

# Summary of the NEA Workshop on Competency Management of Regulators (COMAREG)





# Table of contents

<b>Summary of the NEA Workshop on Competency Management of Regulators (COMAREG)</b> .....	2
Background .....	2
Objectives .....	2
Preparation .....	3
Format .....	3
<b>Summary of the workshop sessions</b> .....	4
Session 1. “Challenges, concepts and implementation of regulatory competency management” .....	4
Session 2. “Ways of developing and implementing regulatory competency” .....	9
Session 3. “Summarising of collected inputs. Conclusions. Recommendations to the NEA” .....	11
<b>Conclusions</b> .....	12
<b>List of participating member countries and organisations</b> .....	13
<b>List of abbreviations and acronyms</b> .....	14

# Summary of the NEA Workshop on Competency Management of Regulators (COMAREG)

## Background

---

With the number of nuclear graduates declining and the workforce ageing, it is foreseen that one of the most pressing challenges for effective nuclear regulation in the near future will be maintaining regulatory competency. The Nuclear Energy Agency (NEA) Regulators' Forum (RF) formally addressed this issue for the first time during its 19<sup>th</sup> plenary meeting in the form of a topical session on "Challenges to the regulator in maintaining competency in radioactive waste management programmes". The participants noted the following key factors impacting the maintenance of competencies and skills development: funding of the educational process; the absence of safety aspects of waste management and decommissioning in educational programmes; and varying interpretations of competency maintenance in different countries.

It is necessary to ensure that regulatory bodies have the appropriate skills and preparedness in the coming decades to tackle tasks and challenges in competency management.

With this in mind, the NEA convened the Workshop on Competency Management of Regulators to facilitate broad discussions on the challenge of maintaining regulators' competency in the areas of radioactive waste management, decommissioning and legacy management. The workshop was envisioned by the NEA RF following the results of the "Survey on Gaining and Maintaining Competencies for the Regulator", issued on 4 January 2019 by the NEA. The future challenges highlighted in this survey were the basis on which the workshop was built.

## Objectives

---

The objectives of the workshop were:

- To discuss the core concepts of competency management and its implementation, both from a national and international standpoint, regarding the safety of radioactive waste management and decommissioning activities.
- To move forward considerations for effective bilateral and multilateral exchanges on regulators' competency building. Such aspects were considered for both the regulatory organisation and its employees.
- To identify the needs of member countries in support of the development of national frameworks for regulator competency management and to discuss the possible initiatives within the NEA RF.
- To collect input from participants to produce peer-reviewed, authoritative documents dealing with best practices in the regulatory environment, and to provide suggestions and recommendations to member countries on the management of regulators' competency.

## Preparation

---

To develop the workshop programme, a Programme Committee was established consisting of the following experts: Felix Altorfer (Swiss Federal Nuclear Safety Inspectorate, Switzerland – the RF Co-chair), Walter Blommaert (Federal Agency for Nuclear Control, Belgium, former RF Chair), Mario Dionisi (National Inspectorate for Nuclear Safety and Radiation Protection, Italy, the RF Co-chair), Luca Abele Piciaccia (Norwegian Radiation Protection Authority, Norway), Juliet Long (Environment Agency, United Kingdom), and Julie Murray (Australian Radiation Protection and Nuclear Safety Agency, Australia). The Programme Committee held several meetings to discuss the workshop concept, topics for discussion, the preliminary questions for the breakout session, and the organisation of sessions for the workshop. During the workshop, the Programme Committee members led the sessions and breakout sessions, compiled session outcomes for presentation at the end of the workshop and prepared relevant presentations. Following the workshop, the committee reviewed the findings of the workshop and developed an outcome document. The workshop gathered 50 participants from 22 countries and various international organisations. A detailed list of participants is presented on page 11 of this document.

## Format

---

The Workshop on Competency Management of Regulators (COMAREG) had originally been planned for 2020 but it was delayed due to COVID-19. It finally took place on 18-20 May 2021 as a virtual video conference that was divided into three sessions.

The first session, titled “Challenges, concepts and implementation of regulatory competency management”, dealt with the status and experience of international organisations, national regulators and the challenges and gaps in the development and management of regulators’ competency in the nuclear back-end.

