December 2015)

Article 7: Legislative and regulatory framework

Three sources for legal acts

There are three types of legal acts in Latvia, which are applicable for review under NSC: primary national legislation, secondary legislation (regulations) and EU legal acts. The main act is the Law on Radiation Safety and Nuclear Safety. In parallel with this framework act, there is also a set of international agreements ratified or acceded by Latvia and several general legal acts, which have some provisions relevant to the NSC (e.g. legislation relevant to the state institutions in general, environmental protection legislation, building codes, administrative and criminal acts).

The secondary sources for Latvia's legal system are regulations and decisions issued by the Government (Cabinet of Ministers). Majority of applicable regulations are issued on the basis of the Law on Radiation Safety and Nuclear Safety, but some - based on other primary legal acts (e.g. the Cabinet Regulations on Procedures for Building of Facilities Related to Radiation Safety, No.661 (24.11.2015.) were issued based on Construction Law (09.07.2013.), but the Cabinet Regulations on State Environmental Service Statute, No.962 (23.11.2004) which covering Radiation Safety Centre authority were issued based on State Administration Structure Law).

The third source of law for Latvia, as for any other EU member state, is *Euratom* law. This system in general is based on the *Euratom* Treaty and secondary legal acts, which are regulations, directives, decisions, recommendations and opinions on the basis of the Treaty issued by the EU Institutions (Commission or the Council), including also the case law - interpretation of treaties and institutional acts carried out by the European Court of Justice and the Court of First Instance. The whole body of EU law together is called the *„acquis communautaire"* and Latvia made all efforts to harmonize its national legislation with the legal provisions set in force within EU.

National legal acts

Latvia applies ***the top to bottom*** approach in developing our nuclear legislation - preparation a set of legal documents. In the initial phase (early 90-ies) international agreements ratified by the parliament were used as the legal background (including decisions by the parliament about responsibilities). In 1994 the first framework law was adopted and several regulations approved by the Cabinet were introduced, but there was still situation with two regulatory systems (under the former Ministry of Environment Protection and Regional Development and under the former Ministry of Welfare). In late 2000 the Parliament approved the next law, which introduced a single regulatory authority and this act also was used to elaborate and to amend several regulations to cover gaps and to manage the comprehensive legal and institutional system.

In summary regarding legislative and regulatory framework it could be recognised, that recommendations by IAEA are implemented in Latvia, but some EU Directives is still on implementation process (Council Directive 2014/87/*Euratom* of 8 July 2014 amending Directive 2009/71/*Euratom* establishing a Community framework for the nuclear safety of nuclear installations, Council Directive 2013/59/*Euratom* of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/*Euratom*, 90/641/*Euratom*, 96/29/*Euratom*, 97/43/*Euratom* and 2003/122/*Euratom*). Currently there is ongoing work on evaluation of the new EU directive (BSS), and projects for the development of legislative acts.

All regulations and guides are issued by Parliament and Cabinet in form of law and there are no regulatory issued specific ordinances or decrees regarding nuclear safety.

EU legislation

Consequently, relevant to the NSC, and enforced for Latvia[3]:

1. **set of regulations** under the *Euratom* treaty, which are relevant to emergency preparedness, mainly concerning maximum permissible levels for contamination in food and feeding products - two groups of them:
   - post-Chernobyl,
   - future accidents.
2. **directives:**

The following European Council Directives: 89/618/*Euratom*, 90/641/*Euratom*, 96/29/*Euratom*, 97/43/*Euratom*, 2003/4/EC, 2003/122/*Euratom*, 2003/122/*Euratom*, 2006/117/*Euratom*, 2009/71/*Euratom* and 2011/70/*Euratom* - establishing a Community framework for the nuclear safety of nuclear installations were implemented to law „On Radiation Safety and Nuclear Safety", Cabinet Regulation No.752 „Procedures for Licensing and Registration Activities with Sources of Ionising Radiation" (adopted on 22.12.2015.) and other Cabinet Regulations regarding radiation safety. The Nuclear Safety Directive is intended to establish a Community framework to maintain and promote the continuous improvement of nuclear safety and its regulation, and to ensure the EU Member States provide appropriate national arrangements for high levels of safety to protect workers and the general public.

National draft legislation is submitted to the Commission under the terms of the procedure laid down in Article 33 of the *Euratom* Treaty. The Commission gives an opinion on the national draft legislation in order to make sure that it is in conformity with the terms of the directive.

