

# IAEA ANNUAL REPORT 2022

## Additional Annex Information



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*



**Table A38. Coordinated research projects initiated in 2022**

**Nuclear Power**

- Advancing Thermal-Hydraulic Models and Predictive Tools for Design of SCWR Prototypes
- Benchmark of Transition from Forced to Natural Circulation Experiment with Heavy Liquid Metal Loop
- Technical Evaluation and Optimization of Nuclear-Renewable Hybrid Energy Systems

**Nuclear Fuel Cycle and Waste Management**

- Performance Assessment of Storage Systems for Extended Durations (PASSED)
- Development of neutronic and thermal-hydraulic coupled calculational methodologies for research reactors including treatment of uncertainties

**Nuclear Science**

- Artificial Intelligence for Accelerating Fusion Research and Development
- Atomic Data for Injected Impurities in Fusion Plasmas
- Development of Neutronic and Thermal-Hydraulic Coupled Calculational Methodologies for Research Reactors Including Treatment of Uncertainties
- Improving External Dosimetry for Terrestrial Animals and Plants
- Towards the Standardization of Small Specimen Test Techniques for Fusion Applications - Phase II

**Food and Agriculture**

- Improve the mass-rearing of Lepidoptera pests for SIT programmes
- Novel Irradiation Technology for Phytosanitary Treatment of Food Commodities and Promotion of Trade
- Application of Advanced Molecular Characterization Technologies Through the Veterinary Diagnostic Laboratory Network (VETLAB Network)
- Novel Test Approaches to Determine Efficacy and Potency of Irradiated and Other Vaccines
- Nuclear and related techniques to measure the impact of type of feeding and production system on greenhouse gas (GHG) emissions and livestock productivity
- Radiation-induced crop diversity and genetic associations for accelerating variety development

**Human Health**

- The Potential of E-Learning Interventions for AI-assisted Contouring Skills in Radiotherapy

**Water Resources**

- Improving understanding of nitrate sources in connected river and groundwater systems through linking nitrate isotopes and contaminants of emerging concern
- Isotopic assessment of the impacts of climatic and hydrological changes on wetland-groundwater ecosystem interactions
- Understanding the Importance of Convective Rain Events and Tracing Their Impact on the Catchment with Isotopes

**Radiochemistry and Radiation Technology**

- Production and Quality Control of Ac-225 Radiopharmaceuticals

**Safety of Nuclear Installations**

- Development of neutronic and thermal-hydraulic coupled calculational methodologies for research reactors including treatment of uncertainties

**Nuclear Security**

- Facilitation of Safe and Secure Trade Using Nuclear Detection Technology - Detection of RN and Other Contraband

**Table A39. Coordinated research projects completed in 2022**

**Nuclear Power**

- Methodology for Assessing Pipe Failure Rates in Advanced Water Cooled Reactor (WCRs)

**Nuclear Science**

- Development of Steady-State Compact Fusion Neutron Sources
- Towards the Standardization of Small Specimen Test Techniques For Fusion Applications

**Food and Agriculture**

- Development and Strengthening of Radio-Analytical and Complementary Techniques to Control Residues of Veterinary Drugs and Related Chemicals in Aquaculture Products
- Irradiation of Transboundary Animal Disease (TAD) Pathogens as Vaccines and Immune Inducers
- Early and Rapid Diagnosis and Control of Transboundary Animal Diseases — Phase II: African Swine Fever

**Human Health**

- Enhancing Capacity of Neuroimaging and Biomarkers: Application in Early-stage Alzheimer's Disease with Comorbidities
- Testing of Code of Practice on Small Field Dosimetry

**Water Resources**

- Isotopes to Study Nitrogen Pollution and Eutrophication of Rivers and Lakes

**Radioisotope Production and Radiation Technology**

- Developing Radiation Treatment Methodologies and New Resin Formulations for Consolidation And Preservation of Archived Materials and Cultural Heritage Artefacts

**Table A40. Publications issued in 2022**

**Nuclear Power**

- Ageing Management and Long Term Operation of Nuclear Power Plants: Data Management, Scope Setting, Plant Programmes and Documentation — Safety Reports Series
- Approach and Methodology for the Development of Regulatory Safety Requirements for the Design of Advanced Nuclear Power Reactors — IAEA TECDOC
- Case Studies on the Development of a Comprehensive Report to Support the Decision Making Process for a Nuclear Power Programme — IAEA TECDOC
- Country Nuclear Power Profiles — Non-serial Publications
- Economic Evaluation of Alternative Nuclear Energy Systems: Supplement for the INPRO ASENES Service — IAEA TECDOC
- Evaluation of the Status of National Nuclear Infrastructure Development (Rev. 2) — IAEA Nuclear Energy Series
- Experiences of Regulatory Bodies and Owner/Operator Organizations in Developing Management Systems for New Nuclear Power Programmes — IAEA TECDOC
- Human Resource Management for New Nuclear Power Programmes — IAEA Nuclear Energy Series
- Introduction to Systems Engineering for the Instrumentation and Control of Nuclear Facilities — IAEA Nuclear Energy Series
- Lessons Learned in Regulating Small Modular Reactors — IAEA TECDOC
- Management of Ageing and Obsolescence of Instrumentation and Control Systems and Equipment in Nuclear Power Plants and Related Facilities Through Modernization — IAEA Nuclear Energy Series
- Managing Siting Activities for Nuclear Power Plants — IAEA Nuclear Energy Series
- Modelling and Simulation of the Source Term for a Sodium Cooled Fast Reactor Under Hypothetical Severe Accident Conditions — IAEA TECDOC
- Nuclear Power Reactors in the World — Reference Data Series
- Nuclear Reactor Technology Assessment for Near Term Deployment — IAEA Nuclear Energy Series
- Numerical Benchmarks for Multiphysics Simulation of Pressurized Heavy Water Reactor Transients — IAEA TECDOC
- Operating Experience with Nuclear Power Stations in Member States — IAEA/OPEX/2022
- Prediction of Transverse Creep Based on Operating Conditions and Microstructure of Heavy Water Reactor Pressure Tubes — IAEA TECDOC
- PROSPER Guidelines — IAEA Services Series
- Resource Requirements for Nuclear Power Infrastructure Development — IAEA Nuclear Energy Series
- Summary Review on the Application of Computational Fluid Dynamics in Nuclear Power Plant Design — IAEA Nuclear Energy Series
- Sustaining Operational Excellence at Nuclear Power Plants — IAEA Nuclear Energy Series

**Nuclear Fuel Cycle and Materials Technology**

- Analysis of Options and Experimental Examination of Fuels for Water Cooled Reactors with Increased Accident Tolerance (ACTOF) — IAEA TECDOC (Chinese, Russian)
- Behaviour of Spent Power Reactor Fuel During Storage — IAEA TECDOC (Russian)
- Best Practices in the Refurbishment of Pressurized Heavy Water Reactors — IAEA TECDOC
- Decommissioning of Particle Accelerators — IAEA Nuclear Energy Series (Russian)
- Developing Cost Estimates for Environmental Remediation Projects — IAEA Nuclear Energy Series (Russian)
- Feasibility Study Preparation for New Research Reactor Programmes — IAEA Nuclear Energy Series (French)
- Framework and Challenges for Initiating Multinational Cooperation for the Development of a Radioactive Waste Repository — IAEA Nuclear Energy Series (French)

- Framework and Challenges for Initiating Multinational Cooperation for the Development of a Radioactive Waste Repository — IAEA Nuclear Energy Series (Spanish)
- Fuel Failure in Normal Operation of Water Reactors: Experience, Causes and Mitigation — IAEA TECDOC
- Fuel Modelling in Accident Conditions (FUMAC) — IAEA TECDOC (Chinese, Russian)
- Management of Disused Sealed Radioactive Sources — IAEA Nuclear Energy Series (Russian, Spanish)
- Management of Naturally Occurring Radioactive Material (NORM) in Industry — Proceedings Series
- Modular Design of Processing and Storage Facilities for Small Volumes of Low and Intermediate Level Radioactive Waste including Disused Sealed Sources — IAEA Nuclear Energy Series (Spanish)
- Near Term and Promising Long Term Options for the Deployment of Thorium Based Nuclear Energy — IAEA TECDOC
- Practices for Interim Storage of Research Reactor Spent Nuclear Fuel — IAEA Nuclear Energy Series
- Review of Fuel Failures in Water Cooled Reactors (2006–2015) — IAEA Nuclear Energy Series (Chinese, Russian)
- Status and Trends in Spent Fuel and Radioactive Waste Management — IAEA Nuclear Energy Series
- Training and Human Resource Considerations for Nuclear Facility Decommissioning — IAEA Nuclear Energy Series

#### **Capacity Building and Nuclear Knowledge for Sustainable Energy Development**

- Energy, Electricity and Nuclear Power Estimates for the Period up to 2050 — Reference Data Series
- Guide to Knowledge Management Strategies and Approaches in Nuclear Energy Organizations and Facilities — IAEA Nuclear Energy Series
- Mentoring and Coaching for Knowledge Management in Nuclear Organizations — IAEA TECDOC
- Nuclear Educational Networks: Experience Gained and Lessons Learned — IAEA TECDOC

#### **Nuclear Science**

- Alternative Commercialization Pathways for Fusion Energy Systems — IAEA TECDOC
- Artificial Intelligence for Accelerating Nuclear Applications, Science and Technology — Non-serial Publications
- Benchmarks of Fuel Burnup and Material Activation Computational Tools Against Experimental Data for Research Reactors — IAEA TECDOC
- Development of Steady State Compact Fusion Neutron Sources — IAEA TECDOC
- Muon Imaging: Present Status and Emerging Applications — IAEA TECDOC
- Nuclear Data Newsletter No. 72, January 2022
- Nuclear Data Newsletter No. 73, July 2022
- Nuclear Science and Instrumentation Newsletter No. 3, February 2022
- Quality Assurance and Quality Control in Neutron Activation Analysis: A Guide to Practical Approaches — Technical Reports Series
- Regional Strategic Framework for Technical Cooperation with the IAEA–CARICOM Member States — Non-serial Publications
- Research Reactor Benchmarking Database: Facility Specification and Experimental Data (Revision) — Technical Reports Series
- World Survey of Fusion Devices 2022 — Non-serial Publications

#### **Food and Agriculture**

- Accessible Technologies for the Verification of Origin of Dairy Products as an Example Control System to Enhance Global Trade and Food Safety — IAEA TECDOC
- Animal Production and Health Newsletter, No. 75, January 2022
- Animal Production and Health Newsletter, No. 76, July 2022
- Animal Production and Health Newsletter, No. 77, December 2022