In the second session, “Ways of developing and implementing regulatory competency (examples, best practices)”, participants of the breakout sessions discussed the challenges identified through the experiences of their regulatory bodies.

The breakout session consisted of two parts: “Challenges in competency management” and “Initiatives, concepts and solutions, with suggestions to the NEA activities in competency management”. The workshop participants were divided into groups with leaders in each group to facilitate the discussion. The Programme Committee and NEA Secretariat had sent a preparatory survey on the topics to participants at the beginning of the first day of the workshop to collect views on the challenges in competency management that member countries were facing.

The survey result was compiled into a “word map”, illustrating the top concerns in competency management. This was used as the basis for the first part of the breakout discussion. The outcome of this first part of the discussion was also compiled into a table showing the priority topics identified and subsequently used as the basis for the second part of the discussion.

The third session, “Summary of collected inputs, conclusions, recommendations to the NEA”, discussed the inputs collected in the previous sessions and formulated the main conclusions.

# Summary

## of the workshop sessions

### Session 1. “Challenges, concepts and implementation of regulatory competency management”

---

*Chair: Mario Dionisi*

Workshop participants discussed how to maintain and develop regulators’ competency. Best practices and the experiences of member countries and organisations were presented, followed by a discussion on gaps and possible solutions. Below is a summary of each presentation in the session.

#### *Global context (Walter Blommaert)*

Walter Blommaert, the former Chair of the Regulators’ Forum (RF), gave a presentation on the challenges for regulators in managing competencies. He introduced the RF and its activities, and then explained the communication issues related to maintaining competency. He defined competency as the combination of observable and measurable knowledge, skills, abilities and personal attributes that contribute to enhanced employee performance and organisational success. He noted that regulators should have a proactive attitude towards learning and competency building related to legal and technical aspects as well as personal skills. Some common means of enhancing competency might include on-the-job training for newcomers, gap analysis within an organisation, external technical support, and competency exchange before the licensing stage. Publications of the NEA, the European Commission (EC) and the International Atomic Energy Agency (IAEA) on competency as well as NEA educational training activities within the Nuclear Education, Skills and Technology (NEST) and the Committee on Radiological Protection and Public Health (CRPPH) frameworks are examples of achievements and practices in international organisations. Mr Blommaert presented the background of this workshop and explained the key results of the RF survey on regulator competency that had been carried out ahead of the workshop. He gave an extensive overview of challenges regulators may be confronted with, highlighting how regulators anticipate or could anticipate such challenges to ensure safety in regulating radioactive waste management, decommissioning and legacy management. It was Mr Blommaert’s hope that this workshop be a step towards a better understanding of regulatory practices in competency management in radioactive waste management, decommissioning and legacy management activities.

#### *NEA activities (Vladimir Lebedev)*

Vladimir Lebedev, the Deputy Head of the NEA Radioactive Waste Management and Decommissioning Division (RWMD), presented the activities the NEA had carried out in the past decade that related to the management of regulators’ competency as well as the evolution of discussions at the NEA on this topic. He introduced the topics and challenges related to regulators’ competency that had been discussed and identified in the NEA Radioactive Waste Management Committee (RWMC), the RF and the NEA Committee on Nuclear Regulatory Activities (CNRA), such as the development of technical and regulatory skills and knowledge. The RF survey, mentioned in the previous presentation, was organised to evaluate how regulatory competencies are developed and maintained within the RF community and to better understand NEA member countries’ needs in competency management in radioactive waste management programmes. The survey identified changes in policies on competency management and an increased interest in knowledge management and in developing new expertise to address new responsibilities for back-end activities (e.g. long-term disposal). The RF discussed the survey results and decided to hold the RF Workshop on Competency Management of Regulators to collect inputs for decision making on competency management. Mr Lebedev also gave a brief introduction of the NEA NEST i-graphite project ([www.oecd-nea.org/jcms/pl\\_24330/nest-radioactive-waste-management-of-i-graphite](http://www.oecd-nea.org/jcms/pl_24330/nest-radioactive-waste-management-of-i-graphite)), which aims

to provide hands-on training for younger researchers on onsite graphite management, and the NEA Working Party on Information Data and Knowledge Management (WP-IDKM) activities to develop a strategy for information, data and knowledge management in radioactive waste management.

