

International Atomic Energy Agency Scientific Forum

RADIOACTIVE WASTE: MEETING THE CHALLENGE

Science and Technology for
Safe and Sustainable Solutions

23–24 September 2014, Vienna, Austria

Boardroom D, C Building, 4th Floor



IAEA

International Atomic Energy Agency

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Foreword

Radioactive waste – the science and technology behind its safe and sustainable management

Nuclear technology provides enormous benefits in many areas, including human health, agriculture and electricity generation. Management of the radioactive waste generated from activities in these and other areas is often seen as a problem. In fact, storage technologies have a long and successful performance record and disposal technologies are also available.

Sound science and technology are prerequisites for safe and sustainable waste management. The technology continues to develop, including in areas such as the geological disposal of high level waste and spent nuclear fuel. Appropriate legal, governmental and regulatory frameworks need to be in place.

But it is also essential that the public are kept fully informed. It is no coincidence that the countries with the lowest levels of public anxiety about the safety of nuclear technology are those which demonstrate the highest degree of openness and transparency.

I decided to devote the 2014 IAEA Scientific Forum to technologies for the management of radioactive waste because I wanted to provide a platform for experts from all over the world to consider the challenges and solutions and to explain the technology to a wider public audience.

It is up to each country using nuclear technology to ensure the safe management and disposal of waste. But countries can benefit greatly from each other's experiences. Providing a forum for exchanges of experience and best practice is one of the key roles of the IAEA.

The IAEA has, from the beginning, been actively involved in helping Member States to safely manage and monitor radioactive waste with a view to protecting people and the environment from the harmful effects of ionizing radiation. We develop safety standards and guidance. We publish technical reports. And we organize training courses, workshops and technical meetings to assist with safe and sustainable implementation of national radioactive waste management programmes.

The Scientific Forum, entitled *Radioactive Waste: Meeting the Challenge*, will take stock of technological developments related to the management of all types of radioactive waste. Both existing solutions and emerging technologies will be considered. Renowned experts from Member States will share their experience and expertise for the benefit of all.



Yukiya Amano
IAEA Director General

The Scientific Forum will be moderated by **Melinda Crane**, who is chief political correspondent at Deutsche Welle TV, and an expert in a range of topics from climate and energy to finance, migration and new media. She has a PhD from the Fletcher School of Law and Diplomacy.

Tuesday, 23 September 2014

10.00–12.15 Getting started

Session 1 will briefly describe the peaceful use of nuclear technologies, the radioactive waste that is generated and the organization of such wastes according to different classes. It will emphasize that managing such waste requires an integrated approach from generation to disposal, as well as appropriate funding. Safety, security and safeguards aspects must be considered during this journey.

Opening Statement by Mr Yukiya Amano, IAEA Director General

IAEA film: Radioactive Waste: The Journey to Disposal

Mr Djarot Wisnubroto, Chairman, National Nuclear Energy Agency of Indonesia (BATAN), Indonesia

Mr Gerald Ouzounian, International Director, ANDRA, France

Ms Allison M. Macfarlane, Chairman, United States Nuclear Regulatory Commission (U.S. NRC), United States

Mr William D. Magwood, Director General, OECD Nuclear Energy Agency (NEA), France

Mr Raoul Awad, Director General, Directorate of Security and Safeguards, Canadian Nuclear Safety Commission (CNSC), Canada

12.15–14.00 Lunch break

14.00–15.30 Along the journey (part 1)

Session 2 will highlight the steps required to manage radioactive waste before its disposal. The focus will be on technologies and applications used to characterize and treat waste, and conditioning processes used to convert it into a form suitable for storage, transport and, ultimately, disposal.

Mr Zhentao Zhang, Director and Researcher, Division of Research on Radioactive Waste Treatment and Disposal, China Institute of Atomic Energy (CIAE), China

Mr Jan Deckers, Business Development and Project Manager, Belgoprocess, Belgium

Mr Hiroshi Rindo, Adviser, Japan Atomic Energy Agency (JAEA), Japan

Ms Daniela Elena Alvarez, Head of Department, Nuclear Regulatory Authority (ARN), Argentina

15.30–16.00 Break

16.00–17.30 Along the journey (part 2)

The session will describe available storage options and technologies, and will discuss the safety aspects related to the pre-disposal management of radioactive waste.

