

SYSTEM OF SCIENTIFIC AND TECHNICAL SUPPORT OF REGULATORY ACTIVITIES IN THE FIELD OF ENSURING NUCLEAR AND RADIATION SAFETY OF THE REPUBLIC OF BELARUS

REPUBLIC OF BELARUS

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System of organizations to overcome the consequences of the Chernobyl disaster

Belarusian Scientific Research
Institute of Agricultural
Radiology

Institute of Radiobiology
of the National Academy
of Sciences of Belarus

Joint Institute for Power and
Nuclear Research – SOSNY
of the National Academy
of Sciences of Belarus

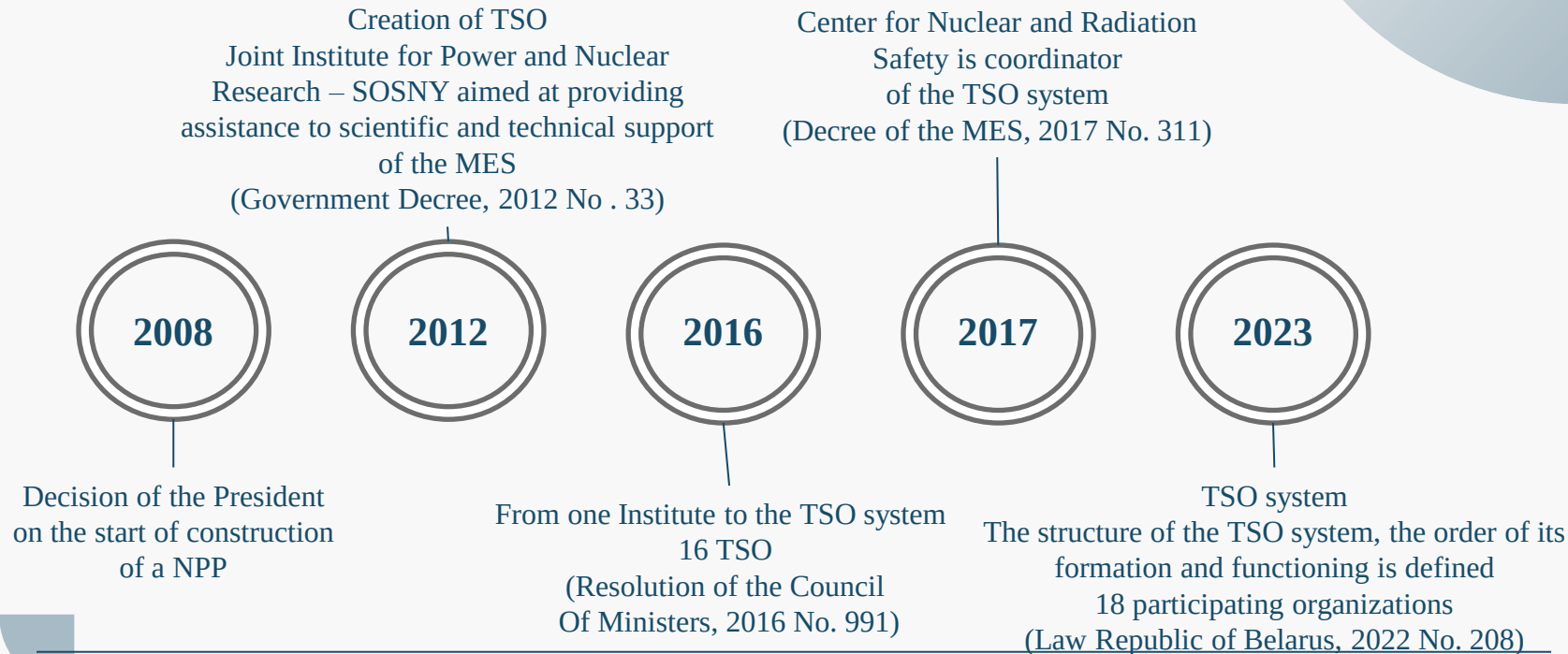
Committee on Hydrometeorology
and Protection of the Population
from the Consequences of the
Chernobyl NPP Disaster

Institute for Nuclear
Problems of the
Belarusian State
University

Belarusian Forestry Research
Institute

Scientific Research and Clinical Institute of Radiation Medicine and Endocrinology
of the Ministry of Health