## **National programmes of regulators' competency management**

### ***Argentine Nuclear Regulatory Authority (Abel González)***

Abel J. González described the experience of the Nuclear Regulatory Authority of Argentina (ARN) with challenges related to the competency management of regulators. For the ARN, the regulators' challenge is to be in charge of the regulatory process by exercising specific knowledge. Traditional education is usually not tailored to provide such specific knowledge; therefore, for nearly half a century, the ARN has assumed responsibility for imparting the required knowledge to future managers in the organisation. A postgraduate course of one full academic year has been held annually at the ARN laboratories since the 1970s. It is co-sponsored by the University of Buenos Aires and its main lecturers are the ARN's senior professionals. The IAEA has organised local courses for students of member countries.

A fundamental lesson learnt by the ARN is that freshly trained staff have a more critical approach to the established paradigms than their seniors. They question established paradigms as they suspect members of the public will question them and are interested in understanding the context in which they exist, as well as the reasons that brought about such context. Newly trained staff also expect the technical rationale to be clearly communicated to the audiences they will encounter as regulatory managers. This fundamental lesson is important for managing regulatory issues, in particular those of legacy management. The ARN has derived the following issues from that fundamental lesson:

- (i) the radiation and nuclear regulatory language is cumbersome and ought to be simplified;
- (ii) the concept of risk is misused (e.g. in legacy situations, hypothetical deaths are calculated by simply multiplying theoretically-calculated collective doses by conjectured detriment-adjusted nominal risks that are used for protection purposes);
- (iii) the sophisticated system for restricting internal exposure is difficult to grasp;
- (iv) there is an absence of ad hoc safety standards for workers other than nuclear workers;
- (v) there is confusion on the concepts of limits, constraints and reference levels;
- (vi) there is inconsistency among the international intergovernmental agreements on acceptable levels of radioactivity in consumer goods; and,
- (vii) the regulatory framework for the remediation of territories defined as contaminated and the disposal of contaminated rubble is not well-defined.

In sum, the ARN considers it essential that future regulatory managers be properly coached on: the essential elements of the science supporting regulatory activities; the existing standards and practices in radiation and nuclear safety; and the international and intergovernmental structure of radiation and nuclear safety standards. The lessons that the ARN learnt by interacting with future managers during their training are applicable to other countries in addressing challenges and solutions in the regulators' competency management.

### ***Bulgarian Nuclear Regulatory Agency (Nikolay Grozev)***

Bulgaria took part in the COMAREG meeting for the first time as an official member of the NEA and was represented by Nikolay Grozev. The material presented was comprehensive and structured in seven sub-sections.

Mr Grozev presented the structure of the Bulgarian Nuclear Regulatory Agency (BNRA), including the normative base in the field of safe management of radioactive waste and the activities for decommissioning of nuclear facilities.

The relationships between the state institutions both directly and indirectly engaged in the safe management of radioactive waste were presented, including the established mechanisms for financing the activities of radioactive waste management and decommissioning at the national and international level.

The licensing status over the years of two specialised divisions of the state enterprise of radioactive waste, the chosen approaches in their management, and the activities carried out within those divisions were discussed in detail. A number of key data and milestones for their future management and operation were shared.

The presentation looked at the “Challenges and future steps” for Bulgaria, dividing them into two types: technical measures and activities and organisational and administrative measures. Activities for the decommissioning of nuclear facilities and the disposal of radioactive waste in a surface-type or geological repository are among the biggest challenges for Bulgaria.

### *Finland’s programme for regulator competency management (Jussi Heinonen)*

Jussi Heinonen provided an overview of the Finnish strategy on radioactive waste management. Finland has a well-established radioactive waste management system that includes solutions for disposal. The regulator and other involved organisations developed the necessary competencies during the implementation of the radioactive waste management system. The responsible ministry has compiled several evaluations of national competencies which have been used, for example, to steer research and development (R&D). Critical RWM competencies have been identified as part of these evaluations.