- Development of Electron Beam and X Ray Applications for Food Irradiation — IAEA TECDOC
- Food Safety and Control Newsletter Vol. 01 No. 1, July 2022
- Food Safety and Control Newsletter Vol. 02 No. 1, January 2023
- Insect Pest Control Newsletter No. 99, July 2022
- Plant Breeding and Genetics Newsletter, No. 49, June 2022
- Soils Newsletter Vol. 44 No. 2, January 2022
- Soils Newsletter Vol. 45 No. 1, July 2022

### **Human Health**

- A Model to Assess Staffing Needs in Nuclear Medicine — IAEA Human Health Reports
- Accuracy Requirements and Uncertainties in Radiotherapy — IAEA Human Health Series (Russian)
- Audit Methodology for Medical Physics Clinical Training Programmes — Training Course Series
- Comprehensive Audits of Radiotherapy Practices: A Tool for Quality Improvement — Non-serial Publications
- Imaging of Ischemic Heart Disease in Women: A Critical Review of the Literature — IAEA Human Health Series
- Methodology for Integrated Missions of the Programme of Action for Cancer Therapy (imPACT Reviews) — IAEA Services Series
- Selecting Megavoltage Treatment Technologies in External Beam Radiotherapy — IAEA Human Health Reports
- SSDL Newsletter Issue No. 75, August 2022
- SSDL Newsletter Issue No. 76, December 2022
- Setting Up a Cancer Centre: A WHO–IAEA Framework — Non-serial Publications

### **Environment**

- Assessment of Radioactive Contamination and Effectiveness of Remedial Measures in Urban Environments — IAEA TECDOC
- Case Study on Assessment of Radiological Environmental Impact from Normal Operation — IAEA TECDOC
- Certification of Mass Fractions of Organochlorines and Polybrominated Diphenyl Ethers in IAEA-435A Fish Homogenate Sample — IAEA Analytical Quality in Nuclear Applications Series
- Certification of Trace Elements and Methylmercury Mass Fractions in Fish Flesh Homogenate IAEA-407A — IAEA Analytical Quality in Nuclear Applications Series
- Interlaboratory Comparisons 2017–2020: Determination of Radionuclides in Sea Water, Sediment and Fish — IAEA Analytical Quality in Nuclear Applications Series
- Remediation Strategy and Process for Areas Affected by Past Activities or Events — IAEA Safety Standards Series
- Worldwide Interlaboratory Comparison on the Determination of Organochlorine Compounds, Polybrominated Diphenyl Ethers and Polycyclic Aromatic Hydrocarbons in a Fish Sample — IAEA Analytical Quality in Nuclear Applications Series

### **Radioisotope Production and Radiation Technology**

- Copper-64 Radiopharmaceuticals: Production, Quality Control and Clinical Applications — IAEA Radioisotopes and Radiopharmaceuticals Series

### **Incident and Emergency Preparedness and Response**

- Arrangements for Public Communication in Preparedness and Response for a Nuclear or Radiological Emergency — IAEA Safety Standards Series (Chinese)
- Arrangements for the Termination of a Nuclear or Radiological Emergency — IAEA Safety Standards Series (Chinese)

- Arrangements for the Termination of a Nuclear or Radiological Emergency: Training Materials — Emergency Preparedness and Response
- Emergency Preparedness and Response Information Management System (EPRIMS) — Emergency Preparedness and Response
- Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material — IAEA Safety Standards Series
- The Radiological Incident in Hueypoxthla — Non-serial Publications

### **Safety of Nuclear Installations**

- Benchmark Analysis of Numerical Models for Tsunami Simulation — IAEA TECDOC
- Conduct of Operations at Nuclear Power Plants — IAEA Safety Standards Series
- Core Management and Fuel Handling for Nuclear Power Plants — IAEA Safety Standards Series
- Corporate OSART Guidelines — IAEA Services Series
- Deterministic Safety Analysis for Nuclear Power Plants — IAEA Safety Standards Series
- Establishing the Safety Infrastructure for a Nuclear Power Programme — IAEA Safety Standards Series (Chinese)
- IRS Guidelines — IAEA Services Series
- Licensing Process for Nuclear Installations — IAEA Safety Standards Series (Chinese)
- Maintenance, Surveillance and In-service Inspection in Nuclear Power Plants — IAEA Safety Standards Series (Spanish)
- Maintenance, Testing, Surveillance and Inspection in Nuclear Power Plants — IAEA Safety Standards Series
- Manual for IRS Coding — IAEA Services Series
- Meteorological and Hydrological Hazards in Site Evaluation for Nuclear Installations — IAEA Safety Standards Series (Chinese)
- Methodologies for Seismic Soil–Structure Interaction Analysis in the Design and Assessment of Nuclear Installations — IAEA TECDOC
- Modifications to Nuclear Power Plants — IAEA Safety Standards Series
- Operating Experience Feedback for Nuclear Installations — IAEA Safety Standards Series (Russian)
- Operational Limits and Conditions and Operating Procedures for Nuclear Power Plants — IAEA Safety Standards Series
- OSART Guidelines — IAEA Services Series
- Protection Against Internal and External Hazards in the Operation of Nuclear Power Plants — IAEA Safety Standards Series
- Recruitment, Qualification and Training of Personnel for Nuclear Power Plants — IAEA Safety Standards Series
- Regulatory Oversight of Ageing Management and Long Term Operation Programme of Nuclear Power Plants — Safety Reports Series
- Seismic Hazards in Site Evaluation for Nuclear Installations — IAEA Safety Standards Series
- Technical Safety Review (TSR) Service Guidelines — IAEA Services Series (French, Russian, Spanish)
- The Operating Organization for Nuclear Power Plants — IAEA Safety Standards Series

### **Radiation and Transport Safety**

- Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition) — IAEA Safety Standards Series
- A Methodology for Establishing a National Strategy for Education and Training in Radiation, Transport and Waste Safety — Safety Reports Series (Russian)
- Communication and Consultation with Interested Parties by the Regulatory Body — IAEA Safety Standards Series (Chinese)

- Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries — IAEA Safety Standards Series (Chinese)
- Criticality Safety in the Handling of Fissile Material — IAEA Safety Standards Series
- Functions and Processes of the Regulatory Body for Safety — IAEA Safety Standards Series (Chinese)
- IAEA Safety Glossary: 2018 Edition (Chinese) — Non-serial Publications
- Justification of Practices, Including Non-Medical Human Imaging — IAEA Safety Standards Series (Chinese)
- National Strategy for Regaining Control over Orphan Sources and Improving Control over Vulnerable Sources — IAEA Safety Standards Series (Chinese)
- Organization, Management and Staffing of the Regulatory Body for Safety — IAEA Safety Standards Series (Chinese)
- Prospective Radiological Environmental Impact Assessment for Facilities and Activities — IAEA Safety Standards Series (Chinese)
- Radiation Safety in Industrial Radiography — IAEA Safety Standards Series (Chinese)
- Radiation Safety of Gamma, Electron and X Ray Irradiation Facilities — IAEA Safety Standards Series (Chinese)

### **Management of Radioactive Waste**

- Classification of Radioactive Waste — IAEA Safety Standards Series
- Communication and Stakeholder Involvement in Radioactive Waste Disposal — IAEA Nuclear Energy Series
- CRAFT — IAEA TECDOC
- Cultura de la seguridad en las organizaciones, instalaciones y actividades vinculadas al uso de fuentes de radiación ionizante — IAEA TECDOC (Spanish)
- Decommissioning at a Multifacility Site — IAEA Nuclear Energy Series
- Developing Cost Estimates for Environmental Remediation Projects — IAEA Nuclear Energy Series (Spanish)
- Experience in the Management of Radioactive Waste After Nuclear Accidents: A Basis for Preplanning — IAEA Nuclear Energy Series
- Exposure Due to Radionuclides in Food Other Than During a Nuclear or Radiological Emergency — IAEA TECDOC
- Format and Content of the Package Design Safety Report for the Transport of Radioactive Material — IAEA Safety Standards Series
- Geological Disposal Facilities for Radioactive Waste — IAEA Safety Standards Series (Chinese)
- Harmonization and Intercomparison of Models for Accidental Tritium Releases to the Atmosphere — IAEA TECDOC
- Leadership, Management and Culture for Safety in Radioactive Waste Management — IAEA Safety Standards Series
- Management of Disused Radioactive Lightning Conductors and Their Associated Radioactive Sources — IAEA Nuclear Energy Series
- Management of Disused Sealed Radioactive Sources — IAEA Nuclear Energy Series (French)
- Mobile Processing Systems for Radioactive Waste Management — IAEA Nuclear Energy Series (Russian, Spanish)
- Notification, Authorization, Inspection and Enforcement for the Safety and Security of Radiation Sources — Technical Reports Series
- Occupational Radiation Protection — IAEA Safety Standards Series (Chinese, French, Spanish)
- Occupational Radiation Protection — Proceedings Series
- Policies and Strategies for Radioactive Waste Management — IAEA Nuclear Energy Series (Arabic, Spanish)
- Programa para la Creación y el Desarrollo de Competencias de Reguladores de Aplicaciones Médicas e Industriales — IAEA TECDOC (Spanish)



- Radiation Protection and Safety in Medical Uses of Ionizing Radiation — IAEA Safety Standards Series (French, Spanish)
- Radiation Protection in Dental Radiology — Safety Reports Series
- Radiation Protection of the Public and the Environment — IAEA Safety Standards Series (Chinese, Spanish)
- Radiation Safety of X Ray Generators and Other Radiation Sources Used for Inspection Purposes and for Non-medical Human Imaging — IAEA Safety Standards Series (Chinese, Russian)
- Regulatory Control of Radioactive Discharges to the Environment — IAEA Safety Standards Series (Chinese)
- Release of Sites from Regulatory Control on Termination of Practices — IAEA Safety Standards Series (Chinese)
- Storage of Radioactive Waste — IAEA Safety Standards Series (Chinese)
- The International Working Forum on the Regulatory Supervision of Legacy Sites — IAEA TECDOC
- The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste — IAEA Safety Standards Series (Chinese)