Mr James McKinney, Head of Integrated Waste Management, Nuclear Decommissioning Authority (NDA), United Kingdom

Mr Ewoud Verhoef, Deputy Director, Centrale Organisatie Voor Radioactief Afval (COVRA), Netherlands

Mr Evgeny Kudryavtsev, Head of the Department of Safety Regulation of Nuclear Fuel Cycle Facilities, Nuclear Propulsion Installations and Radiation Hazardous Facilities, Rostekhnadzor, Russian Federation

Mr Carl-Magnus Larsson, Chief Executive Officer, Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), Australia

17.30–20.00 Reception (C02)

Wednesday, 24 September 2014

09.00–10.30 Destination (part 1)

Session 3 will illustrate disposal solutions for radioactive waste that must remain under regulatory control. Concepts for disposal being implemented or developed around the world will be outlined and the safety of disposal will be addressed.

Mr Alvaro Rodriguez Beceiro, Director of Technical Division, Empresa Nacional De Residuos Radioactivos, S.A. (ENRESA), Spain

Mr Bálint Nős, Director of Strategy and Technology, Public Limited Company for Radioactive Waste Management (PURAM), Hungary

Mr Chul-Hyung Kang, Executive Vice President, Korea Radioactive Waste Agency (KORAD), Republic of Korea

Mr Juhani Vira, Corporate Adviser, Posiva Oy, Finland

10.30–11.00 Break

11.00–12.30 Destination (part 2)

In particular, some of the scientific and technological developments that provide confidence in the feasibility and safety of deep geological disposal of high level radioactive waste and spent nuclear fuel will be described.

Mr Magnus Westerlind, Director Technology, Swedish Nuclear Fuel and Waste Management Co. (SKB), Sweden

Mr Yoichi Miyamoto, Director, Geological Disposal Research and Development Department, Japan Atomic Energy Agency (JAEA), Japan

Mr Thilo von Berlepsch, Head of International Cooperation Department, DBE Technology GmbH, Germany

12.30–14.00 Lunch break

14.00–15.30 The path ahead

Session 4 will focus on how evolving nuclear technologies, such as better use of nuclear fuel, innovative fuels, and advanced reactors and fuel cycles, could affect future waste management.

Mr Piaray Kishan Wattal, Director of Nuclear Recycle Group, Bhabha Atomic Research Centre (BARC), India

Mr Vyacheslav Pershukov, Deputy Director General, ROSATOM, Russian Federation

Mr Christophe Behar, Director of Nuclear Energy Division, Commissariat Energie Atomique (CEA), France

Mr James C. Marra, Advisory Engineer, Savannah River National Laboratory (SRNL), United States

Public perceptions of science, technology and risk and their influence on managing waste will also be addressed.

Mr Kjell Andersson, Managing Director, Karita Research, Sweden

15.30–16.00 Closing session

Mr Yukiya Amano, IAEA Director General

Mr David G. Huizenga, President of the 5th Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, Department of Energy, United States

Mr Massimo Garribba, Director for Nuclear Safety and Fuel Cycle of Directorate General G for Energy of the European Commission (EC), Luxembourg

16.00 Closing



Getting started

Mr Yukiya Amano

IAEA Director General



Yukiya Amano is Director General of the International Atomic Energy Agency.

Mr Amano served as Chair of the Agency's Board of Governors from September 2005 to September 2006. He was Japan's Resident Representative to the Agency from 2005 until his election as Director General in July 2009. He assumed his duties as IAEA Director General on 1 December 2009. In March 2013, the IAEA Board of Governors appointed him to a second four-year term. He has extensive experience in disarmament and non-proliferation diplomacy, as well as nuclear energy issues.

At the Japanese Foreign Ministry, Mr Amano was Director General for the Disarmament, Non-proliferation and Science Department from 2002 until 2005. He previously served as a governmental expert on the U.N. Panel on Missiles and on the U.N. Expert Group on Disarmament and Non-proliferation Education. Mr Amano contributed to the 1995, 2000 and 2005 Nuclear Non-proliferation Treaty Review Conferences, and he chaired the 2007 Preparatory Committee for the 2010 Nuclear Non-proliferation Treaty Review Conference.