The implementation and operation of radioactive waste management facilities are often projects that last decades, especially for disposal. Regulation of radioactive waste management requires knowledge in several technical and scientific disciplines. The competencies needed also change between phases of facility development. For example, the development of spent fuel disposal in Finland has been ongoing for four decades. The required regulatory competencies have changed as the focus has evolved from site characterisation and concept development to construction and operational.

Long time spans, evolving competencies and finite regulatory resources pose challenges to the maintenance of competencies.

### *Germany’s programme for regulator competency management (Jochen Ahlswede, Stefan Hellebrandt)*

Jochen Ahlswede and Stefan Hellebrandt presented Germany’s plan to phase out the use of nuclear energy by the end of 2022. The focus of Germany’s Nuclear Waste Management is on decommissioning, the storage of all kinds of nuclear waste in interim storage facilities, and the deep geological storage for high-level waste (HLW). For the latter and the related site selection process, transparency and the participation of the interested public is of great importance. The site selection process started in 2017 using a “white map” of Germany and on the basis of a set of criteria laid down by law. The aim is to find a site with the best possible safety.

Consequently, the priorities for Germany in regulators’ competency management are: the maintenance of a high level of security and safety standards; safe and orderly regulation of radioactive waste management, taking the importance of communications and participation into account; ensuring radiation safety during the whole process; and building up as well as preserving competency. A major aspect in Germany’s competency building and development is a strict focus on safety and security, without promoting nuclear energy.

One of the central challenges in Germany is to preserve for future generations the reservoir of knowledge and experience that has been amassed over decades of research and practical applications in various fields of nuclear safety. In this context, the German cabinet approved and adopted the “Strategy for Competence Building and the Development of Future Talent for Nuclear Safety” with needs, objectives and recommendations to maintain a high level of safety during both the operational and post-operational phase.

### *Japan NRA’s approach to regulator competency management (Ichiro Otsuka)*

Ichiro Otsuka gave a presentation about the Regulatory Standards and Research Department of the Secretariat of the Nuclear Regulatory Authority (SNRA), which develops regulatory standards and provides R&D data and staff. The Division of Research for the Nuclear Fuel Cycle and Radioactive Waste, which is part of the department, deals with the technical aspects of the safety of nuclear fuel cycle facilities and faces challenges in knowledge and competency management. The necessary competency is identified by analysing licensing experience, R&D needs from the Regulatory Department, the experience of the other regulators, etc. This analysis is then used to develop a “knowledge map”. The existence of a knowledge transfer programme, regulatory research programme and licensing and inspection experience are key to ensuring the competency of researchers in the SNRA.

### ***UK programme for regulator competency management (Juliet Long)***

Juliet Long of the Environment Agency (United Kingdom) gave a presentation on competency management for the regulator in the United Kingdom. She outlined the regulation of RW and decommissioning in the United Kingdom and explained the nuclear and non-nuclear decommissioning activities that the Environment Agency focuses on. The Environment Agency is considering disposal of different types of radioactive wastes, design of the disposal sites, and transportation of radioactive wastes. The Agency also focuses on the establishment of soft capabilities and frameworks providing the core definition of technical knowledge and capabilities in various regulatory roles. She explained two types of paths to develop competency for newer and more experienced staff, the achievements expected of capable regulators, and tools and approaches for learning and supporting groups in workforce development. She concluded her presentation with general and specific challenges in developing competency and the Environment Agency's plan to maintain competency in radioactive substances regulation.

### ***US programme for regulator competency management (Steven Cochrum)***

Steven Cochrum of the United States Nuclear Regulatory Commission (NRC) gave a presentation on competency models for developing the workforce. He introduced the NRC Competency Model, a collection of tasks and behaviours to define the ability of employees to do their jobs successfully that was developed to improve the capability of the workforce. In the process of developing the Competency Model, core positions are identified based on gaps and changes in roles in the new regulation. After the identification of core positions, tasks and behaviours are developed for each position and applied to assessments assigned to the workforce. The Competency Model can be assessed from various perspectives and can be used to build career development plans for staff as well as to build technical training on risk assessment, security, communication and project management in order to close competency gaps. To prepare for the future, there are many aspects to consider, such as: identifying who needs to be recruited, how to close and review the gaps, new areas of job training, career development, and self-learning. It is also important to consider developing a new model that supposes a high level of technical competency and staff participation in the development and operation of the competency model. Mr Cochrum closed his presentation by indicating that the key challenge lies in getting more information and continuously updating models as roles change and new skillsets arise; learning activities should adapt in line with those changes.