System of licensing

According the Cabinet Regulation No.752 „Procedures for Licensing and Registration Activities with Sources of Ionising Radiation" (adopted 22.12.2015.), issuing authority is RSC and periods of validity of a licence is:

1. ten years;

2. up to four years for the design of an ionising radiation object of national significance or a nuclear installation of national significance;

3. up to ten years for the construction of an ionising radiation object of national significance or a nuclear installation of national significance;

4. up to three years:

4.1. for the use of smoke detectors containing plutonium;

4.2. for the shipment of sources of ionising radiation containing a radioactive substance and radioactive waste or international shipments of spent fuel; and

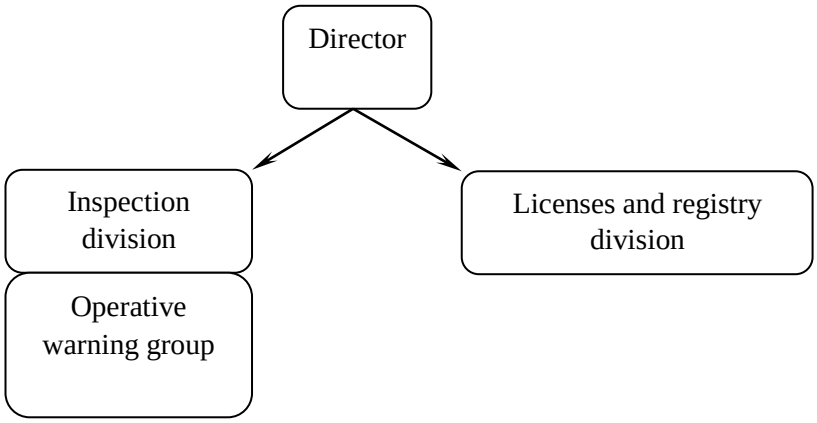
5. shorter than that 10 year, if the applicant requests the issue of a licence for a shorter period of time, for the calibration, testation, demonstration, for the transit, export and import.

[3] It is not the comprehensive list of all legal provisions under the Euratom Treaty, because such will be presented by the Commission of the European Communities and also some legal documents are only partly relevant to the NSC, thus they are not mentioned in the Latvia's National Report

Article 8: Regulatory body

RSC was established in July 2001 based on framework law „On Radiation Safety and Nuclear Safety", which entitled the Government (the Cabinet of Ministers) to issue regulations „Statutes of Radiation Safety Centre" and also empowered the Cabinet of Ministers to issue (in majority of cases re-issue updated regulations, because the system for radiation and nuclear safety was established already in 1994 based on the previous act with the same title) regulations, which were needed to implement legal requirements prescribed by this act. According to amendments in framework law, adopted in June 12, 2009, changed its status to central structural unit of State Environmental Service which is under supervision of the Ministry of Environmental Protection and Regional Development.

Organizational structure of the RSC:



The law on state institutions in details prescribes system of supervision - in short, there is no rights for the supervisor directly affect decisions on the subject matters, only financial control and compliance with requirements from the Law on State civil servants. Thus recommendations about independency are implemented.

Radiation Safety Centre as a part of State Environmental Service executes the radiation and nuclear safety supervision and authorisation for all issues related to nuclear safety. RSC has legal rights and duties for enforcement of applicable regulations.

The Parliament delegated the regulatory functions to the RSC, which is a single regulatory authority in field of radiation and nuclear safety. Functions and duties are prescribed by the Law on Radiation Safety and Nuclear Safety. More detailed duties, rights and working procedures are defined in regulations approved by the Cabinet of Ministers.

Since the previous report RSC has undergone a complete change of personnel, working towards training new personnel and improving expertise. This work shall be continued, with additional attention to new technologies and research reactor decommissioning.

Place of the regulatory body in the governmental structure:

Article 9: Responsibility of the licence holder

According to the Law on Radiation Safety and Nuclear Safety a license holder have responsibility for violation of law. A licence holder who has violated the requirements specified in regulatory enactments shall compensate any person injured for the losses caused to the health and property of the person, as well as the environment as a result of activities connected with sources of ionising radiation. The licence holder has the right to raise a subrogation action against a person who is guilty of causing losses. If, when performing activities with sources of ionising radiation, the environment, buildings, equipment or vehicles have been polluted, a licence holder shall ensure the decontamination of the environment, buildings, equipment and vehicles so that the pollution would no longer pose a threat to the environment, the life, health or property of employees and inhabitants, the life and health of animals, as well as shall cover all the expenditure necessary for sample-taking and research. Only the licence holder of nuclear equipment shall be responsible for the nuclear damages caused by this equipment.