A graduate of the Tokyo University Faculty of Law, Mr Amano joined the Japanese Foreign Ministry in April 1972, when he began a series of international postings in Belgium, France, Laos, Switzerland, and the United States.

Mr Djarot Wisnubroto

Chairman, National Nuclear Energy Agency of Indonesia (BATAN), Indonesia



Djarot Wisnubroto is Chairman of BATAN, Indonesia's governmental research and development agency for nuclear technology. He was principle researcher on radioactive waste management, and managed the Centre for Radioactive Waste Management (CRWM) for BATAN from 2006 to 2010. BATAN and its chairman advise the government of Indonesia on policy and strategy related to nuclear technology. BATAN's work includes the promotion of public acceptance for nuclear technologies, the provision of services for irradiation, and radioactive waste management. CRWM-BATAN treats waste and spent fuel and is also the national focal point for the management of spent and disused sources.

Mr Gerald Ouzounian

International Director, National Agency for Radioactive Waste Management (ANDRA), France



Gerald Ouzounian has been the International Director of ANDRA, France's public agency responsible for the management of radioactive waste, since 2006. He spent 16 years in ANDRA's department of science as deputy director coordinating research programmes for geological disposal, partitioning and transmutation, and long-term storage of high-level activity waste. Before joining ANDRA in 1989, he spent 15 years in the geothermal power sector. He is a member of the NEA/Radioactive Waste Management Committee (WMC) bureau and of the Waste Technology Committee (WATEC) of the IAEA and has served on several scientific boards and was involved in many French research programmes. He received a PhD in 1978 from Paris University.

Ms Allison M. Macfarlane

Chairman, United States Nuclear Regulatory Commission (NRC), United States



Allison M. Macfarlane, Chairman of the U.S. Nuclear Regulatory Commission (NRC) since July 2012, is an expert on nuclear waste issues. She served on the Blue Ribbon Commission on America's Nuclear Future, created by President Obama's Administration to make recommendations about a national strategy for dealing with the nation's high-level nuclear waste from 2010 to 2012. Her research has focused on environmental policy and international security issues associated with nuclear energy, especially the back-end of the nuclear fuel cycle. In 2006, she co-edited the book *Uncertainty Underground: Yucca Mountain and the Nation's High-Level Nuclear Waste*, which explored technical issues at the proposed waste disposal facility at Yucca Mountain, Nevada. Ms Macfarlane holds a PhD in geology from the Massachusetts Institute of Technology. Prior to beginning her term as the NRC's 15th chairman, she was an associate professor of environmental science and policy at George Mason University in Fairfax, Virginia.

Mr William D. Magwood, IV

Director General, OECD Nuclear Energy Agency (NEA), France



William D. Magwood is Director General of the OECD Nuclear Energy Agency (NEA), a position he was appointed to in September 2014. From 2010 to 2014 he was one of five Commissioners to the U.S. Nuclear Regulatory Commission (NRC). From 2004 to 2010 he provided independent strategic and policy advice on energy, environmental and technology policy issues. During his 1998-2005 tenure as Director of Nuclear Energy at the U.S. Department of Energy (DOE), he launched several important initiatives including the Generation IV International Forum (GIF). He began his career working as a scientist for Westinghouse and managing electric utility research and nuclear policy programmes at the Edison Electric Institute in Washington, DC. Mr Magwood holds a Master of Fine Arts from the University of Pittsburgh.

Mr Raoul Awad

Director General, Directorate of Security and Safeguards, Canadian Nuclear Safety Commission (CNSC), Canada



Raoul Awad is Director General of the Security and Safeguards Directorate at the Canadian Nuclear Safety Commission (CNSC), responsible for programmes to ensure adequate security measures for the protection of nuclear facilities and nuclear material in Canada. He also ensures Canada's conformity with its international obligations and commitments to nuclear non-proliferation, such as the Treaty on the Non-proliferation of Nuclear Weapons (NPT). In addition, Mr Awad is responsible for the CNSC's Nuclear Emergency Management Programme. He is a former Director of the Operation and Engineering Assessment Division at the CNSC with responsibility for regulatory leadership and expertise on mechanical, civil and material engineering. Mr Awad has a degree in Mechanical Engineering and a Master of Business Administration from the Université du Québec à Montréal (UQAM).