### **Nuclear Security**

- Advisory Mission on Regulatory Infrastructure for Radiation Safety and Nuclear Security — IAEA Services Series
- Building Capacity for Nuclear Security — IAEA Nuclear Security Series (Arabic)
- Computer Security Approaches to Reduce Cyber Risks in the Nuclear Supply Chain — Non-serial Publications
- Computer Security for Nuclear Security — IAEA Nuclear Security Series (Arabic, French)
- Developing a National Framework for Managing the Response to Nuclear Security Events — IAEA Nuclear Security Series (Arabic, Spanish)
- Developing Regulations and Associated Administrative Measures for Nuclear Security — IAEA Nuclear Security Series (Arabic, Spanish)
- Effective Nuclear and Radiation Regulatory Systems — Proceedings Series
- Establishing and Operating a National Nuclear Security Support Centre — Non-serial Publications (Arabic)
- Establishing the Nuclear Security Infrastructure for a Nuclear Power Programme — IAEA Nuclear Security Series (Russian)
- IAEA Nuclear Safety and Security Glossary (2022 (Interim) Edition) — Non-serial Publications
- IAEA School on Nuclear and Radiological Leadership for Safety — Training Course Series
- Independence in Regulatory Decision Making — INSAG Series
- National Nuclear Security Threat Assessment, Design Basis Threats and Representative Threat Statements — IAEA Nuclear Security Series (Arabic, French, Spanish)
- Nuclear Forensics in Support of Investigations — IAEA Nuclear Security Series (Arabic, French, Spanish)
- Nuclear Security Culture — IAEA Nuclear Security Series (Russian)
- Nuclear Security Systems and Measures for the Detection of Nuclear and Other Radioactive Material out of Regulatory Control — IAEA Nuclear Security Series (Russian)
- Physical Protection of Nuclear Material and Nuclear Facilities (Implementation of INFCIRC/225/Revision 5) — IAEA Nuclear Security Series (Russian)
- Preventive and Protective Measures Against Insider Threats — IAEA Nuclear Security Series (Arabic, Spanish)
- Preventive Measures for Nuclear and Other Radioactive Material out of Regulatory Control — IAEA Nuclear Security Series (Arabic, Russian, Spanish)
- Risk Informed Approach for Nuclear Security Measures for Nuclear and Other Radioactive Material out of Regulatory Control — IAEA Nuclear Security Series (Arabic, French, Spanish)

- Safety Assessment for Research Reactors and Preparation of the Safety Analysis Report — IAEA Safety Standards Series
- Safety in the Utilization and Modification of Research Reactors — IAEA Safety Standards Series
- Security During the Lifetime of a Nuclear Facility — IAEA Nuclear Security Series (Arabic, Spanish)
- Security Management of Radioactive Material in Use and Storage and of Associated Facilities — IAEA Nuclear Security Series
- Security of Radioactive Material in Transport — IAEA Nuclear Security Series (Arabic, French, Spanish)
- Security of Radioactive Material in Use and Storage and of Associated Facilities — IAEA Nuclear Security Series (Arabic, French, Spanish)
- Sustaining a Nuclear Security Regime — IAEA Nuclear Security Series (Spanish)

#### **Nuclear Verification**

- IAEA Safeguards Glossary — International Nuclear Verification Series

#### **Nuclear Law**

- Nuclear Law Institute — Non-serial Publications
- Nuclear Law: The Global Debate — Non-serial Publications (Arabic, Chinese, French, Russian, Spanish)

**Table A41. Technical cooperation training courses held in 2022**

**Energy**

- Interregional Training Course on Understanding the Physics and Technology of Small Modular Reactors (iPWR design) using IAEA's Educational Simulator  
Austria
- Virtual Event – Interregional Training Course on Participatory Decision-Making in Environmental Remediation and Site Release from Regulatory Control  
Austria
- Virtual Event - Regional (AFRA) Training Course for Teachers' on Energy Demand Analysis and Use of the IAEA's tool MAED - Online Preparatory Sessions  
Austria
- Interregional Training Course on Safety and Impact Assessment for Decommissioning Projects  
Brazil
- Training Course on Fundamentals of Safe, Secure and Sustainable Nuclear Power Generation through the Intercontinental Nuclear Institute (INI)  
Czech Republic and United States of America
- Virtual Training Course on Fundamentals of Safe, Secure and Sustainable Nuclear Power Generation through the Intercontinental Nuclear Institute (INI)  
Czech Republic and United States of America
- Regional Training Course on 'Modelling the Regional Energy Supply Study, Using the IAEA Model "MESSAGE"  
Dominican Republic
- Regional (AFRA) Training Course on the Milestones Methodology for Evaluating National Infrastructure for the Uranium Production Cycle  
Egypt
- Regional (AFRA) Training Course on Analysis of Energy Demand  
Ethiopia
- Regional Training Course on Assessing Demand-side Contributions to Energy & Climate Strategies  
Georgia
- Regional (AFRA) Training Course for Teachers' on Energy Demand Analysis and Use of the IAEA's tool MAED  
Ghana
- Regional (AFRA) Training Course on Data for Energy Planning, Data Collection, Energy Statistics and Energy Balances  
Kenya

**Food and Agriculture**

- Regional (AFRA) Training Course on the Use of Cosmic-Ray Neutron Sensor (CRNS) for Area-Wide Soil Moisture Monitoring  
Austria
- Regional Training Course on Mark-Release-Recapture and Field Data Management  
Austria
- Regional Training Course on Taxonomy, Genetics, Colony Management and Breeding Procedures of the New Genetic Sexing Strain *Anastrepha fraterculus* (Wiedemann)  
Austria
- Virtual Event - Regional (AFRA) Training Course on Residue Monitoring Programmes  
Austria
- Virtual Event - Regional Training Course on Field Experimental Design and Data Analysis for the Advancement of Mutant Populations  
Austria

- Virtual Event - Regional Training Course on Molecular Techniques for Crop Improvement of Mutant Populations  
Austria
- Virtual Regional Training Course on Mutation Breeding on Vegetatively Propagated Crops  
Austria
- Virtual Regional Training Course on Plant Mutation Breeding and Efficiency Enhancing Techniques to Increase Resilience to Climate Change  
Austria
- Regional Training Course on Climate Smart Agricultural Practices to Enhance Productivity of Rice and Other Major Crops with Lower Environmental Footprints Using Nuclear Techniques  
Bangladesh
- Regional Training Course on African Swine Fever (ASF) Laboratory Diagnosis and Serological Screening  
Bosnia and Herzegovina
- Regional Training Course on SIT components, Handling, shipping and releasing procedures applied in SIT projects  
Brazil
- Regional Training Course on Bioinformatic Tools for the Detection of Molecular Markers associated with Disease Resistance in Aquaculture - Part 2  
Chile
- Regional Training Course on Nuclear and Nuclear Related Techniques for Early Diagnosis and Detection of Lumpy Skin Disease, Sheep and Goat Pox and Peste des Petits Ruminants  
Croatia
- Regional Training Course on National Vector Control Needs Assessment in Preparation of Integrated Vector Management including the Sterile Insect Technique  
Cyprus
- Regional Training Course on Mutation Induction and Mutation Breeding  
Fiji
- Regional Training Course on Plant Mutation Breeding and Associated Biotechnologies in Seed Propagated Crops  
Indonesia
- Interregional Training Course on Climate Change Adaptation Strategies for Soil and Water Management in High Mountainous Regions  
Italy
- Regional Training Course on Monitoring Pesticide Residues in Food  
Jordan
- Regional (AFRA) Training Course on Integrated Cropping Livestock Production System with a Focus on Soil Fertility  
Kenya
- Regional (AFRA) Training Course on Advanced Climate Smart Agricultural Practices for Enhanced Cassava Production  
Kenya
- Regional Training Course on Irrigation, Nutrient Management on Date Palm Cultivation  
Kuwait
- Virtual Regional Training Course on Data Processing and Interpretation of Results from  $^{15}\text{N}$  Stable Isotope Analysis from Field and Greenhouse Experiments (Group 2)  
Mexico
- Regional (AFRA) Training Course on High-resolution soil moisture monitoring using Cosmic Ray Neutron Sensor and remote sensing digital technology  
Morocco

- Regional Training Course on Proper Sampling, Use of Statistics, Risk Assessment and ISO/IEC 17025:2017 Including Lead Assessor Roles  
Pakistan
- Regional Training Course on Surveillance, Emergency Response and Quarantine  
Panama
- Regional Training Course on Using Nuclear Techniques in Developing Climate Smart Agricultural Practices for Cassava Production  
Rwanda
- Regional (AFRA) Training Course on Statistically Rigorous, Pre-field and Field Screening to Select Improved Mutant Lines  
Senegal
- Regional Training Course on Methods for the Mass-Rearing, Irradiation and Release of Sterile Male Aedes Mosquitoes  
Singapore
- Regional Training Course on Next Generation Sequencing (NGS) using Illumina Platform  
Slovenia
- Regional (AFRA) Training Course on Residue Analysis for Food Crops from Supervised Field Trials  
Uganda
- Regional Training Course on Quality Management in Radiotherapy  
United States of America
- Regional Training Course on the Diagnosis of the New World Screwworm  
Uruguay
- Regional (AFRA) Training Course on Tsetse Baseline Data Collection and Data Management  
Zimbabwe

## **Health and Nutrition**

- Interregional Training Course on Quality Assurance Teams for Radiation Oncology  
Austria
- Regional (AFRA) Training Course for Nuclear Medicine physicians in FDG PET/CT Aspects (in English)  
Austria
- Regional (AFRA) Training Course on Dosimetry Audits for English-speaking countries  
Austria
- Regional (AFRA) Training Course on Dosimetry Audits for French-speaking countries  
Austria
- Regional (AFRA) Training Course on Nuclear Medicine Leadership  
Austria
- Virtual Event - Regional (AFRA) Training Course on Clinical Training Programmes in Medical Physics  
Austria
- Virtual Regional Training Course on a Basic Palliative Radiation Therapy for Bones and Brain Metastases  
Austria
- Virtual Regional Training Course on Quality Management and QA in Radiotherapy Medical Physics  
Austria
- Virtual Training Course on Safety-Assessment of Medical and Industrial Facilities and Activities  
Austria
- Virtual Training Course on the Product and Quality Control of Theranostic Radiopharmaceuticals using Copper-64 and Zirconium-89  
Austria
- Regional Training Course on Pre-Clinical Practice of new Materials for Regenerative Medicine  
Brazil



- Regional Training Course on Structured and Supervised Clinical Training Programmes in Medical Physics  
Brazil
- Regional Training Course on the Utilization of Imaging Techniques in the Management of Cardiovascular Diseases in Women  
Brazil
- Regional Training Course- Master on Advanced Radiotherapy  
Chile
- Regional Training Course on Imaging Techniques in the Management of Cardiotoxicity/Radiotherapy Complications in Breast Cancer Patients  
Colombia
- Regional Training Course on Quality Assurance and Dosimetry in general radiography (conventional and digital), fluoroscopy and interventional radiology  
Costa Rica
- Regional Training Course on Internal Dosimetry: Activity Quantification and Dosimetry Formalisms  
Cuba
- TC Sponsored Training - 50 connexions virtuelles aux 2es Journees Franco-Mediterranneennes d'imagerie moleculaire et theranostique  
France
- IAEA/RCA Regional Training Course (RTC) on Paediatric Nuclear Medicine and Theranostic  
Japan
- Regional Training Course On Body Composition Assessment  
Kuwait
- Regional Training Course on Hybrid Imaging for Non-Communicable Diseases management  
Lebanon
- Regional Training Course on Production and Quality Control of F-18 FDG  
Lebanon
- Regional (AFRA) Training Course on Optimizing 3D Conformal Radiotherapy for French-speaking Countries  
Mauritania
- Regional Training Course on Standardization of Techniques for the Evaluation of Body Composition in Pregnancy and Infancy  
Mexico
- Regional Training Course on Regulatory Aspects of Radiopharmaceuticals Production with GMP Requirements  
Mongolia
- Regional (AFRA) Training Course for French-speaking Countries to Train the Trainers on Dose Assessment and Management in Diagnostic Radiology  
Niger
- Virtual Event - Regional Training Course on Brachytherapy Physics  
Russian Federation
- Virtual Event - Regional Training Course on Comprehensive Quality Assurance Programme for External Beam Therapy  
Russian Federation
- Virtual Event - Regional Training Course on Radiation Protection and Safety and Prevention of Radiotherapy Accidents  
Russian Federation
- Virtual Event - Regional Training Course on Radiobiology for Radiotherapists and Medical Physicists  
Russian Federation
- Regional Training Course on Clinical Nuclear Imaging in Infections and Inflammatory Conditions Using SPECT/SPECT-CT and PET/CT  
Thailand