Creation of a scientific and technical support system





Purpose of the scientific and technical support system

To make informed decisions on nuclear and radiation safety issues when reviewing design documentation and other documents justifying the nuclear and radiation safety of nuclear facilities, as well as the results of safety analysis



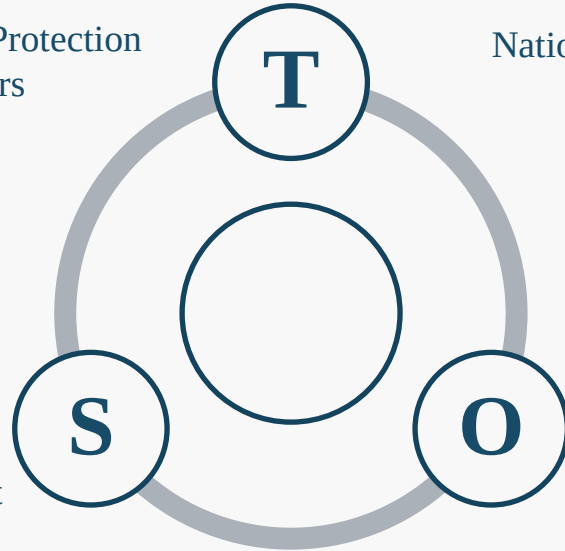
Tasks of the scientific and technical support system

- ➡ Identification of actual directions and topics of research
Conducting fundamental and applied research
 - ➡ Formation and implementation of tasks of state scientific, technical and other programs
 - ➡ Improvement of the system of education and training of highly qualified scientific workers, formation of personnel potential of TSOs;
 - ➡ Providing expert support in the implementation of state regulation
Providing scientific and technical support to Gosatomnadzor in decision-making
 - ➡ Conducting scientifically based safety analysis, modeling and computational analysis in the field of nuclear and radiation safety
 - ➡ Conducting tests, trials and measurements in the field of nuclear and radiation safety
Development, creation, formation and maintenance of databases in this area
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Structure of the TSO system

National Commission on Radiation Protection
under the Council of Ministers
of the Republic of Belarus

National Commission for the Safe Use of Atomic
Energy under the Council of Ministers
of the Republic of Belarus



Scientific and technical support
organizations

Experts in the field of nuclear
and radiation safety

Scientific and technical support organizations



Expert community

The following number of experts received permission to conduct a safety review:



in the field of nuclear energy use – **57 experts**



in the field of ionizing radiation sources use –
11 experts

Areas of scientific and technical support



Safety assessment and review



Supervisory (control) activities



Radiation safety and monitoring



Staff training and education



Development of technical
regulatory legal acts

Safety assessment and review

- Safety review during the licensing process
- Safety assessment of modifications
- Safety assessment of the changes made based on the results of commissioning
- Safety assessment in the framework of stress tests
- Safety assessment of fuel loading (refueling)
- Review of information on NPP events, assessment of adequacy of the developed corrective measures
- Thermal-hydraulic analysis, etc.

Center for
Nuclear and
Radiation
Safety

SSI “JIPNR-
SOSNY”

Institute for
Nuclear
Problems
of BSU

Center for
Geophysical
Monitoring
of the NAS of
Belarus

Institute of
Heat and Mass
Transfer of the
NAS of
Belarus

Supervisory (control) activities



Cooperation with:

BELARUSIAN-RUSSIAN UNIVERSITY

- ☐ quality assessment of welded joints
- ☐ carrying out destructive and non-destructive testing of welded joints
- ☐ and others



CENTER FOR NUCLEAR AND RADIATION SAFETY

- ☐ graded approach in the activities for supervision of nuclear and radiation safety



INSTITUTE FOR NUCLEAR PROBLEMS of the BSU

- ☐ intelligent information system of Gosatomnadzor employee
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Radiation safety and monitoring

- Staff, public and environment protection
- Radiation control and radiation monitoring
- Radioactive waste management
- Emergency preparedness and response



Center for Nuclear
and Radiation
Safety

Institute of
Radiobiology
of the National
Academy
of Sciences of
Belarus

Republican
Scientific and
Practical Center
for Radiation
Medicine and
Human Ecology