Along the journey (part 1)

Mr Zhen tao Zhang

China Institute of Atomic Energy (CIAE), China



Zhen tao Zhang is Director of the Division of Research on Radioactive Waste Treatment and Disposal in the Department of Radiochemistry at the China Institute of Atomic Energy (CIAE). He is engaged in a variety of research activities including the immobilization of high level salts and sludges in ceramics, the long-term disposal behaviour of high level glass in geological media and purification of low level liquid wastes. Mr Zhang obtained a PhD degree in physical chemistry from the Université de Haute Alsace.

Mr Jan Deckers

Belgoprocess, Belgium



Jan Deckers is a business development and project manager for international waste treatment of radioactive waste. He has more than 30 years experience working in the field of radioactive waste treatment, including its minimisation, and providing waste management technologies for nuclear power plants and other nuclear facilities in various countries. He has developed and implemented large-scale turn-key projects such as the development of decontamination plants and radioactive waste treatment facilities for several nuclear power plants in Europe. Mr Deckers started his career at Euratom and subsequently worked for a general contracting company, before moving to Belgoprocess.

Mr Hiroshi Rindo

Japan Atomic Energy Agency (JAEA), Japan



Hiroshi Rindo is an adviser at the Japan Atomic Energy Agency (JAEA) and a senior research fellow at the Institute of Applied Energy (IAE) in Japan. He has 16 years experience in the field of radioactive waste management and decommissioning including research and development activities at the JAEA. He joined the Power Reactor and Nuclear Fuel Development Corporation (PNC) in 1978 and from 1998 to 1999 served as Deputy Director of Research for the Association of Nuclear Decommissioning (RANDEC). He was Director General of the Nuclear Cycle Backend Directorate at the JAEA from 2008 to 2012.

Ms Daniela Elena Alvarez

Nuclear Regulatory Authority (ARN), Argentina



Daniela Elena Alvarez is head of the department in Argentina's Nuclear Regulatory Authority overseeing the evaluation of radioactive discharges from nuclear power plants and research reactors. She assesses radioactive waste management in nuclear power plants and research reactors, the storage or disposal of radioactive waste and spent fuel, and studies on licensing of new radioactive waste facilities. Ms Alvarez is a member of the working group on the evaluation of the radiological assessment related to radioactive waste management in the life extension project of the Embalse Nuclear Power Plant.

Along the journey (part 2)

Mr James McKinney

Nuclear Decommissioning Authority (NDA), United Kingdom



James McKinney is Head of Integrated Waste Management for the Nuclear Decommissioning Authority (NDA), the body responsible for the clean up of the UK's civil nuclear legacy. His key areas of concern are: radioactive waste storage and disposal; treatment and packaging and graphite management and wastes from decommissioning. After completing his PhD in boron coordination chemistry in the mid-1990s, Mr McKinney worked for British Nuclear Fuels Limited (BNFL) and was involved in a wide range of waste treatment projects. He is a Fellow of the Royal Society of Chemistry.

Mr Ewoud Verhoef

Centrale Organisatie Voor Radioactief Afval (COVRA), Netherlands



Ewoud Verhoef is Deputy Director of the Centrale Organisatie Voor Radioactief Afval (COVRA), the body responsible for managing radioactive waste in the Netherlands. COVRA collects, treats and stores all radioactive waste in the Netherlands for at least 100 years. Mr Verhoef is one of the leaders of the Netherlands national programme on geological disposal and is the Acting Chair of the European Repository Development Organisation working group on multinational solutions for waste management in Europe. He studied chemical technology at the Delft University of Technology, where he also obtained his PhD.

Mr Evgeny Kudryavtsev

Rostekhnadzor, Russian Federation



Evgeny Kudryavtsev is Head of the Department of Safety Regulation of Nuclear Fuel Cycle Facilities, Nuclear Propulsion Installations and Radiation Hazardous Facilities at Rostekhnadzor, the Federal Service for Environmental, Industrial and Nuclear Supervision Service. From 1981 he worked for Minatom and the ROSATOM State Corporation, coordinating back-end activities of the nuclear fuel cycle, including spent fuel and radioactive waste management and decommissioning. In 2012 he joined the Russian regulatory body, Rostekhnadzor. He graduated from the Moscow Chemical Technological University in 1976 and obtained a PhD in chemistry in 1980.