- Regional Training Course on QA/QC in Digital Imaging  
Thailand
- Regional (AFRA) Training Course for French-speaking Countries to Train the Trainers on Implementation of the Harmonized Quality Control Programme in Nuclear Medicine and Diagnostic Radiology  
Tunisia
- Regional (AFRA) Training Course on Optimizing 3D Conformal Radiotherapy for English-speaking Countries  
United Republic of Tanzania
- Regional Training Course on Quality Management in Radiotherapy  
United States of America
- Regional Training Course on Operation and Maintenance of Cyclotrons  
Uruguay

#### **Industrial Applications/Radiation Technology**

- Regional Training Course for Level 2 Certification of Personnel in Non-Destructive Testing (NDT) in Civil Engineering  
Argentina
- Regional Training Course on Modification of Natural Polymers Waste  
Argentina
- Regional Training Course on Radiotracers and Column Scanning  
Austria
- Regional Training Course on Scale-up of Results and Achievements Obtained through Radiation Technology  
Brazil
- Regional Training Course on Certification in Residence Time Distribution and Column Scanning Techniques  
France
- Regional Training Course on Filling the Gaps Between Technology Readiness Level (TRL)3 and TRL7 for the Development of Pilot Scale Plastic Waste Recycling Using Irradiation  
Indonesia
- Regional Training Course on Computational Fluid Dynamics (CFD) for Industrial Process Flow Modelling and Simulation  
Malaysia
- Regional Training Course on Radiography for Cultural Heritage Preservation  
Malta
- IAEA/RCA Regional Training Course on Radiographic Testing – Digital (RT-D) Level 3 for Certification  
Thailand

#### **Nuclear knowledge development and management**

- Regional (AFRA) Training Course - Postgraduate Educational Course (PGEC) in Radiation Protection and the Safety of Radiation Sources in French Language  
Algeria
- Nuclear Law Institute  
Austria
- 2022 Study Tour on NST Contribution to UN SDGs following the Virtual NST Education Exhibition 2021  
Austria
- KAERI-WCI-IAEA e-learning course on Diagnostic and therapeutic radioisotopes and radiopharmaceuticals application  
Austria

- Regional (AFRA) Train-the-Trainer Course on The Use of Nuclear Instrumentation Educational Kits for Secondary Schools in Africa (Group A)  
Austria
- Regional (AFRA) Train-the-Trainer Course on The Use of Nuclear Instrumentation Educational Kits for Secondary Schools in Africa (Group B)  
Austria
- Regional Training Course for Recently Assigned National Liaison Officers and Assistants on Operations and Processes of the Technical Cooperation Programme  
Austria
- Virtual Event - Regional (AFRA) Training Course on Train-the-Trainers for Radiation Protection Officers at Medical and Industrial Facilities  
Austria
- Virtual Event - W4NSEC Online Course 2022  
Austria
- Regional Training Course on Energy Data Collection, Analysis and Integrated Assessment of Climate Land Energy and Water (CLEW)  
Belize
- Regional Training Course on Authorisation and Inspection of Cyclotron Facilities for Radio-pharmaceutical Production  
Brazil
- Latin-America Regional Nuclear Knowledge Management School  
Chile
- Postgraduate Educational Course (PGEC) on Radiation, Transport and Waste Safety in English  
Ghana
- Regional (AFRA) Training Course - Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources (PGEC) in English Language  
Ghana
- Regional Workshop on Nuclear Science and Technology (NST) and its Contribution to the Sustainable Development Goals (SDGs)  
Jordan
- Regional Training Course on Detection and Diagnostic Fusarium Tropical Race 4  
Mexico
- Postgraduate Educational Course (PGEC) on Radiation, Transport and Waste Safety for (French-speaking Countries)  
Morocco
- Regional Training Course on Verification of SOPs for New Serological and Molecular Techniques  
Senegal
- Regional (AFRA) Training Course on Nuclear Energy Knowledge Management School  
South Africa

### **Safety and Security**

- Basic Professional Training Course on Nuclear Safety (BPTC) 2022-IN PERSON PART  
Argentina
- Postgraduate Educational Course on Radiation Protection and Safety of Radiation Sources (PGEC) 2021 - Part II Practical  
Argentina
- Postgraduate Educational Course on Radiation Protection and Safety of Radiation Sources (PGEC) 2022  
Argentina
- Virtual RTC 2022 Basic Training Course on Radiological Protection (CBPR). Edition 2022.  
Argentina

- Regional (AFRA) Training Course on Inspections by the Competent Authority  
Austria
- Regional Training Course on Mutation Breeding and Efficiency Enhancing Techniques for Resistance To Banana Fusarium Wilt Race TR4 in Latin America -Part B  
Austria
- Regional Training Course on Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material  
Austria
- Virtual Regional Training Course on Combined Emergencies  
Austria
- Virtual Event - Regional (AFRA) Training Course on Authorization and Inspection of Linear Accelerator Facilities (LINACs) used in Radiotherapy  
Austria
- Virtual Event - Regional Training Course on Dismantling of Metal and Concrete Structures and Components  
Austria
- Virtual Event - Regional Training Course on Safety Culture Self-Assessment for a Regulatory Body for Radiation Safety  
Austria
- Virtual Training Course and Webinar on “Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material”  
Austria
- Virtual Training Course for Latin American Region on Development of the Protection Strategy  
Austria
- Virtual Training on Enforcement Policy for Regulatory Bodies of the Latin America and The Caribbean Region  
Austria
- Webinar for Getting Ready to Participate in The IAEA School of Drafting Regulations for Countries of the Caribbean Region  
Austria
- Regional Training Course on Train-the-Trainers for Radiation Protection Officers  
Bosnia and Herzegovina
- School of Radiation Emergency Management  
Brazil
- Regional (AFRA) Training Course - Train the Trainers Course for First Responders  
Egypt
- Regional (AFRA) Training Course on Regulatory Enforcement  
Egypt
- Regional (AFRA) Training Course on Demonstration Operation on Conditioning and Storage of Neutron and Low Activity Sources  
Ethiopia
- Interregional Training Course on Implementation of National Requirements for a Nuclear Power Programmes  
Finland
- Interregional Training Course on Economic Aspects and Funding of a New Nuclear Power Programme  
France
- Regional (AFRA) Training Course on Organization and Implementation of a National Regulatory Programme for Control of Radiation Sources (English)  
Ghana
- Postgraduate Educational Course on Radiation Protection and the Safety of Radiation Sources  
Greece

- Interregional Training Course on Nuclear Power Infrastructure Development  
Japan
- Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources in Arabic  
Jordan
- Train-the-Trainers Regional Training Course for First Responders to a Radiological Emergency  
Jordan
- Train-the-Trainers Regional Training Course for Radiation Protection Officers at Medical and Industrial Facilities  
Jordan
- Postgraduate Educational Course in Radiation Protection and the Safety of Radiation Sources PGEC17-2020  
Malaysia
- Regional (AFRA) Training Course to Train the Trainers in Safety Culture  
Mauritius
- School on Nuclear and Radiological Leadership for Safety for Latin America and the Caribbean  
Mexico
- Regional (AFRA) Training Course - School of Radiation Emergency Management (French)  
Morocco
- Regional (AFRA) Training Course on Radioactive Waste Conditioning  
Nigeria
- Hybrid Interregional Training Course on Fuel Design Optimization and Fuel Cycle Options for SMRs  
Russian Federation
- Interregional Training Course on Energy Planning for Nationally Determined Contributions  
Russian Federation
- Interregional Training Course on Establishing a National Position for a New Nuclear Power Programme  
Russian Federation
- Interregional Training Course on Human Resource Management for New and Expanding Nuclear Power Programmes  
Russian Federation
- Interregional Training Course on Licensing Process for Nuclear Power Plants  
Russian Federation
- Regional (AFRA) Training Course on Effective and Sustainable Regulatory Control of Radiation Sources  
Tunisia
- Interregional Training Course on Nuclear Power Plant Financing and Risk Allocation  
United States of America
- Interregional Training Course on Electrical Grid Considerations and Interactions with the Nuclear Power Plant  
United States of America
- Interregional Training Course on Establishing Arrangements and Capabilities for Emergency Preparedness and Response  
United States of America
- Interregional Training Course on Integrated Management System, Leadership and Safety Culture  
United States of America
- Regional Train-the-Trainer Course on the Use of Radiation Detection Equipment  
United States of America

#### **Water and the Environment**

- TC sponsored participation to Training Course on Tritium 3H Training  
Austria
- Virtual Regional Training Course on Isotope Hydrology  
Austria



- Regional Training Course on In-Situ Characterization of Contaminated Sites with Practical Field Applications  
Hungary
- Regional Training Course on Nuclear Techniques (Radio-ligand receptor binding assay-RBA) for the Analysis of Toxins in Marine Organisms  
Monaco
- Regional (AFRA) Training Course on The Use of Nitrogen Isotopes in Water Pollution Studies (English-speaking Countries)  
Morocco
- Regional (AFRA) Training Course on The Use of Nitrogen Isotopes in Water Pollution Studies (French-speaking Countries)  
Morocco

**Table A42. Agency corporate social media accounts**

**Facebook**

*Arabic*

[www.facebook.com/IAEAarabic](http://www.facebook.com/IAEAarabic)

*English*

[www.facebook.com/iaeaorg](http://www.facebook.com/iaeaorg)

*French*

[www.facebook.com/aieaorg](http://www.facebook.com/aieaorg)

*Russian*

[www.facebook.com/magateorg](http://www.facebook.com/magateorg)

*Spanish*

[www.facebook.com/oieaorg](http://www.facebook.com/oieaorg)

**Instagram**

[www.instagram.com/iaeaorg](http://www.instagram.com/iaeaorg)

**LinkedIn**

[www.linkedin.com/company/iaea](http://www.linkedin.com/company/iaea)