For facilities with radiation sources in Latvia are applicable civil liability regime, which was developed, based on legal provisions from Vienna Convention on Civil Liability for Nuclear Damage. There is clear statement in the Law - only operator is liable. Thus it is assumed, that Requirement 5 from IAEA safety standard GSR Part 1 (Rev. 1) - "The government shall expressly assign the prime responsibility for safety to the person or organization responsible for a facility or an activity, [and …]." is implemented.

According to the Law on Radiation Safety and Nuclear Safety, the main person in any facility is the Work Manager (Radiation Protection Officers), who bears major License Holder functions, prescribed by the Law.

The operator shall demonstrate to the RSC that this responsibility for safety has been met and will continue to be in compliance of all relevant requirements. RSC's inspectors verify safety situation at all facilities and RSC has power to request (usually these issues are included in inspector's findings) any relevant safety upgrades. Moreover, during the re -licensing activities, the operator has to demonstrate by reports, programs for activities etc., that facility is safe to continue operations.

To enable that the RSC performs its functions, the operator shall provide necessary assistance and, definitely, shall grant access to the plant and all relevant documentation. When so required by the RSC (it had been some cases where occupational exposures seem higher than dose constrains, also few cases with non-compliances), the operator shall undertake special analyses, tests and investigations to demonstrate that exposures are controlled (only TLD badges received higher doses) or non-compliances are recognised and will be eliminated.

Article 10: Priority to safety

National BSS lay down the principle for Radiation safety and nuclear safety - priority of protection measures in comparison with other measures.

In order to fulfil the requirements (set out in the quality assurance programme, currently, where it is possible RSC introducing comprehensive management systems for operators, and working for improving small operators capabilities according the IAEA relevant recommendations) the operator shall budget the financial resources required for the performance of protection measures and regularly take inventory and examine material resources.

For all large facilities there is a requirement to establish radiation safety unit, which shall be independent from routine operations of the facility. Composition and number of staff for such radiation protection units is prescribed by regulations.

Plans for any activities that may directly affect the safety have been submitted by the operator to the RSC for approval, if so required, or in majority of cases had been discussed with inspectors. In some cases, when activities are proposed, but are not included in the normal procedures, special procedures had been written in accordance with established administrative procedures by operator and then agreed with RSC. Verifications of these actions are performed by RSC during inspections and licensing.

Article 11: Financial and human resources

RSC, Salaspils Research Reactor and Radioactive Waste Repository are institutions which are financed from the State Budget. The Ministry of Environmental Protection and Regional Development explains and gives proof to the Government concerning adequate funding for each fiscal year and long-term programmes. For the specific project - decommissioning of the Salaspils Research Reactor and extension of radioactive waste repository "Radons", in 2014-2015 the Parliament approved the allocation of funds (~8,7 million EUR from 2015 till 2020) in the state budget.

With approval of the Cabinet Regulation No.752 „Procedures for Licensing and Registration Activities with Sources of Ionising Radiation" (adopted on 22 December 2015), designated personnel of the operator has prime responsibility to ensure qualification, training and re-training. Three state universities have special programs for re-training of different groups of radiation workers. Training programmes are under supervision of RSC and will be revised in near future when amendments in regulations will get in force.

Article 12: Human factors

The prevention of human errors is set up in National BSS (for example, requirements for defence in depth, quality assurance programmes etc.).

Another type of activities to reduce possibilities for human failures is introduction of the system for marking (regulations). RSC continues to request that all safety relevant information should be available for operators in the national language. Licensing Regulations and National BSS require adequate staff training; set up educational requirements for experts. The licensing procedure requires the applicants to submit also information about available staff and their level of education.

Verification of activities is performed by RSC during inspections (annual plan for RSC is around 200 inspections). Findings from inspections are used to impose additional requirements for the licensees and also in licensing conditions during the re-licensing.

Article 13: Quality assurance

The Quality assurance programmes are requested by the national BSS and according the Cabinet Regulation No.752 „Procedures for Licensing and Registration Activities with Sources of Ionising Radiation" (adopted on 22 December 2015). Any facility (especially „facilities of state significance") is requested to have a Quality assurance programme. The Quality assurance systems are developed by the operators and service companies.