Mr Carl-Magnus Larsson

Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), Australia



Carl-Magnus Larsson is Chief Executive Officer of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and Chair of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR). He has also been a member of the OECD-NEA Radioactive Waste Management Committee (RWMC) and Chair of the RWMC-Regulators' Forum. He serves on the International Commission on Radiological Protection (ICRP) and is a member of the IAEA Commission on Safety Standards. He completed his PhD in Botany at Stockholm University.

Destination (part 1)

Mr Alvaro Rodriguez Beceiro

Empresa Nacional De Residuos Radioactivos, S.A. (ENRESA), Spain



Alvaro Rodriguez Beceiro is Director of the Technical Division of Empresa Nacional De Residuos Radioactivos, S.A. (ENRESA), Spain's radioactive waste management corporation. He joined ENRESA in 1987 and has served as head of the international relations department and Director for Engineering. He is responsible for project design, licensing, construction and installations operation as well as for international cooperation, safety, licensing and quality assurance. He has been a member of the Committee for the Plan of Action on Radioactive Waste Management of the European Commission (EC).

Mr Bálint Nős

Public Limited Company for Radioactive Waste Management (PURAM), Hungary



Bálint Nős is Director of Strategy and Technology for the Hungarian radioactive waste management organization PURAM and is responsible for developing technological solutions and long-term strategies. In addition to working on scientific issues, he participates in local public forums concerning radioactive waste management and regularly gives public lectures. He holds a Master of Science in nuclear physics from the Budapest University of Technology and Economics.

Mr Chul-Hyung Kang

Korea Radioactive Waste Agency (KORAD), Republic of Korea



Chul-Hyang Kang has been Executive Vice President of KORAD since 2013. He started his career as a researcher in the Korean Agency for Defence Development in 1977. From 1989 to 2013, he was engaged in research and development as a principal researcher at the Korea Atomic Energy Research Institute. Mr Kang studied nuclear engineering at Seoul National University and obtained a PhD from the University of California, Berkeley, USA.

Mr Juhani Vira

Posiva Oy, Finland



Juhani Vira is corporate adviser on the long-term safety of geological disposal of nuclear waste with Posiva Oy, the company established to develop a geological repository for the disposal of spent fuel from the Olkiluoto and Loviisa nuclear power plants in Finland. He has almost 40 years of experience in the research and development of various aspects of the nuclear fuel cycle. From 2001 to 2013 he was responsible for the research of long-term safety and site investigations for Posiva Oy. He has a Doctor of Science (Engineering) from the Helsinki University of Technology.

Destination (part 2)

Mr Magnus Westerlind

Swedish Nuclear Fuel and Waste Management Co. (SKB), Sweden



Magnus Westerlind is Director of the Swedish Nuclear Fuel and Waste Management Co. (SKB) Department of Technology. The department is responsible for the research, safety assessments and development of technologies for the geological disposal of radioactive waste. He spent more than 10 years with the Swedish Nuclear Safety and Radiation Protection Regulator before joining SKB. Mr Westerlind was the head of the IAEA's Waste and Environmental Safety Section from 2010 to 2013.

Mr Yoichi Miyamoto

Japan Atomic Energy Agency (JAEA), Japan



Yoichi Miyamoto is Director of the Geological Disposal Research and Development Department of the Japan Atomic Energy Agency (JAEA). His work involves planning and managing research and development for geological disposal, including two underground research laboratory projects and neo-tectonics studies, for future planning purposes. From 2009 to 2011, he was Director General of the Horonobe Underground Research Center.

Mr Thilo von Berlepsch

DBE Technology GmbH, Germany



Thilo von Berlepsch is head of the International Cooperation Department of DBE Technology, Germany, providing support for the design, operation and closure of radioactive waste repositories. He also represents DBE Technology in several international working groups. Mr von Berlepsch has worked in the field of international regulation supporting several international new build projects, including in the UK.