## **International programmes for regulator competency management**

### ***Activities of the European Nuclear Safety Training & Tutoring Institute (Didier Louvat)***

Didier Louvat explained how the European Nuclear Safety Training & Tutoring Institute (ENSTTI) gradually transformed into a recognised training and tutoring centre specialised in meeting the growing need for highly qualified personnel with adequate knowledge and skills in nuclear safety and security at nuclear regulatory authorities and technical support organisations (TSOs). The presentation of the results of ENSTTI education since its creation also questioned the validity and the sustainability of its model. Most of ENSTTI's activities were performed outside of the European Union (EU) and the proportion of the activity performed for EU nuclear safety organisations remained small. There was a reluctance of EU safety organisations to pay for staff training which keeps ENSTTI from meeting its initial objective of contributing to a European harmonisation in the safety approach. There is still no consensus among EU countries on the importance of harmonised training at the European level in nuclear safety.

### ***Activities of the International Atomic Energy Agency (Tea Bilic Zabrc)***

Tea Bilic Zabrc summarised the IAEA approach for developing a strategic knowledge management (KM) programme and introduced a discussion on the disposal facility life cycle. The objective of the presentation was to provide a deeper understanding of KM in the context of an organisation and to define the relationships between KM practices and their overall impact on the organisation's performance. Ms Bilic Zabrc provided information on the IAEA documents related to the development of a strategic KM programme and a roadmap for the implementation of the KM programme. The presentation also covered the IAEA approach in assessing the maturity of the KM programme in organisations. It summarised the lessons learnt and the plans for KM activities internationally.

## **Session 2. “Ways of developing and implementing regulatory competency (examples, best practices)”**

---

*Chair: Luca Piciaccia*

The discussion was divided into two breakout sessions, with the first one dealing with the “Challenges in competency management”. The second session, “Initiatives, concepts and solutions, with suggestions to the NEA activities in competency management”, followed the next day.

The workshop participants were divided into five groups for each session and group leaders were identified to play the role of facilitator and rapporteur of group discussions.

### **First session: “Challenges in competency management”**

In the first breakout discussion, key challenges in competency management were listed based on the word map, and participants discussed the challenges that were of the highest concern and should be addressed with high priority.

The following issues were identified as the main challenges of high concern among regulators, meaning they should be prioritised in addressing future competency management:

- knowledge management, including the transfer of knowledge and experience;
- lack of capacity and funding/resources;
- development of the regulatory framework;
- long-term waste management (deep geological disposal);
- stakeholder involvement and communication with the public.

The outcome of the first discussion was also compiled into a table showing the priority of identified challenges and it was used as the basis of the second discussion.

### **Second session: “Initiatives, concepts and solutions, with suggestions to the NEA activities in competency management”**

In the second session, each breakout group discussed interesting areas where the NEA could assist in addressing identified challenges through the international framework, specific skills that could benefit from further development, and good practices for addressing the main challenges.

The second discussion identified the following potential areas of international co-operation and possible support from the NEA:

- An international platform could be useful to exchange practical experience on knowledge management and knowledge transfer. This kind of platform enables countries to share knowledge on deep geological repositories (DGRs) with each other and provides training opportunities to improve public communication skills, build capacity and motivate young people.
- The NEA can support the development of regulatory framework bases for both existing and new DGR facilities.
- The NEA can provide a platform for networking among regulators and other stakeholders, an opportunity to exchange information among countries, and training and education programmes both online and in-person.

Many participating countries said competency management could improve soft skills among their staff in preparation for DGR implementation, public communication, and mentoring of the younger generation as well as hard skills regarding new technology.

Some countries already have successful experiences in knowledge management, stakeholder involvement and capacity building in regulatory activities. They have also utilised regulatory networks, the NEA international framework, events and databases to address these issues.