More stringent requirements are introduced for accreditation of laboratories and certification of dangerous goods.

According the licensing regulation related to the criteria for applicants the potential operator shall:

- ensure the compliance of employee qualifications with the duties to be performed;

- ensure the development of a radiation and nuclear safety quality assurance programme.

According to the regulations on licensing procedures one of the main documents is a quality assurance programme for operations with sources of ionising radiation.

One of the main tasks for inspectors of RSC is to control the implementation of QA programs.

Article 14: Assessment and verification of safety

The national regulations (Regulations on Protection against Ionising Radiation, No.149 (09.04.2002) and Regulations on the „Procedures for Licensing and Registration Activities with Sources of Ionising Radiation", No.752 (22.12.2015.)) require, that in order to be authorized, the following tasks shall:

- reduce the risks to the health and safety of an employee or other person, related to the structure and use of a source of ionising radiation, taking into account the effect of the ionising radiation, electric shock and mechanical hazard;
- ensure the preparedness for radiological emergencies and the prevention of the consequences thereof;
- ensure the development of a radiation safety programme.

Access to information concerning the evaluation of potential threat from nuclear facilities, as prescribed by the Licensing Regulations.

Information about planned activities and major changes at nuclear or radiation facilities should also be provided to the public. All this information is used for decisions regarding licensing, licensing conditions and implementation is verified by inspections. The Licensing Regulations and National BSS prescribe the duties for RSC in the field of inspections.

Inspection programme is performed by the RSC in accordance with working procedures. The Quality manual including the procedures were partly elaborated in 2009, then updated in 2012, based on State Administration Structure Law. A new update of procedures is planned in 2016/2017.This law prescribes, that such internal/external documents (in this case - regulatory provisions of RSC) shall be developed to ensure knowledge for operators about working procedures of regulatory authority.

RSC inspectors carry out verification of safety based on a planned systematic programme and also perform non-announced inspections. Programme is designed on the basis of the graded approach. RSC has approved criteria in accordance with type of practice and the associated risk, the performance record of operators and the statistics of previous offences.

Every year it is adopted the annual inspection plan (programme) taking into account the graded approach. Inspections 4 times per year are applicable to:

a) ionising radiation objects of national significance – nuclear equipment, undertakings for the disposal or management of radioactive waste and such objects in which activities with radioactive substances are performed, total radioactivity of which exceeds the limits specified by the Cabinet by more than one billion times, for which licence or registration certificate is required.

b) high activity sealed sources (HASS).

In the case of new high-risk practices the pre-licensing inspections should be carried out.

More over there is additional legal base for safety impact assessment, which is given in the law On Environmental Impact Assessment. That system was extensively used during the planning phase of decommissioning and activities for expansion of radioactive waste repository.

Periodic safety assessments of nuclear installations using deterministic and probabilistic analysis methods is used in very limited scope - mainly during the re-licensing (re-licensing is valid for 10 years).

Article 15: Radiation protection

1. Legal provisions

The Law „On Radiation Safety and Nuclear Safety" introduced these basic principles of limitation and optimisation. Verification of compliance is a duty for RSC, which also provides as services the occupational exposure control for all radiation workers in country and maintains relevant database. These requirements are further elaborated in National BSS.

As regards practices involving a risk from ionising radiation for the population, the Law requires to apply the fundamental principles governing operational protection of the population. In particular:

1. the public and the environment may not be exposed to a dose of ionising radiation which exceeds the established dose limits;
2. the positive results achieved shall exceed the negative impact or loss caused by practices involving ionising radiation sources;
3. optimum radiation safety measures are chosen, taking into account economical and social circumstances, as well as technical capabilities, so that the exposure level is reasonably low and does not exceed the established dose limits;
4. the operator's civil liability for damage that may be caused to a third party and its property or the environment;
5. practices involving ionising radiation sources may only be conducted upon receipt of a licence, except for circumstances prescribed by the Cabinet of Ministers regulations.

2. Implementation measures

2.1. Radiation dose limits

Regarding dose limitation the National BSS, which were elaborated based on IAEA BSS and EU Basic Safety Standards Directive, set out dose limits for exposed workers, for

apprentices and students and for members of the public. The limits are the same as in IAEA BSS and in EU Basic Safety Directive.