Belhydromet

Staff training and education

- ❖ Belarusian State University
 - ❖ A.D. Sakharov International Ecological Institute of the Belarusian State University
 - ❖ Belarusian National Technical University
 - ❖ Belarusian State University of Informatics and Radioelectronics
 - ❖ Inter-State Educational Institution of Higher Education “Belarusian-Russian University”
 - ❖ National Institute for Higher Education
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Interaction between TSOs and the regulatory body

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- State Program “High-tech Technologies and Equipment” and State program to overcome the consequences of the disaster at the Chernobyl NPP (10 TSO involved: Center for Nuclear and Radiation Safety, “JIPNR–Sosny”, INP BSU, BSUIR, BNTU, Center for Geophysical Monitoring, ITMO, Hydromet, the A.D. Sakharov International Ecological Institute, Center for Radiation Medicine and Human Ecology)
 - Consulting services
 - Agreements on cooperation in the field of nuclear and radiation safety between Gosatomnadzor and TSOs (10 Agreements)
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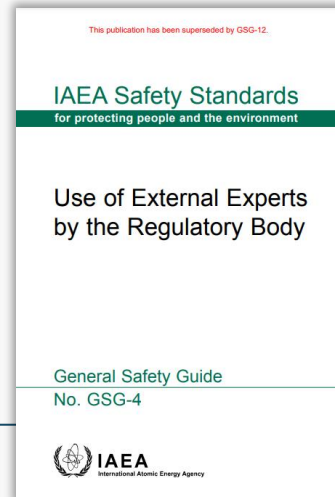
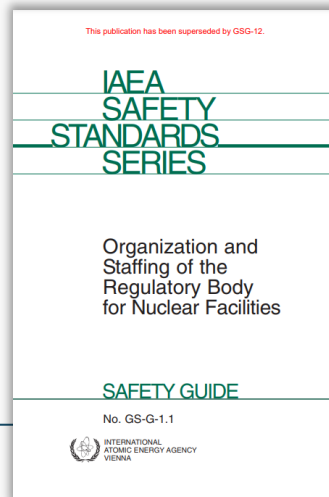
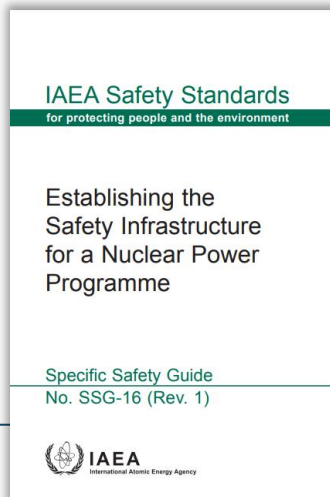
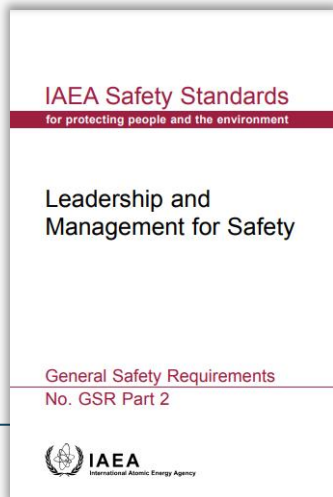
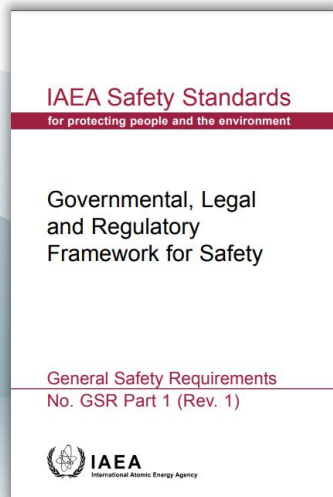
National Commission for the Safe Use of Atomic Energy under the Council of Ministers of the Republic of Belarus

Functions of the National Commission:

- preparation of recommendations to government bodies (organizations) on the following issues:
 - implementation of the basic principles of ensuring the safe use of nuclear energy,
 - training and education of specialists for nuclear energy facilities,
 - scientific substantiation of requirements for ensuring nuclear and radiation safety during the operation of nuclear energy and radiation facilities,
 - application of technological solutions at nuclear energy and radiation facilities
 - review and evaluation of the results of scientific research in the field of ensuring safety in the use of atomic energy and making recommendations for their application
 - consideration of draft regulatory legal acts and technical regulatory legal acts in the field of ensuring safety in the use of atomic energy sent by republican government bodies
 - development of recommendations for scientific and technical support organizations
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Background of TSO in the IAEA documents