**Twitter**

[www.twitter.com/iaeaorg](http://www.twitter.com/iaeaorg)

**Weibo**

*Chinese*

<http://weibo.com/iaeaorg>

**YouTube**

<https://www.youtube.com/user/IAEAvideo>

**Flickr**

[https://www.flickr.com/photos/iaea\\_imagebank](https://www.flickr.com/photos/iaea_imagebank)

**Table A43(a). Number and types of facilities under Agency safeguards by State during 2022**

State <sup>a</sup>	Power reactors	Research reactors and critical assemblies	Conversion plants	Fuel fabrication plants	Reprocessing plants	Enrichment plants	Separate storage facilities	Other facilities	Total
Algeria		2	1	1					4
Argentina	4	6	4	3		4	6	7	34
Armenia	2						1		3
Australia		2					1	2	5
Austria		1							1
Bangladesh	2	1					1		4
Belarus	2	1					2		5
Belgium	6	3		1	1		7	5	23
Brazil	3	6	1	1		5	2	5	23
Bulgaria	3	1					2		6
Canada	7	8	2	5			12		34
Chile		2	1	1					4
China	1					1			2
Colombia		1							1
Czech Republic	3	3					4	2	12
Democratic Republic of the Congo		1							1
Denmark		1					2	1	4
Egypt	1	2	1	2				3	9
Estonia		1							1
Finland	5	1					2	1	9
France				1	1	1			3
Georgia		1						1	2
Germany	21	13		1	1	1	23	6	66
Ghana		1							1
Greece		1							1
Hungary	3	2					2		7
India	11			3			2		16
Indonesia		3		2			1	1	7
Iran, Islamic Republic of	4	6	2	2		3	1	3	21
Iraq							1		1
Israel		1							1
Italy	5	6			2		5	1	19
Jamaica		1							1
Japan	64	19	2	8	6	3	8	15	125
Jordan		1							1
Kazakhstan	1	4		2			6		13
Korea, Republic of	32	3		1			3	7	46

Latvia	1						1		
Libya	1						1		
Lithuania	1					3	4		
Malaysia	1						1		
Mexico	2	1	1		1		5		
Morocco	1						1		
Netherlands	2	2			1	2	1	8	
Nigeria	1						1		
Norway	2						1	3	
Pakistan	7	2					9		
Peru	2						2		
Philippines	1	1					2		
Poland	2						1	3	
Portugal	1						1	2	
Romania	4	2	1	1	1		9		
Russian Federation					1		1		
Serbia	1						1		
Slovakia	5					3	8		
Slovenia	1	1					1	3	
South Africa	2	1	2	2	8		3	18	
Spain	8				1	7	1	17	
Sweden	12	1	1		2		16		
Switzerland	5	2					2	3	12
Syrian Arab Republic	1						1		
Tajikistan	1						1		
Thailand	3						3		
Türkiye	4	2	1		2		9		
Ukraine	19	2					8	6	35
United Arab Emirates	4						4		
United Kingdom					1	2	3		
United States of America					1		1		
Uzbekistan	2	1					1	4	
Venezuela, Bolivarian Republic of	1						1		
Viet Nam	1						1		

<sup>a</sup> An entry in this column does not imply the expression of any opinion whatsoever on the part of the Agency concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers.

**Note:** 1. The numbers indicated here include projected and operational facilities, and facilities at the decommissioning stage.  
2. The Agency was also applying safeguards at 15 facilities in Taiwan, China.

**Table A43(b). Facilities under Agency safeguards or containing safeguarded nuclear material during 2022**

State <sup>a</sup>	Name of facility	Location
<b>Power reactors</b>		
Argentina	Atucha I Nuclear Power Plant	Lima
	Atucha II Nuclear Power Plant	Lima
	Carem	Lima
	Embalse Nuclear Power Plant	Embalse
Armenia	Armenian NPP	Metsamor
	Armenian NPP 3	Metsamor
Bangladesh	Rooppur NPP 1	Ishwardi, Pabna District
	Rooppur NPP 2	Ishwardi, Pabna District
Belarus, Republic of	Belarus 1	Ostrovets
	Belarus 2	Ostrovets
Belgium	Doel 1 & 2 NPP	Doel
	Doel 3 NPP	Doel
	Doel 4 NPP	Doel
	Tihange 1 NPP	Tihange
	Tihange 2 NPP	Tihange
	Tihange 3 NPP	Tihange
Brazil	Angra 1	Angra dos Reis
	Angra 2	Angra dos Reis
	Angra 3	Angra dos Reis
Bulgaria	NPP Kozloduy 1 & 2	Kozloduy
	NPP Kozloduy 3 & 4	Kozloduy
	NPP Kozloduy 5 & 6	Kozloduy
Canada	Bruce 'A' N.G.S.	Tiverton, Ontario
	Bruce 'B' N.G.S.	Tiverton, Ontario
	DNNP	Bowmanville, Ontario
	Darlington NGS	Bowmanville, Ontario
	Gentilly II	Gentilly, Quebec
	Pickering N.G.S.	Pickering, Ontario
	Point Lepreau	Pt. Lepreau, New Brunswick
China	HTR-PM	Rongcheng, Shandong Province
Czech Republic	NPP Dukovany (Edu-1)	Dukovany
	NPP Dukovany (Edu-2)	Dukovany
	NPP Temelin	Temelin



State <sup>a</sup>	Name of facility	Location
Egypt	El Dabaa NPP	El Dabaa
Finland	Hanhikivi-I	Pyhaejoki
	Loviisa NPP	Loviisa
	TVO I	Olkiluoto
	TVO II	Olkiluoto
	TVO III	Olkiluoto
Germany	HKG-THTR 300	Hamm
	KKW Brokdorf	Brokdorf
	KKW Brunsbuettel	Brunsbuettel
	KKW Emsland	Lingen (Ems)
	KKW Grafenrheinfeld	Grafenrheinfeld
	KKW Grohnde	Emmerthal
	KKW Gundremmingen, Block B	Gundremmingen
	KKW Gundremmingen, Block C	Gundremmingen
	KKW Isar 1	Essenbach
	KKW Isar 2	Essenbach
	KKW Krümmel	Geesthacht
	KKW Neckarwestheim 1	Neckarwestheim
	KKW Neckarwestheim 2	Neckarwestheim
	KKW Obrigheim	Obrigheim
	KKW Philippsburg 1	Philippsburg
	KKW Philippsburg 2	Philippsburg
	KKW Unterweser	Unterweser
	KW Biblis A	Biblis
	KW Biblis B	Biblis
	KWL Lingen	Lingen
	KWW Muelheim-Kaerlich	Muelheim-Kaerlich
Hungary	MVM Paks NPP Ltd. I	Paks
	MVM Paks NPP Ltd. II	Paks
	Paks II Nuclear Power Plant	Paks
India	KAPS 1 & 2	Surat, Gujrat
	KAPS 3 & 4	Surat, Gujrat
	KKNPP 1 & 2	Kudankulam, Tamil Nadu
	KKNPP 3 & 4	Kudankulam, Tamil Nadu
	KKNPP 5 & 6	Kudankulam, Tamil Nadu

State <sup>a</sup>	Name of facility	Location
	NAPS 1 & 2	Bulandshahar, Uttar Pradesh
	RAPS 1 & 2	Rawatbhata, Rajasthan
	RAPS 3 & 4	Rawatbhata, Rajasthan
	RAPS 5 & 6	Rawatbhata, Rajasthan
	RAPS 7 & 8	Rawatbhata, Rajasthan
	TAPS	Tarapur, Maharashtra
Iran, Islamic Republic of	BNPP-1	Bushehr
	BNPP-2	Bushehr
	BNPP-3	Bushehr
	IR360 NPP	Darkhovin
Italy	Area Disattivazione Caorso	Caorso
	Centrale Latina	Borgo Sabotino
	Centrale Nucleare di Trino	Trino Vercellese
	Cirene (On Load)	Borgo Sabotino
	So.G.I.N. CN del Garigliano	Sessa Aurunca (CE)
Japan	Fugen	Tsuruga-Shi, Fukui-Ken
	Fuku-I-1	Futaba-Gun, Fukushima-Ken
	Fuku-I-2	Futaba-Gun, Fukushima-Ken
	Fuku-I-3	Futaba-Gun, Fukushima-Ken
	Fuku-I-4	Futaba-Gun, Fukushima-Ken
	Fuku-I-5	Futaba-Gun, Fukushima-Ken
	Fuku-I-6	Futaba-Gun, Fukushima-Ken
	Fuku-N-1	Futaba-Gun, Fukushima-Ken
	Fuku-N-2	Futaba-Gun, Fukushima-Ken
	Fuku-N-3	Futaba-Gun, Fukushima-Ken
	Fuku-N-4	Futaba-Gun, Fukushima-Ken
	Genkai-1	Higashimatsuura-Gun, Saga-Ken
	Genkai-2	Higashimatsuura-Gun, Saga-Ken
	Genkai-3	Higashimatsuura-Gun, Saga-Ken
	Genkai-4	Higashimatsuura-Gun, Saga-Ken
	Hamaoka-1	Ogasa-Gun, Shizuoka-Ken
	Hamaoka-2	Ogasa-Gun, Shizuoka-Ken
	Hamaoka-3	Ogasa-Gun, Shizuoka-Ken
	Hamaoka-4	Ogasa-Gun, Shizuoka-Ken
	Hamaoka-5	Ogasa-Gun, Shizuoka-Ken

State <sup>a</sup>	Name of facility	Location
	Higashidoori-1	Shimokita-Gun, Aomori-Ken
	Higashidoori-1	Shimokita-Gun, Aomori-Ken
	Ikata-1	Nishiuwa-Gun, Ehime-Ken
	Ikata-2	Nishiuwa-Gun, Ehime-Ken
	Ikata-3	Nishiuwa-Gun, Ehime-Ken
	Joyo	Higashi, Ibaraki-Ken
	Kaminoseki-1	Kumage-Gun, Yamaguchi-Ken
	Kashiwazaki-1	Kashiwazaki-Shi, Niigata-Ken
	Kashiwazaki-2	Kashiwazaki-Shi, Niigata-Ken
	Kashiwazaki-3	Kashiwazaki-Shi, Niigata-Ken
	Kashiwazaki-4	Kashiwazaki-Shi, Niigata-Ken
	Kashiwazaki-5	Kashiwazaki-Shi, Niigata-Ken
	Kashiwazaki-6	Kashiwazaki-Shi, Niigata-Ken
	Kashiwazaki-7	Kashiwazaki-Shi, Niigata-Ken
	Mihama-1	Mikata-Gun, Fukui-Ken
	Mihama-2	Mikata-Gun, Fukui-Ken
	Mihama-3	Mikata-Gun, Fukui-Ken
	Monju	Tsuruga-Shi, Fukui-Ken
	Ohi 1 & 2	Ohi-Gun, Fukui-Ken
	Ohi 3	Ohi-Gun, Fukui-Ken
	Ohi 4	Ohi-Gun, Fukui-Ken
	Ohma	Shimokita-Gun, Aomori-Ken
	Onagawa-1	Oshika-Gun, Miyagi-Ken
	Onagawa-2	Oshika-Gun, Miyagi-Ken
	Onagawa-3	Oshika-Gun, Miyagi-Ken
	Sendai-1	Satsumasendai-Shi, Kagoshima-Ken
	Sendai-2	Satsumasendai-Shi, Kagoshima-Ken
	Sendai-3	Satsumasendai-Shi, Kagoshima-Ken
	Shika-1	Hakui-Gun, Ishikawa-Ken
	Shika-2	Hakui-Gun, Ishikawa-Ken
	Shimane-1	Yatsuka-Gun, Shimane-Ken
	Shimane-2	Yatsuka-Gun, Shimane-Ken
	Shimane-3	Yatsuka-Gun, Shimane-Ken
	Takahama-1	Ohi-Gun, Fukui-Ken
	Takahama-2	Ohi-Gun, Fukui-Ken