There are ongoing investigations around the major radiation facilities and in different regions of country to assess and monitor public exposures. Addition to these activities, based on requests from individual persons, in few cases from other authorities, the RSC made task oriented investigations at certain regions where was practices with radiation sources in the past or was suspicious about naturally enhanced radiation.

2.2. Fulfilment of conditions for the release of radioactive materials

RSC has responsibility to examine and approve the plans for installations involving an exposure risk, and of the proposed siting of such installations from the point of view of radiation protection. The data about assessment of the risks, including planned releases, shall be submitted by the applicant prior to receiving of authorization. Facilities, which may release radionuclides into the environment, have to prepare plans for control of such releases and they have to provide regular reports to the RSC.

There is very limited utilization for the controlled releases - only one hospital (Latvian Oncology Centre) is authorized to release short-lived isotopes (mainly I-131 after decay storage) together with the sewage water.

Another option for controlled releases is the clearance - regulations [4] provide possibilities for operators to discharge (mainly together with solid waste or as re-usable materials) some amount of radioactivity.

Verification of the radiation conditions around facilities, which discharge radioactivity, is under the national environmental monitoring program.

Environmental monitoring includes:

- routine measurement of radioactivity in air, water, soil and biota;
- provisions in case of radiological emergencies (alarms and data collection).

The requirements for radiation monitoring under environmental monitoring program were introduced also to fulfil Article 35 of the *Euratom* Treaty. The European Commission's Article 35 Verification was carried in 2014. This mission dealt with environmental radiological monitoring programme and activities as implemented in the visited regions of Latvia, measuring laboratories and installation of ambient gamma dose rate probes as part of the national surveillance network. The verification activities that were performed demonstrated that the facilities necessary to carry out continuous monitoring of levels of radioactivity in the air, water and soil in Latvia are adequate. The recommendations and suggestions are included in the final technical report (some upgrades of monitoring system in the Salaspils Research Reactor and radioactive waste repository „Radons", improvement of procedures for the laboratory methods, etc.).

Article 16: Emergency preparedness

1. General provisions

For any new nuclear and radiation facility, such plans shall be prepared and tested before it commences operation agreed by the regulatory body. The plans shall be agreed also with local municipalities and Fire and Rescue Services. These are preconditions for

[4] The Cabinet Regulations on Requirements for Operations with Radioactive Waste and Materials Related Thereto, No.129 (19.03.2002).

applicants and the relevant documents are assessed before RSC grants the license. National BSS prescribes main duties for work managers regarding emergency preparedness. Based on Civil Defence Law the Cabinet of Ministers issued two regulations, which prescribe requirements for emergency plans for any facility and introduced specific requirements for preparedness for radiation emergencies, based on groups of radiation facilities (grouping is done based on potential risks associated with the level of total radioactivity and form (sealed/non sealed sources) of radioactive materials).

For management of accidents the State Civil Defence Plan is established and relevant regulation[5] were adopted. The State Civil Defence Plan provides basic principles for emergency preparedness according to radiation and nuclear safety legislation and has requirements for regular testing (including theoretical exercises, table top exercises and practical exercises) and updating of the Plan.

On 5 May 2016 it was adopted new Civil Defence and Catastrophic Management Law. According to this Law new Cabinet of Ministers Regulations will be issued till 1 February 2017 and new State Civil Defence Plan will be developed till 2 August 2017.

Several improvements in readiness and reaction during radiation emergencies and nuclear emergencies have been implemented since the previous report. In 2014, improvements of the early warning radiation monitoring system were implemented with support from the EU Cohesion Fund (project No 3DP/3.5.1.4.0/11/IPIA/VARAM/004 „Modernization of early warning radiation monitoring system". During the project old monitoring stations were completely replaced by new spectrometric monitoring stations. Currently 24 new stations are operational throughout the territory of Latvia. There are 20 new stationary spectrometric monitoring stations, one portable spectrometric station, one aerosol monitoring station and two water monitoring stations. Continuous measuring mode provides information about gamma dose rate in the environment.

In 2015, taking into account the RSC function of 24 hour readiness to provide early notification of a nuclear accident, RSC acquired the ARGOS decision support system for crisis and emergency management for incidents with CBRN releases.