- **GSR Part 1, Req.20** | Liaison with advisory bodies and **support organizations**
- **GSR Part 2, Req.11** | Supply Chain Management
- **SSG-16** | Safety element associated with the use of **external support organizations** and contractors (actions 61-71)
- **GS-G-1.1** | Organization and staffing of a regulatory body for NPP- **Consultants**
- **GSG-4** | Use of **external experts** by the regulator



Center for Nuclear and Radiation Safety – coordinator of TSOs activities

State Scientific Technical Institution “Center for Nuclear and Radiation Safety” (CNRS) was established by the Decree of the President of the Republic of Belarus dated October 5, 2017 No. 361 “On the Establishment of Institution”.

The purpose of the CNRS activity is scientific and technical support of the Ministry for Emergency Situations of the Republic of Belarus in the field of ensuring nuclear and radiation safety



Указ

Президента Республики Беларусь

5 октября 2017 г.

№ 361

г. Минск



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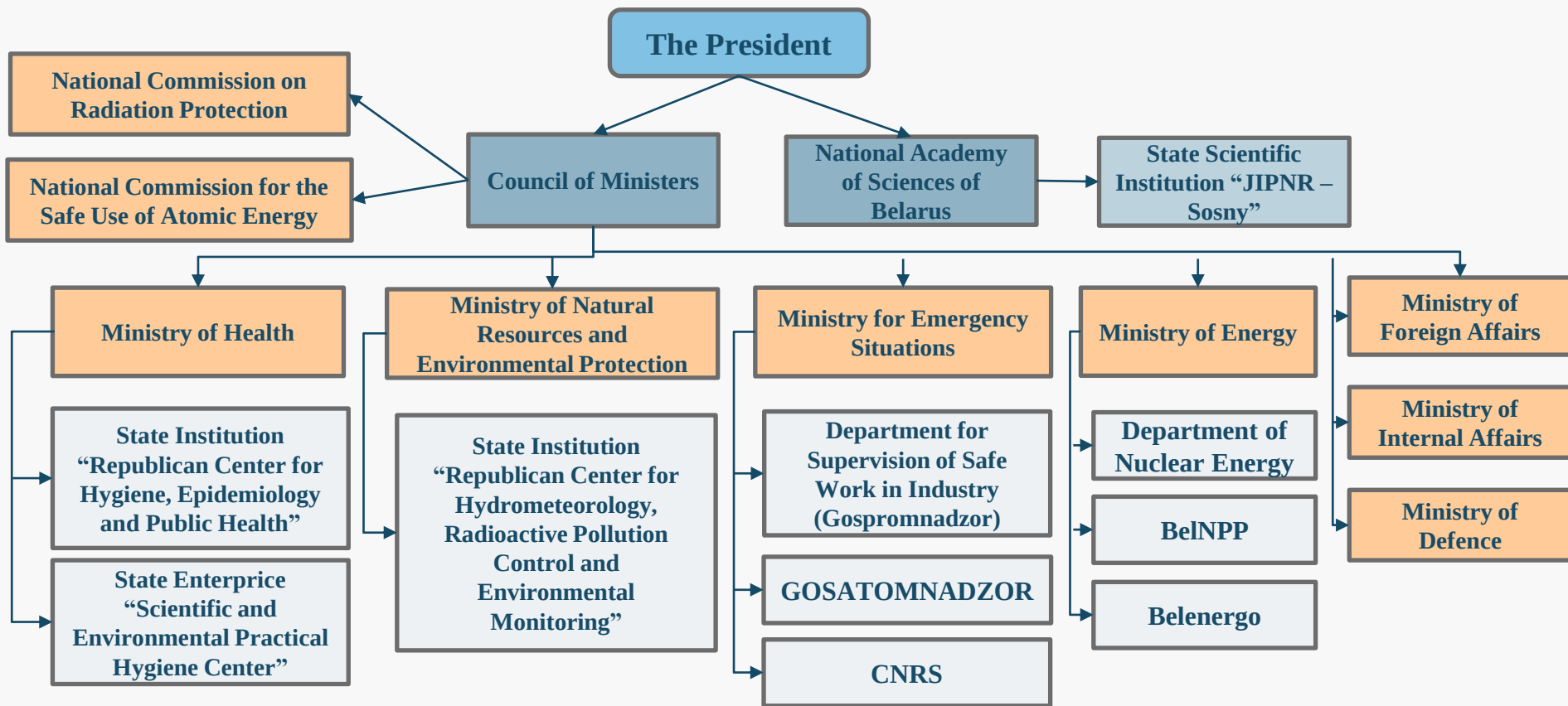