The path ahead

Mr Piaray Kishan Wattal

Bhabha Atomic Research Centre (BARC), India



Piaray Kishan Wattal leads the back-end fuel cycle programme, including reprocessing and waste management, as Distinguished Scientist and Director of the Nuclear Recycle Group at the Bhabha Atomic Research Centre (BARC) in India. He has more than 40 years experience in the field of radioactive waste management. Mr Wattal is also engaged in international activities with ITER, the IAEA and the Indo-French Bilateral Programme on radioactive waste management.

Mr Vyacheslav Pershukov

ROSATOM, Russian Federation



Vyacheslav Pershukov is the Deputy Director General of ROSATOM State Corporation. He is in charge of Innovation Complex at ROSATOM and manages it as a Director since 2011. He is also researching the creation of new technologies, products and services for energy markets, as well as technology transfer for the new non-energy related markets. He is the Deputy Chairman of the ROSATOM Scientific and Technical Research Council Presidium. Mr Pershukov is also the author of many scientific articles and monographs and has lectured at the National Research Nuclear University MEPhI, Moscow. He received a Sc.D. in thermo-physics in 1995.

Mr Christophe Behar

Commissariat Energie Atomique (CEA), France



Christophe Behar is Director of the Nuclear Energy Division at the Commissariat Energie Atomique (CEA). The division includes large scale facilities in Saclay, Marcoule and Cadarache in France. Its research and development supports the French nuclear industry and prepares for Generation IV nuclear power reactors and the associated fuel cycle. Mr Behar's division is also responsible for decommissioning CEA facilities. He is a lecturer at the Ecole Centrale de Paris in France and special adviser for the new Nuclear Damage Liability Facilitation Fund (NDF) in Japan.

Mr James C. Marra

Savannah River National Laboratory (SRNL), United States



James (Jim) Marra is an advisory engineer in the Materials Science and Technology Directorate of the Savannah River National Laboratory in Aiken, SC. with more than 25 years working experience, particularly in the area of radioactive waste treatment. He has been a consultant for on site clean up following the Fukushima Daiichi Nuclear Power Plant accident. He has a PhD from Clemson University and has received five patents primarily in the areas of nuclear waste treatment and immobilization.

Mr Kjell Andersson

Karita Research, Sweden



Kjell Andersson is Managing Director of Karita Research, developing and implementing models for awareness, transparency and public participation in areas such as nuclear waste management, energy production and biotechnology. He developed the RISCOM model that improves the quality of decision-making through transparency and public participation. It has been used in Sweden and is a core element in a series of European Union (EU) research projects. He is the author of Transparency and Accountability in Science and Politics.

Closing session

Mr David G. Huizenga

President of the 5th Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management; Department of Energy, United States



David G. Huizenga is Principal Assistant Deputy Administrator for Defense Nuclear Nonproliferation within the U.S. Department of Energy's National Nuclear Security Administration. He recently returned to this position after serving three years as Acting Assistant Secretary for Environmental Management at the Department of Energy. He is an expert in non-proliferation and nuclear waste management issues with more than 25 years experience in various programmes in the U.S. Department of Energy. Mr Huizenga was the U.S. Senior Technical Adviser on the IAEA's Radioactive Waste Advisory Committee for four years, and led technical negotiations for the United States during the drafting of the Joint Convention. In May 2014, Contracting Parties of the Joint Convention elected him as President of the Fifth Review Meeting of the Parties in 2015.

Mr Massimo Garribba

Director for Nuclear Safety and Fuel Cycle of Directorate General G for Energy of the European Commission (EC), Luxembourg



Massimo Garribba is Director of the European Commission (EC) Directorate for Nuclear Safety and Fuel Cycle of the Directorate General for Energy, an appointment he took up in January 2014. From 2004 he was Head of Unit for Euratom Coordination and International Relations at the EC's Directorate General G for Energy where he was responsible for the "stress tests" dossier following the Fukushima Daiichi accident and for the Euratom nuclear safety directive and its implementation. From 1995 to 2004, he worked as an Assistant to the Director at the EC's DG Information Society, in charge of strategy and political programming. Mr Garribba obtained a PhD from Padova University, Italy.



The objective of radioactive waste management is to protect people and the environment. The IAEA promotes the safe and secure management of radioactive waste.



International Atomic Energy Agency Scientific Forum

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Science and Technology for Safe and Sustainable Solutions

environment from the harmful effects of radiation, now and in the future.
generated by the use of nuclear technology, including nuclear power.





IAEA

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