2. Implementation measures

2.1. Bilateral agreements and arrangements

Latvia has some bilateral agreements for early warning and assistance in case of radiological or nuclear accidents (with Lithuania and Ukraine on governmental level, with Estonia and Lithuania on level of regulatory authorities) and also agreements for cooperation in case of natural and man-made accidents (including radiological) with several countries (Belarus, Estonia, Hungary, Lithuania and Sweden).

2.2. National emergency preparedness plan

The State Fire-Fighting and Rescue Service shall notify and warn residents in the event of a radiological emergency by using the mass media and the notification and alarm system. Upon the recommendation of the RSC, the State Fire-Fighting and Rescue Service shall immediately provide information to the residents who have suffered in the radiological emergency.

[5] The Cabinet Regulations on Requirements for Preparedness for Radiological Emergency and Actions in the Event of Such Emergency, No.152 (adopted on 08.11.2003.).

Taking into account the character and scale of the possible radiological emergency, once per three years the State Fire-Fighting and Rescue Service in co-operation with the RSC shall provide information regarding the possible impact of ionizing radiation on residents and the environment and radiation protection measures to managers and employees of such institutions and commercial companies that may be involved in the organization and performance of protection measures in the event of a radiological emergency.

An operator in cooperation with the local government, in the territory of which the relevant object is located, and the State Fire-Fighting and Rescue Service are responsible for planning the protection measures in the event of a radiological emergency. As stated in introduction of the Report, Latvia's major concern is the Ignalina NPP in the vicinity. According to the Law on Civil Protection System, the main institution responsible for planning and implementation this function is Fire Rescue Service.

To ensure readiness and reaction capabilities for incidents, RSC participates in IAEA communication exercises regularly. In 2017, Latvia has planned to participate in the international European Disaster Response Exercise (EDREX), which is organised by the European Commission.

2.3. Information activities

Latvia also introduced requirements according the Council Directive 89/618/*Euratom*, which deals with informing the general public about health protection measures to be applied and steps to be taken in the event of a radiological emergency. The Directive specifies two types of information that has to be given to the members of the public:

- preventive information to be given to the population groups for which Member States have drawn up intervention plans in the event of a radiological emergency;
- information in the event of a radiological emergency to be given to the population groups actually affected in the event of a radiological emergency and for which specific protection measures are taken.

2.4. Early Warning

Since 2001 RSC participates in ***EURDEP (European Radiological Data Exchange Platform),*** which is both a standard data format and a network for the exchange of environmental radiation monitoring data between European countries in real-time. Participation of the Latvia is based on the Recommendation 2000/473/*Euratom*. RSC made available the national radiological monitoring data for Joint Research Centre (JRC) Ispra and has access to the data of all other participating countries. The system is continuously operating with a daily data exchange routine and there is a general consensus that participating in the system automatically means that the data transmissions will continue during an emergency in an elevated frequency.

In parallel with EURDEP RSC participates in ECURIE program, which (similarly as system under Early Warning Convention - ENAC) is a 24h emergency notification and information exchange system. ECURIE system notifies the competent authorities of the participating States and the Commission in case of a major nuclear accident or a radiological emergency. During an emergency the system provides an information exchange platform for the participating States in order to inform about the current and foreseeable status of the accident, meteorological conditions, national countermeasures

taken, etc. The legal basis for participation in ECURIE by the EU Member States is the EU Council Decision 87/600/*Euratom*. The Commission is responsible for ECURIE management and development. The Commission maintains a 24h preparedness service in order to activate the system in the event of a nuclear or radiological emergency.

Article 17: Siting

Currently, there is no specific legislation applicable for the siting of nuclear installations in place. In general, this part is not directly applicable to Latvia, but with respect to research reactor and radioactive waste disposal, some brief information is provided below:

- Law on Environmental Impact Assessment covers these activities.
- Other safety assessment requirements are partly elaborated in Licensing regulations and Regulations on building of radiation facilities.

The Law on Environmental Impact Assessment and Regulations on building of radiation facilities governs these activities. The Government decided on composition of dedicated Council, which is led by the Ministry of Environmental Protection and Regional development. The Council has to make opinion about proposal for special building activities and RSC on the safety considerations.

The Law on Environmental Impact Assessment prescribes requirements for assessment of impact of proposed nuclear facilities on the environment.

The mechanism of public hearing is established by licensing regulations. Based on opinions from the EIA, and Radiation Safety Board, the RSC can decide on subject and issues the license.

According to Licensing Regulations the operational license could be granted for 10 years. During the application process for renewal of operational license the operator (or work manager) shall submit all safety relevant information.