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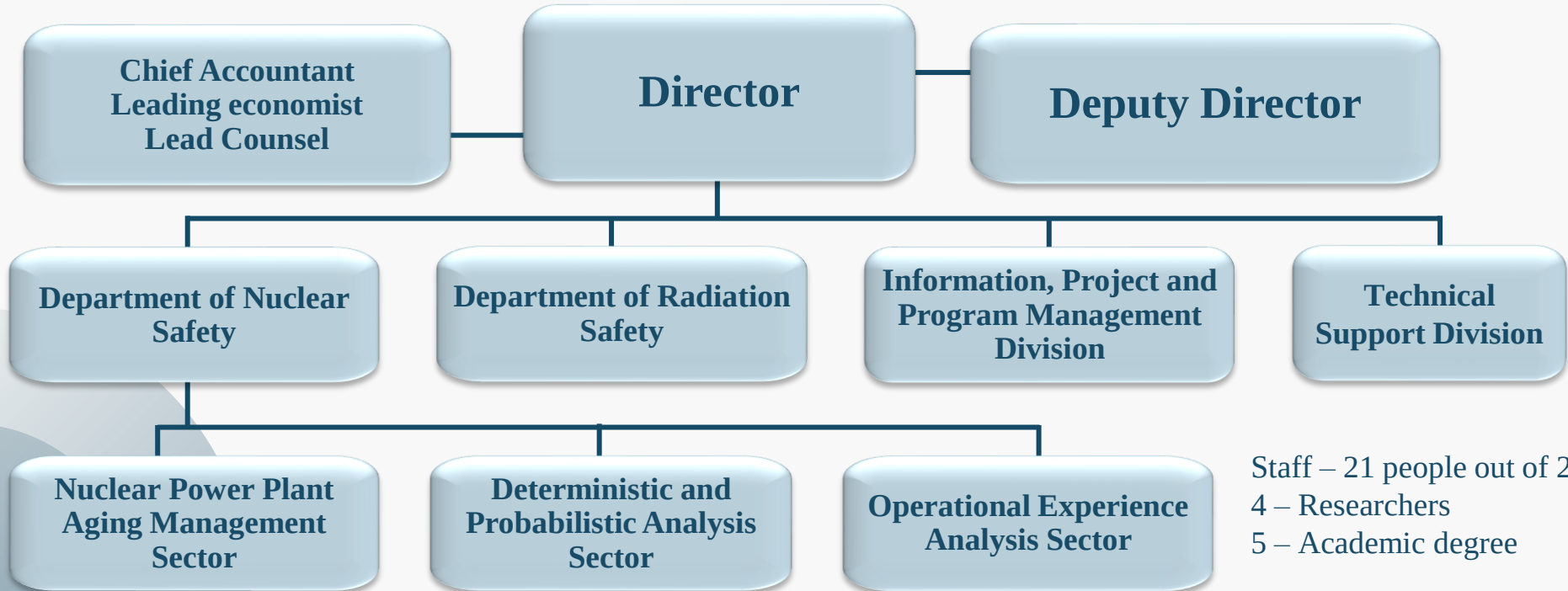
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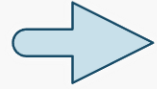
Government bodies and organizations that are involved in ensuring nuclear and radiation safety



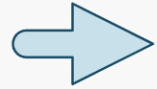
Structure of CNRS



Tasks of CNRS



Participation and (or) conducting a safety review in the field of the use of atomic energy and ionizing radiation sources



Coordination of activities to provide scientific and technical support to the Ministry of Emergency Situations of the Republic of Belarus in the field of ensuring nuclear and radiation safety, analysis and generalization of the results of studies conducted by other organizations providing scientific and technical support to the Ministry of Emergency Situations in the field of ensuring nuclear and radiation safety



Carrying out applied scientific research in the field of ensuring nuclear and radiation safety