State <sup>a</sup>	Name of facility	Location
	Takahama-3	Ohi-Gun, Fukui-Ken
	Takahama-4	Ohi-Gun, Fukui-Ken
	Tokai	Tokai-Mura, Ibaraki-Ken
	Tokai-2	Tokai-Mura, Ibaraki-Ken
	Tomari-1	Fururu-Gun, Hokkaido
	Tomari-2	Fururu-Gun, Hokkaido
	Tomari-3	Fururu-Gun, Hokkaido
	Tsuruga-1	Tsuruga-Shi, Fukui-Ken
	Tsuruga-2	Tsuruga-Shi, Fukui-Ken
Kazakhstan	BN-350	Aktau
Korea, Republic of	Hanbit-1	Yeonggwang
	Hanbit-2	Yeonggwang
	Hanbit-3	Yeonggwang
	Hanbit-4	Yeonggwang
	Hanbit-5	Yeonggwang
	Hanbit-6	Yeonggwang
	Hanul-1	Ulchin
	Hanul-2	Ulchin
	Hanul-3	Ulchin
	Hanul-4	Ulchin
	Hanul-5	Ulchin
	Hanul-6	Ulchin
	Kori-1	Pusan
	Kori-2	Pusan
	Kori-3	Pusan
	Kori-4	Pusan
	Shin Hanul-1	Ulchin
	Shin Hanul-2	Ulchin
	Shin Hanul-3	Ulchin
	Shin Hanul-4	Ulchin
	Shin Kori-1	Pusan
	Shin Kori-2	Pusan
	Saeul 1	Pusan
	Saeul 2	Pusan
	Saeul 3	Pusan

State <sup>a</sup>	Name of facility	Location
	Saeul 4	Pusan
	Shin Wolsong-1	Kyongju
	Shin Wolsong-2	Kyongju
	Wolsong-1	Kyongju
	Wolsong-2	Kyongju
	Wolsong-3	Kyongju
	Wolsong-4	Kyongju
Lithuania	Ignalina NPP	Visaginas
Mexico	Central Laguna Verde Unit I	Muni. Al. Luc. Veracruz
	Central Laguna Verde Unit II	Muni. Al. Luc. Veracruz
Netherlands	Epz. Borssele	Borssele
	N. V. GKN-Dodewaard	Dodewaard
Pakistan	Chasnupp-1	Kundian, District Mianwali
	Chasnupp-2	Kundian, District Mianwali
	Chasnupp-3	Kundian, District Mianwali
	Chasnupp-4	Kundian, District Mianwali
	Kanupp	Karachi
	Kanupp-2	Karachi
	Kanupp-3	Karachi
Philippines	BNPP	Morong, Bataan
Romania	Cernavoda 3	Cernavoda
	Cernavoda 4	Cernavoda
	CNE Cernavoda 1	Cernavoda
	CNE Cernavoda 2	Cernavoda
Slovakia	JAVYS NPP A-1	Jaslovske Bohunice
	JAVYS NPP V-1	Jaslovske Bohunice
	NPP Mochovce Units 1 & 2	Mochovce
	NPP Mochovce Units 3 & 4	Mochovce
	V-2 NPP	Jaslovske Bohunice
Slovenia	Krško (NEK)	Krško
South Africa	Koeberg Unit I	Cape Town
	Koeberg Unit II	Cape Town
Spain	Asco 1	Asco
	Asco 2	Asco
	C.N. Almaraz 1	Almaraz

State <sup>a</sup>	Name of facility	Location
	C.N. Almaraz 2	Almaraz
	C.N. Cofrentes	Cofrentes
	C.N. de Sta. Maria de Garona	Santa Maria de Garona
	CN Trillo-1	Trillo
	CN Vandellos-2	Vandellos
Sweden	Barsebaeck Unit 1	Loeddekoepinge
	Barsebaeck Unit 2	Loeddekoepinge
	Forsmark Unit 1	Oesthammar
	Forsmark Unit 2	Oesthammar
	Forsmark Unit 3	Oesthammar
	Oskarshamn Unit 1	Oskarshamn
	Oskarshamn Unit 2	Oskarshamn
	Oskarshamn Unit 3	Oskarshamn
	Ringhals 1	Ringhals
	Ringhals 2	Ringhals
	Ringhals 3	Ringhals
	Ringhals 4	Ringhals
Switzerland	KKB Beznau-I	Beznau Doettingen
	KKB Beznau-II	Beznau Doettingen
	KKG Goesgen	Goesgen Daeniken
	KKL Leibstadt	Leibstadt
	KKM Muehleberg	Muehleberg
Türkiye	Akkuyu Unit 1	Büyükeceli
	Akkuyu Unit 2	Büyükeceli
	Akkuyu Unit 3	Büyükeceli
	Akkuyu Unit 4	Büyükeceli
Ukraine	Chernobyl NPP, Unit 1	Chornobyl
	Chernobyl NPP, Unit 2	Chornobyl
	Chernobyl NPP, Unit 3	Chornobyl
	Khmelnitski 1	Netishyn
	Khmelnitski 2	Netishyn
	Khmelnitski 3	Netishyn
	Khmelnitski 4	Netishyn
	Rovno 1 & 2	Varash
	Rovno 3	Varash

State <sup>a</sup>	Name of facility	Location
	Rovno 4	Varash
	South Ukraine 1	Yuzhnoukrayinsk
	South Ukraine 2	Yuzhnoukrayinsk
	South Ukraine 3	Yuzhnoukrayinsk
	Zaporozhe 1	Enerhodar
	Zaporozhe 2	Enerhodar
	Zaporozhe 3	Enerhodar
	Zaporozhe 4	Enerhodar
	Zaporozhe 5	Enerhodar
	Zaporozhe 6	Enerhodar
United Arab Emirates	BNPP-1	Barakah
	BNPP-2	Barakah
	BNPP-3	Barakah
	BNPP-4	Barakah
Uzbekistan	Unit 1	tbd
	Unit 2	tbd
<b>Research reactors and critical assemblies</b>		
Algeria	Es Salam Reactor	Ain Oussera
	Nur Reactor	Draria-Bp29 Wilaya de Tipaza
Argentina	Argentine Reactor 0 (RA-0)	Cordoba
	Argentine Reactor 1 (RA-1)	Buenos Aires
	Argentine Reactor 3 (RA-3)	Centro Atomico Ezeiza
	Argentine Reactor 4 (RA-4)	Rosario
	Argentine Reactor 6 (RA-6)	Centro Atomico Bariloche
	Argentine Reactor 10 (RA-10)	Centro Atomico Ezeiza
Australia	HIFAR	Lucas Heights, New South Wales
	OPAL	Lucas Heights, New South Wales
Austria	TRIGA Mark II Reactor	Vienna
Bangladesh	Atomic Energ. Res. Estab.	Dhaka
Belarus	Sosny	Minsk
Belgium	BR1-CEN	Mol
	BR2-CEN	Mol
	Venus-CEN	Mol
Brazil	Brazilian Multipurpose Reactor	Iperó, São Paulo
	CDTN/IRP-R1 Reactor	Belo Horizonte

State <sup>a</sup>	Name of facility	Location
	IEN/Argonauta Reactor	Rio de Janeiro
	IPEN/IEA-R1	São Paulo
	IPEN/MB01 Critical Assembly	São Paulo
	LABGENE	Iperó
Bulgaria	IRT-2000	Sofia
Canada	Biology, Chemistry, Physics	Chalk River, Ontario
	DIF	Chalk River, Ontario
	Ecole Polytechnique	Montreal, Quebec
	McMaster Nuclear Reactor	Hamilton, Ontario
	NRU Reactor	Chalk River, Ontario
	NRX Reactor	Chalk River, Ontario
	Slowpoke Kingston	Kingston, Ontario
	Slowpoke Saskatchewan	Saskatoon, Saskatchewan
Chile	RECH-1	Santiago
	RECH-2	Santiago
Colombia	Ian-R1 R. Reactor	Bogotá
Czech Republic	LR-0	Řež
	LVR-15	Řež
	VR-1	Prague
Democratic Republic of the Congo	TRIGA II Reactor	Kinshasa
Denmark	Danish Decommissioning-DR3	Roskilde
Egypt	ET RR-1	Inshas
	ET RR-2	Inshas
Estonia	A.L.A.R.A.	Paldiski
Finland	FiR 1	Espoo
Georgia	Decom. IRT-M	Tbilisi
Germany	AKR-2	Dresden
	BER-II	Berlin
	FH-Furtwangen	Furtwangen
	FRM	Garching
	FRM II	Garching
	Helmholtz-Zentrum Geesthacht	Geesthacht
	KFA-FRJ2	Juelich
	Labor-ST	Zittau
	SUR-100 FHU	Ulm