According to National BSS the supervision of radiation and nuclear facilities is a continuous process; therefore inspectors together with operators shall re-evaluate safety related information during the inspections of facilities.

Based on Law on Environmental Impact Assessment, any facility with potential impact to other countries shall be jointly assessed and relevant information shall be provided. But as stated in Introduction, there are no plans for building of NPP in Latvia, therefore these provisions had not been realised in practice for such facilities.

Article 18: Design and construction

The Law on Radiation Safety and Nuclear Safety set up the responsibility for safety (strict liability of operator) and requirements regarding emergency preparedness. These requirements are more detailed elaborated by National BSS and some provisions in regulations concerning physical protection. The main requirements for such installations are:

- The design and construction of a nuclear installation (and also any radiation facility) shall provide several reliable levels and methods of protection (defence in depth) against the release of radioactive materials.
- Any proposal for new facility shall to prevent the occurrence of accidents and to mitigating their consequences should they occur.

Prevention of errors is set up by National BSS (example requirements for defence in depth, quality assurance programmes etc.).

Provisions for construction are only partly incorporated in national nuclear legislation because new nuclear facility is not planned. Up to now the basic requirements regarding certification and testing of any equipment relevant to the radiation safety are used. These requirements are introduced for any facility and system is based on initial assessments (in licensing process), regular tests (by license holder, part of QA) information is provided to RSC annually and by inspections with random measurements of some technical parameters. The prevention of human errors on legal level is set up in National BSS (requirements for defence in depth, calibration of equipment, quality assurance programmes etc.). In general legislation these implementation procedures are described in Law on Radiation Safety and Nuclear Safety and other Cabinet Regulations. Implementation measures are assessed by RSC during the licensing and verified by inspections.

Special construction regulations have been implemented for construction of sources of ionising radiation of national level (including NPPs), with requirements for obtaining a building permit, building design, and construction work.[6]

Article 19: Operation

These provisions are only partly incorporated in national nuclear legislation because new nuclear facility is not planned. The operational limits and conditions in general is the part of licensing conditions, which are under considerations during the licensing. New conditions and working limits can be introduced on ad-hock base if operator request so or based on findings from inspections. The regular updates of these conditions are introduced during the relicensing process.

The Law on Radiation safety and Nuclear Safety sets up the requirements for licensing of facilities of State Significance and more detailed elaborated by Licensing Regulations.

The Licensing Regulations requests the work manager to provide all safety related information together with application for a license. Based on this information and other decisions with respect to building activities and outcomes from environmental impact assessments, the RSC has to decide about licensing and conditions of licence. Main part of provisions for operation safety is covered by National BSS, more detailed (internal) requirements are elaborated into Regulatory provisions of RSC.

The National BSS sets up the basic requirements for the operator. These procedures shall be elaborated in working manuals and procedural documents developed by facilities. Assessments of them are done during the licensing process and inspectors verify implementation and registration of them.

Owners and operators (work managers) are responsible to ensure engineering and technical support according to the National BSS. Applicants for license shall describe how auxiliary services will be ensured (usually applicant provides information about relevant service contracts). As mentioned early, the license is granted for 10 years and thus re-assessment is done periodically and additional requirements can be added. Verification of the situation is done by inspections.

[6] The Cabinet Regulations on Procedures for Building of Facilities Related to Radiation Safety, No.661 (adopted on 24.11.2015.) (*based on Construction Law*)

Testing of installations shall be managed according the requirements for calibration and testing activities based on legal acts for them and in more details elaborated in QA manuals for any entity dealing with tests and measurements.

Law on Radiation Safety and Nuclear Safety, National BSS, Regulations on preparedness and response in case of radiation accident, Regulations on physical protection and Regulations on State Accounting and Control of Nuclear Materials set up requirements on immediate reporting about accidents and incidents.

RSC maintains relevant databases, which include inspection findings and also files for each operator, which contains all relevant information and also results from tests and calibrations. With respect to international exchange of information, the RSC coordinates participation of experts from Latvia in relevant international forums and strives to publish technical documents and recommendations (in form of books and some quotes also on Internet home page).

Any operator, which could generate radioactive waste, provides annual reports and plans, which are analysed by RSC. During the licensing process requirements for radioactive waste management are prepared and, if needed, included in the license conditions. Verification of compliance with these waste management requirements are made during the inspections.