## **Session 3. “Summarising of collected inputs. Conclusions. Recommendations to the NEA”**

---

*Chair: Felix Altorfer*

Felix Altorfer, chair of session 3, gave a summary of the previous sessions and the main findings of the workshop as the closing remarks.

### **Workshop findings**

Based on the workshop discussions and breakout sessions, some key areas of common interest were found:

#### *Development of key skills and the regulator’s framework*

The key skills of regulators include technical skills such as radiation training, expertise in the field of DGRs and long-term waste management, as well as an understanding of new/advanced technologies (such as small modular reactors [SMRs] and robotics). To ensure adequate regulation in these fields, the regulatory body should encourage the in-house development of skills, but also consider networking in order to have access to independent experts in the fields of interest. Regulatory bodies should also address the interdisciplinary nature of oversight with human resource (HR) development plans and should further the technical and scientific awareness on the management level of the organisation.

Developing and maintaining (or implementing) regulatory competency is paramount to face challenges such as decommissioning, dealing with legacy waste and realising geological repositories. Staff at the regulatory body must have the necessary skills and experience to regulate nuclear safety issues in a consistent and appropriate way. Additional skills such as public communication should also be developed through training and with the commitment of management and HR.

#### *Transfer of skills: New platforms and e-learning*

To facilitate the international transfer of skills and experience from older staff to a younger generation, new platforms such as training courses or virtual meetings should be envisioned to encourage or facilitate the participation of young people in the regulatory field. For example, virtual meetings could be beneficial by reducing travel expenses.

HR planning to further organisational competence for the younger generation could include new developments such as digital platforms and in-house e-learning. The organisational development plans should consider aspects of knowledge management and governance. The long duration of legacy remediation work or RWM and disposal requires management attention and should also be part of HR planning.

#### *Role of the NEA*

The NEA was recognised as a mediator for international co-operation. As such, the NEA could support the organisation of multilateral exchanges and organise both online and in-person events such as workshops, group-oriented seminars, and task-oriented keynotes to share knowledge and competencies with young people. The NEA could further facilitate the sharing of best practices with member countries and organisations. The involvement of NEA groups (Working Party on Information, Data and Knowledge Management, Expert Group on Building Constructive Dialogues between Regulators and Implementers in Developing Disposal Solutions for Radioactive Waste, and others) in RF efforts to exchange relevant points regarding competency management and other international activities (IAEA, Western European Nuclear Regulators’ Association) should be strengthened.

# Conclusions

During the workshop, COMAREG participants recognised the importance of the management of regulators' competency in the realisation of nuclear back-end projects. These competencies should be intended not only as knowledge of prior projects and best practices but also as resilience and adaptability to new problems arising from the decommissioning and legacy sites management and, in the future, of advanced reactors as well as the radioactive waste management related to these technologies. Regulators should also ensure the needed competency to address challenges arising from unexpected situations (e.g. the COVID-19 pandemic).

Participants reached a consensus concerning the NEA role in addressing members' needs in the area of competency management. The NEA demonstrated in previous activities its significant capacity and flexibility to provide various forms of support for member countries, and COMAREG participants expressed their expectations regarding NEA support.

Various types of NEA activities were considered in support of the development and maintenance of regulators' competency to ensure adequate and up-to-date regulation in member countries of waste management, decommissioning and legacy management:

- keynote speeches;
- webinars;
- task-oriented and/or group-oriented online events for national regulators' staff;
- reports with relevant recommendations;
- workshops;
- other forms.