State <sup>a</sup>	Name of facility	Location
	SUR-100 Hannover	Hannover
	SUR-100 Stuttgart	Stuttgart
	SUR100-RWTH	Aachen
	TRIGA Mainz	Mainz
Ghana	GHARR-1 Ghana Research React. 1	Legon-Accra
Greece	GRR-1	Attikis
Hungary	Budapest Research Reactor	Budapest
	Training Reactor	Budapest
Indonesia	ChTkn <i>CANST</i>	Bandung
	PPNY <i>PSTA</i>	Yogyakarta
	RSG-GAS	Serpong
Iran, Islamic Republic of	Esfahan MNSR	Esfahan
	FARS Research Reactor FRR	Shiraz
	HWZPR	Esfahan
	KHRR	Arak
	LWCR	Tehran
	Tehran Research Reactor (TRR)	Tehran
Israel	Israel Res. Reactor (IRR1)	Soreq
Italy	AGN-201	Palermo
	CEC-Complexe-Essor	Ispra
	CISAM-RTS-1	San Piero a Grado
	Lena	Pavia
	TAPIRO- Casaccia	Santa Maria di Galeria
	TRIGA RC1 Mark II	Santa Maria di Galeria
Jamaica	CNS	Kingston
Japan	DCA	Oarai-Machi, Ibaraki-Ken
	FCA	Tokai-Mura, Ibaraki-Ken
	HTR	Kawasaki-Shi, Kanagawa-Ken
	HTTR	Higashi, Ibaraki-Ken
	JMTR	Higashi, Ibaraki-Ken
	JMTRC	Higashi-Gun, Ibaraki-Ken
	JRR-2	Tokai-Mura, Ibaraki-Ken
	JRR-3	Tokai-Mura, Ibaraki-Ken
	JRR-4	Tokai-Mura, Ibaraki-Ken
	KINKI	Higashiosaka-Shi, Osaka-Fu

State <sup>a</sup>	Name of facility	Location
	KUCA	Osaka
	KUR	Sennan-Gun, Osaka
	Musashi Reactor	Kawasaki-Shi, Kanagawa-Ken
	NCA	Kawasaki-Shi, Kanagawa-Ken
	NSRR	Tokai-Mura, Ibaraki-Ken
	Rikkyo	Nagasaka, Kanagawa-Ken
	TCA	Tokai-Mura, Ibaraki-Ken
	TODAI	Tokai-Mura, Ibaraki-Ken
	TTR	Kawasaki-Shi, Kanagawa-Ken
Jordan	JRTR	Jordan Univ. Science & Tech.
Kazakhstan	IGR Reactor	Kurchatov
	IVG.1M Reactor	Kurchatov
	RA Reactor	Kurchatov
	WWR-K	Almaty
Korea, Republic of	Gijang Research Reactor <i>KJRR</i>	Gijang, Busan Metropol. City
	Hanaro	Taejeon
	Kyung Hee	Suwoon
Latvia	IRT	Salaspils
Libya	IRT-Tajura	Tajura
Malaysia	Puspati	Bangi, Selangor
Mexico	TRIGA Mark III	Ocoyoacac
Morocco	MA-R1	Rabat, Agdal
Netherlands	HFR-Petten	Petten
	IRI HOR	Delft
Nigeria	NIRR-1	Ahmadu Bello University, Zaria
Norway	HBWR	Halden
	JEEP-II	Kjeller
Pakistan	PARR-1	Rawalpindi
	PARR-2	Rawalpindi
Peru	CNIP RP-10 R. Reactor	Lima
	RP-0 R. Reactor	Lima
Philippines	PRR-1	Quezon City, Diliman
Poland	Anna & Agata	Otwock-Świerk
	Maria	Otwock-Świerk
Portugal	IST (CTN) RPI	Sacavem

State <sup>a</sup>	Name of facility	Location
Romania	IFIN-HH	Magurele
	TRIGA Research & MTR	Pitești-Mioveni
Serbia	RA-RB	Vinča
Slovenia	TRIGA II	Ljubljana
South Africa	Safari-I Research Reactor	Pelindaba
Sweden	Studsvik AB and AB Svafo	Studsvik
Switzerland	Crocus	Lausanne
	Proteus	Villigen
Syrian Arab Republic	MNSR	Damascus
Tajikistan	Argus Research Reactor	Dushanbe
Thailand	MNSR	Nakhon Ratchasima Province
	ONRC <i>SUT-RR</i>	Ongkharak
	TRR-1	Bangkok
Türkiye	Çekmece Nuc. Res. & Tr. Centre	Istanbul
	ITU-TRR-TRIGA Mark II	Istanbul
Ukraine	IR-100 Research Reactor	Sevastopol
	WWR-M Research Reactor	Kyiv
Uzbekistan	WWR-SM Reactor	Ulugbek
Venezuela, Bolivarian Republic of	RV-1 Ivic R. Reactor	Altos de Pipe
Viet Nam	Da Lat Research Reactor	Da Lat, Lam Dong
<b>Conversion plants</b>		
Algeria	Pilot Uranium Conversion Plant	Draria Nuclear Research Center
Argentina	Experimental Dry Conversion	Pilcaniyeu
	UF <sub>6</sub> Conversion Plant	Pilcaniyeu
	UO <sub>2</sub> Conversion Plant	Cordoba
	Uranium Powder Production Fac.	Polo Cientifico, Tecnologico y Inn.
Brazil	USEXA	Iperó, São Paulo
Canada	Blind River	Blind River, Ontario
	Port Hope	Port Hope, Ontario
Chile	Lab. Experiment de Conversion	Santiago
Egypt	Uranium Products Semi-pilot Plant	Inshas
Iran, Islamic Republic of	EUPP	Esfahan
	UCF	Esfahan
Japan	JCO	Tokai-Mura, Ibaraki-Ken

State <sup>a</sup>	Name of facility	Location
	PCDF	Tokai-Mura, Ibaraki-Ken
Romania	National Uranium Company	Feldioara
South Africa	Conversion Plant (U Plant)	Pelindaba
	HEU/LEU Conversion Plant	Pelindaba
<b>Fuel fabrication plants</b>		
Algeria	UDEC	Draria Nuclear Research Center
Argentina	ECRI	Buenos Aires
	FECN	Ezeiza
	R. Reactor Fuel Fab. Plant	Ezeiza
Belgium	FBFC DNU Fab.	Dessel
Brazil	Fuel Fabrication Plant	Resende
Canada	Cameco, Port Hope	Port Hope, Ontario
	Fuel Eng. Met. Che. Op.	Chalk River, Ontario
	Fuel Fabrication Facility	Chalk River, Ontario
	BWXT, Peterborough	Peterborough, Ontario
	BWXT, Toronto	Toronto, Ontario
Chile	United de Metalur, Fisica (UMF)	Santiago, Chile
Egypt	FMPP (Fuel Manuf. Pilot Plant)	Inshas
	R&D-NFL	Inshas
France	Melox de Marcoule	Chusclan
Germany	Advanced Nuclear Fuels	Lingen
India	NFC	Hyderabad
	NFC-NU	Hyderabad
	PFFF	Kota, Rjasthan
Indonesia	IEBE	Serpong
	IPEBRR	Serpong
Iran, Islamic Republic of	FMP	Esfahan
	FPFP	Esfahan
Japan	GNF-J	Yokosuka-Shi, Kanagawa-Ken
	J-MOX	Oaza Obuchi, Rokkasho-Mura
	MNF	Tokai-Mura, Ibaraki-Ken
	NFI Kumatori-1	Sennan-Gun, Osaka
	NFI Tokai-1	Tokai-Mura, Ibaraki-Ken
	NFI Tokai-2	Tokai-Mura, Ibaraki-Ken
	PPPF	Tokai-Mura, Ibaraki-Ken

State <sup>a</sup>	Name of facility	Location
	PPFF	Tokai-Mura, Ibaraki-Ken
Kazakhstan	Fuel Assembly Fabrication Plant	Ust-Kamenogorsk
	UMP	Ust-Kamenogorsk
Korea, Republic of	KNFFP	Taejeon
Mexico	Fuel Fabrication Pilot Plant	Salazar
Romania	SN NFP Subsidiary	Mioveni
South Africa	MTR Fuel Fabrication Plant	Pelindaba
	LEU Fuel Fabrication Plant	Pelindaba
Spain	ENUSA Fab. Juzbado	Juzbado
Sweden	Westinghouse Electric	Vaesteras/Finnslaetten
Türkiye	Nuclear Fuel Pilot Plant	Istanbul
<b>Reprocessing plants</b>		
Belgium	RECUMO	Mol
France	AREVA NC-UP2 & UP3	La Hague
Germany	KTE GmbH	Eggenstein-Leopoldshafen
Italy	So. G.I.N. SpA-Impianto EUREX	Saluggia
	So. G.I.N. SpA-Trisaia	Rotondella
Japan	CPF	Tokai-Mura, Ibaraki-Ken
	RETF	Tokai-Mura, Ibaraki-Ken
	RRF	Ibaraki-Ken
	RRP	Kamikita-Gun, Aomori-Ken
	SCF	Tokai-Mura, Ibaraki-Ken
	TRP	Tokai-Mura, Ibaraki-Ken
<b>Enrichment plants</b>		
Argentina	Lasie	Bariloche
	LESI	San Martin
	Pilcaniyeu Mock-up Laboratory	Pilcaniyeu
	Uranium Enrichment Pilot Plant	Pilcaniyeu
Brazil	CTMSP/Ladesi-Copesp	São Paulo
	CTMSP/LEI	Iperó
	CTMSP/USIDE	Iperó
	FCN-Enrichment Plant	Resende
	IAEV/AR/LAS	São Jose dos Campos
China	Shaanxi	Han Zhang, Shaanxi Province
France	Georges Besse II	Bollene

State <sup>a</sup>	Name of facility	Location
Germany	UTA 1 and UTA 2	Gronau
Iran, Islamic Republic of	FEP	Natanz
	FFEP	20 km North-East of Qom City
	PFEP	Natanz
Japan	CTF	Kitakami-Gun, Aomori-Ken
	NEP	Tomata-Gun, Okayama-Ken
	REP	Kamikita-Gun, Aomori-Ken
Netherlands	Urenco Nederland	Almelo
United Kingdom	Urenco Capenhurst E22, E23, A3	Capenhurst
<b>Separate storage facilities</b>		
Argentina	Cent. St. Irr. Sp. Fiss. M. (DCMFEI)	Centro Atomico Ezeiza
	Centr. Store Sp. Fiss. Mat. (DCMFE)	Buenos Aires
	DUE	Centro Atomico Ezeiza
	FACIRI	Ezeiza
	Nuclear Material Storage	Buenos Aires
	Storage Bunker	Centro Atomico Ezeiza
Armenia	SSFS	Metsamor
Australia	Bulk Storage Facility	Lucas Heights, Sutherland
Bangladesh	Rooppur NPP FFS	Ishwardi, Pabna District
Belarus	Belarus NPP FF storage	Ostrovets
	Sosny 2	Minsk
Belgium	Belgoprocess	Dessel
	Belgoprocess Dry Storage	Dessel
	Belgoprocess UF <sub>6</sub>	Dessel
	Doel Spent Fuel Storage Facility	Doel
	Elbel Doel Dry Storage	Beveren
	Tihange Dry Storage	Tihange
Brazil	Tihange Wet Storage	Tihange
	Angra Dry Storage	Angra dos Reis
	Planned Fuel Storage Facility	Ilha Da Madeira, Itaguaí
Bulgaria	DSFSF KNPP 2	Kozloduy
	SFSF Kozloduy 1	Kozloduy
Canada	ACEL Research <i>whiteshell labs</i>	Pinawa, Manitoba
	CRL Waste Storage Facility	Chalk River, Ontario
	DP Dry Storage	Tiverton, Ontario