Participation in expert support of control (supervisory) activities in the manner prescribed by law



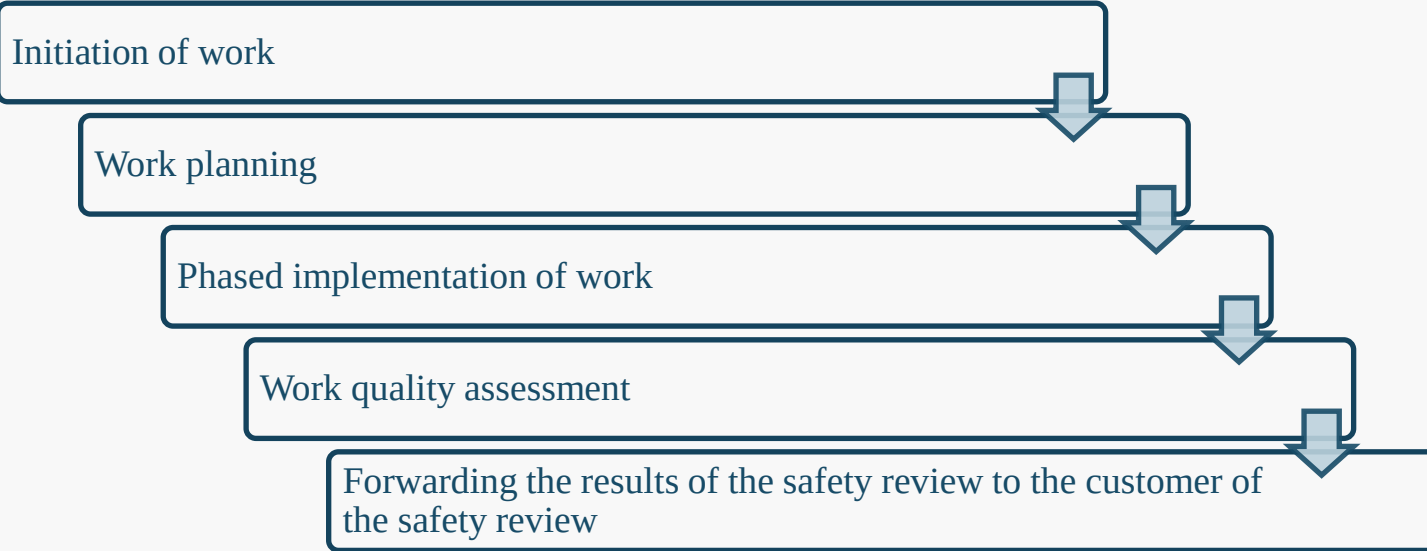
Conducting research on the effectiveness of regulatory legal regulation in the field of ensuring nuclear and radiation safety, including taking into account internationally recognized approaches and international obligations of the Republic of Belarus

Tasks of BCNRS

- ➡ Participation in the development of state programs, programs of the Union State, international projects and programs on issues related to ensuring nuclear and radiation safety
 - ➡ Conducting science-based safety analysis, modeling and computational analysis using computer codes in the field of nuclear and radiation safety
 - ➡ Carrying out tests, trials, measurements in the field of nuclear and radiation safety
 - ➡ Preparation of proposals for improving the methodology for assessing the compliance of the capabilities of the license applicant (licensee) with license requirements and conditions in the field of the use of atomic energy and ionizing radiation sources
 - ➡ Development, creation, formation and maintenance of databases in the field of ensuring nuclear and radiation safety when using atomic energy and sources of ionizing radiation for the purposes of regulating nuclear and radiation safety
 - ➡ Preparation of proposals for the improvement and development of draft regulatory legal acts, including technical regulatory legal acts, and other documents necessary to ensure and regulate activities in the field of the use of atomic energy and sources of ionizing radiation
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Safety Review

In accordance with the Decree of the President of the Republic of Belarus dated April 5, 2021 No. 137 “On the Regulation of Activities in the Field of Use of Atomic Energy and Ionizing Radiation Sources”, the **Center for Nuclear and Radiation Safety** conducts a safety review:



Challenges of the TSO

- ➡ Preparation for joining TSOF
 - ➡ Expertise of organization processes and safety analysis
 - ➡ Development of new programs for scientific support of regulatory activities
 - ➡ Building technical competencies
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Thank you for your attention!