# List of participating member countries and organisations

<b>Argentina</b>	Nuclear Regulatory Authority of Argentina (ARN)
<b>Australia</b>	Australian Radiation Protection & Nuclear Safety Agency (ARPANSA)
<b>Belgium</b>	Federal Agency for Nuclear Control (FANC); Bel V
<b>Bulgaria</b>	National Centre for Radiobiology and Radiation Protection (NCRRP); Bulgarian Nuclear Regulatory Agency
<b>Canada</b>	Canadian Nuclear Safety Commission
<b>China</b>	China Institute of Atomic Energy
<b>Finland</b>	Nuclear Waste and Material Regulation Department; Radiation and Nuclear Safety Authority (STUK)
<b>France</b>	European Nuclear Safety Training and Tutoring Institute (ENSTTI)
<b>Germany</b>	BASE – Federal Office for the Safety of Nuclear Waste Management
<b>Italy</b>	National Inspectorate for Nuclear Safety and Radiation Protection (ISIN)
<b>Japan</b>	Nuclear Waste Management Organization; Division of Research for Nuclear Fuel Cycle & Radioactive Waste; Nuclear Power Engineering Centre, Institute of Applied Energy (IAE); Nuclear Waste Management Organization of Japan (NUMO)
<b>Korea</b>	Korea Institute of Nuclear Safety (KINS)
<b>Mexico</b>	National Commission on Nuclear Safety & Safeguards; CNSNS (Mexican Regulatory Body)
<b>Norway</b>	Norwegian Radiation and Nuclear Safety Authority (DSA)
<b>Poland</b>	Nuclear Energy Department Ministry of Climate and Environment; National Atomic Energy Agency
<b>Romania</b>	Ministry of Economy, Energy and the General Directorate of Energy Politics
<b>Russia</b>	Federal Environmental, Industrial and Nuclear Supervision Service of Russia; Rosatom
<b>Slovak Republic</b>	Jacobs Slovakia s.r.o
<b>Slovenia</b>	Slovenian Nuclear Safety Administration
<b>Spain</b>	Foro de la Industria Nuclear Española; Consejo de Seguridad Nuclear (CSN)
<b>Switzerland</b>	Swiss Federal Nuclear Safety Inspectorate (ENSI)
<b>United Kingdom</b>	Environment Agency
<b>United States</b>	Technical Training Center; US Environmental Protection Agency; US Environmental Protection Agency; Office of Nuclear Material Safety and Safeguards; US Nuclear Regulatory Commission
<b>International organisations</b>	International Atomic Energy Agency (IAEA)
	Nuclear Energy Agency (NEA)

## List of abbreviations and acronyms

<b>ARN</b>	Nuclear Regulatory Authority of Argentina
<b>ARPANSA</b>	Australian Radiation Protection and Nuclear Safety Agency
<b>CNRA</b>	Committee on Nuclear Regulatory Activity (NEA)
<b>COMAREG</b>	Workshop on Competency Management of Regulators
<b>DGR</b>	deep geological repository
<b>DSA</b>	Norwegian Radiation Protection Authority
<b>EC</b>	European Commission
<b>ENSI</b>	Swiss Nuclear Safety Inspectorate
<b>ESNTTI</b>	European Nuclear Safety Training & Tutoring Institute
<b>FANC</b>	Federal Agency for Nuclear Control (Belgium)
<b>HLW</b>	high-level waste
<b>HR</b>	human resources
<b>IAEA</b>	International Atomic Energy Agency
<b>ISIN</b>	National Inspectorate for Nuclear Safety and Radiation Protection (Italy)
<b>KM</b>	knowledge management
<b>NEA</b>	Nuclear Energy Agency
<b>NEST</b>	Nuclear Education Skills and Technology (NEA)
<b>NRC</b>	Nuclear Regulatory Commission (United States)
<b>R&amp;D</b>	research and development
<b>RF</b>	Regulators' Forum (NEA)
<b>RIDD</b>	Expert Group on Building Constructive Dialogues between Regulators and Implementers (NEA)
<b>RW</b>	radioactive waste
<b>RWM</b>	radioactive waste management
<b>RWMC</b>	Radioactive Waste Management Committee (NEA)
<b>SMR</b>	small modular reactor
<b>TSO</b>	technical support organisation
<b>WENRA</b>	Western European Nuclear Regulators Association
<b>WP-IDKM</b>	Working Party on Information, Data and Knowledge Management (NEA)



## **OECD Nuclear Energy Agency (NEA)**

46, quai Alphonse Le Gallo

92100 Boulogne-Billancourt, France

Tel.: +33 (0)1 73 21 28 19

nea@oecd-nea.org [www.oecd-nea.org](http://www.oecd-nea.org)