State <sup>a</sup>	Name of facility	Location
	DWMF	Darlington, Ontario
	FPSF	Chalk River, Ontario
	Gentilly I	Gentilly, Quebec
	LTWMF	Port Hope, Ontario
	NMSF	Chalk River, Ontario
	PWMF	Pickering, Ontario
	Spent Fuel Canister Storage	Chalk River, Ontario
	Waste Storage Facility	Chalk River, Ontario
	WUFDSE	Tiverton, Ontario
Czech Republic	ISFS Dukovany	Dukovany
	ISFS Temelin	Temelin
	Radioactive Waste Rep. Richard	Litoměřice
	Vao, HLWS	Řež
Denmark	DD Storage	Roskilde
	DD Waste	Roskilde
Finland	Geological Repository	Olkiluoto
	TVO-KPA-Store	Olkiluoto
Germany	AVR-BL	Juelich
	BZA Ahaus	Ahaus
	Daher Nuclear Technologies GmbH	Hanau
	EWN Zwischenlager Nord GmbH	Lubmin
	HDB	Eggenstein - Leopoldshafen
	Kernmateriallager 87	Rosendorf
	KFK-FR-2	Eggenstein-Leopoldshafen
	PTB-Spaltstofflager	Lubmin
	SZK Kruemmel	Geesthacht
	SZL Biblis	Biblis
	SZL Brokdorf	Brokdorf
	SZL Brunsbuettel	Brunsbuettel
	SZL Emsland	Lingen (Ems)
	SZL Grafenrheinfeld	Grafenrheinfeld
	SZL Grohnde	Emmerthal
	SZL Gundremmingen	Gundremmingen
	SZL Isar	Essenbach
	SZL Neckarwestheim	Neckarwestheim

State <sup>a</sup>	Name of facility	Location
	SZL Philippsburg	Philippsburg
	SZL Unterweser	Stadland
	TBH (B) 87.2	Rosendorf
	TBL-G	Gorleben
	Uranoxid-Lager UAG	Gronau
Hungary	Central Isotope Storage	Budapest
	MVDS	Paks
India	PREFRE	Tarapur
	TAPS AFR	Tarapur
Indonesia	Ria-Nd ISFSF	Serpong
Iran, Islamic Republic of	KWS	Karaj
Iraq	Former Location C	Tuwaita
Italy	Centro Comune di Ricerca	Ispira
	Dep. Avogadro Elementi Irragg	Torino
	Essor Storage	Ispira
	Lab. Misura Nucleari Perla	Ispira
	Nucleco S.p.A.	Rome
Japan	Fuku-I-CSFS	Futaba-Gun, Fukushima-Ken
	Hamaoka (Storage-UC)	Omaezaki-Shi, Shizuoka-Ken
	JAERI Mutsu	Mutsu-Shi, Aomori-Ken
	KUFFS	Sennan-Gun, Osaka
	NFI Kumatori-2	Sennan-Gun, Osaka
	Ningyo R&D	Tomata-Gun, Okayama-Ken
	RFSC	Mutsu-Shi, Aomori-Ken
	VHTRC	Tokai-Mura, Ibaraki-Ken
Kazakhstan	Baikal-1 DSFS	Kurchatov
	BN-350 Temporary Storage	Aktau
	DU & PU Source Storage	Kurchatov
	IAEA LEU Storage Facility	Ust-Kamenogorsk
	Thorium Storage Facility	Kurchatov
	Ulba Thorium Storage	Ust-Kamenogorsk
Korea, Republic of	NMSF	Kaeri-Taejeon
	Uranium Residue Storage Fac.	Kaeri-Taejeon
	WLDC	Kyongju
Lithuania	IFFSF	Visaginas



State <sup>a</sup>	Name of facility	Location
	SNFS-1	Visaginas
	SNFS-2	Visaginas
Mexico	ISFSI	Estado de Veracruz
Netherlands	COVRA	Vlissingen
	HABOG	Vlissingen
Poland	ZUOP	Otwock-Świerk
Portugal	IST (CTN) Instalacao Piloto	Sacavem
Romania	CNE Cernavoda IDSFS	Cernavoda
Russian Federation	IUEC Storage Facility	Angarsk
Slovakia	JAVYS Nuclear Store	Jaslovske Bohunice
	JAVYS ISFS	Jaslovske Bohunice
	Bohunice Dry SNF Storage	Jaslovske Bohunice
Slovenia	Spent Fuel Dry Storage	Krško
South Africa	E-Building Storage Facility	Pelindaba
	HEU Storage Vault	Pelindaba
	Koeberg Castor Storage Fac.	Cape Town
	Thabana Pipe Store	Pelindaba
	Vaalputs	Springbok
	Waste Storage Facility	Pelindaba
	Y-Plant Storage Facility	Pelindaba
	Z-Plant Storage Facility	Pelindaba
Spain	Almaraz Dry Storage	Almaraz
	Asco Dry Storage	Asco
	ATC Centralized Storage	Madrid
	Cofrentes Dry Storage	Cofrentes
	Nuclenor, S.A. Storage	Santa Maria de Garona
	Trillo Dry Storage	Trillo
	Zorita Dry Storage	Almonacid de Zorita
Sweden	SFK	Oesthammar
	SKB Clab Store	Oskarshamn
Switzerland	Zwibez Kernkraftwerk Beznau	Doettingen
	Zwilag	Wuerenlingen Aargau
Türkiye	Akkuyu Fresh Fuel Storage	Büyükeceli
	Akkuyu Spent Fuel Storage	Büyükeceli
Ukraine	Chernobyl NPP-SFS	Chornobyl

State <sup>a</sup>	Name of facility	Location
	Chernobyl SNFSF-2	Chornobyl
	Khmelnitski FF Storage	Netishyn
	Rovno FF Storage	Varash
	South Ukraine FF Storage	Yuzhnoukrayinsk
	Ukraine Centralized Dry Store	Chornobyl
	Zaporozhe FF Storage	Enerhodar
	Zaporozhe SFS	Enerhodar
United Kingdom	SNM Store 9	Sellafield
	Thorp Product Store	Sellafield
United States of America	KAMS Storage	Savannah River Site
Uzbekistan	Fresh Fuel Storage	tbd
<b>Other facilities</b>		
Argentina	Alpha Laboratory	Buenos Aires
	PPRF	Centro Atomico Ezeiza
	Lapep	Centro Atomico Ezeiza
	Tripple Altura Laboratory (LTA)	Centro Atomico Ezeiza
	Enriched Uranium Recovery Lab (LUE)	Centro Atomico Ezeiza
	Uranium Power Fab. Plant (PFPU)	Buenos Aires
	PPCA	Buenos Aires
Australia	R&D Labs	Lucas Heights, Sutherland
	SYNROC	Lucas Heights, Sutherland
Belgium	Belgoprocess Waste Treatment	Mol
	I.R.E.	Fleurus
	IRMM. Geel	Geel
	SCK•CEN Lab.	Mol
	SCK•CEN Pu Laboratories	Mol
Brazil	Aramar Store	Iperó
	CTMSP/Labmat	Iperó
	IPEN-Nuclear Fuel Centre	São Paulo
	IPEN-Reprocessing Project	São Paulo
	LADICON	São Paulo
Czech Republic	Lab. & Stores, Centr. Anal. Lab.	Řež
	UJP	Prague
Denmark	Danish Decommiss. - Hotcell	Roskilde

State <sup>a</sup>	Name of facility	Location
Egypt	Hydrometallurgy Unit	Inshas
	Molybdenum Production Unit	Inshas
	NCB	Inshas
Finland	Encapsulation Plant	Olkiluoto
Georgia	Sukhumi Institute	Sukhumi
Germany	Inst. Kernchemie	Mainz
	JRC-ITU	Eggenstein-Leopoldshafen
	Betriebsstätten der JEN	Juelich
	Lab. Juelich	Juelich
	PKA Gorleben	Gorleben
Indonesia	WAK-Heisse Zellen der HVT	Eggenstein-Leopoldshafen
	RMI	Serpong
	JHL	Tehran
Iran, Islamic Republic of	LWSCR	Esfahan
	MIX Separation Facility	Tehran
	Impianto Plutonio	Santa Maria di Galeria
Italy	JNC Tokai R&D	Tokai-Mura, Ibaraki-Ken
	FMF	Higashi, Ibaraki-Ken
	IRAF	Higashi-Gun, Ibaraki-Ken
	JAERI Oarai R&D	Higashi, Ibaraki-Ken
	JAERI Tokai	Tokai-Mura, Ibaraki-Ken
	JNC Oarai R&D	Higashi, Ibaraki-Ken
	Kumatori	Sennan-Gun, Osaka
	Mitsui Iwakuni-Ohtake	Kuga-Gun, Yamaguchi-Ken
	Mitsui Osaka	Takai-Shi, Osaka-Fu
	NDC Fuel Hot Lab	Tokai-Mura, Ibaraki-Ken
	NERL	Tokai-Mura, Ibaraki-Ken
	NFD	Higashi, Ibaraki-Ken
	Showa	Kawasaki-Shi, Kanagawa-Ken
	Sumitomo-Chiba	Sodegaura-Shi, Chiba-Ken
	UML	Higashi, Ibaraki-Ken
Korea, Republic of	ACPF	Taejeon
	DFDF	Taejeon
	HFFL	Taejeon
	IMEF	Taejeon

State <sup>a</sup>	Name of facility	Location
	KAERI R&D Facility	Taejeon
	PIEF	Taejeon
	PRIDE	Kaeri Site, Taejeon
Netherlands	GCO/ECN Lab.	Petten
Norway	Research Laboratories	Kjeller
South Africa	Decontam. and Waste Recovery Pl.	Pelindaba
	Hot Cell Complex	Pelindaba
	Nu and Du Metals Plant	Pelindaba
Spain	C.A. El Cabril	El Cabril
Switzerland	AERA	Villigen
	CERN	Meyrin-Geneva
	Hot Labor	Villigen
Ukraine	Chernobyl Conditioning	Chornobyl
	Chernobyl Unit 4 Shelter	Chornobyl
	Izotop Enterprise	Kyiv
	KHFTI	Kharkiv
	KHFTI	Kharkiv
	Sevastopol Subcritical Assembly	Sevastopol

<sup>a</sup> An entry in this column does not imply the expression of any opinion whatsoever on the part of the Agency concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers.

- Note:**
1. The Agency was also applying safeguards at 15 facilities in Taiwan, China.
  2. Additionally under Agency safeguards there were 631 material balance areas outside facilities in 159 States and in Taiwan, China. These include 79 material balance areas established for States with a small quantities protocol based on the revised standard text.
  3. The list includes projected and operational facilities and facilities at the decommissioning stage.

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