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# **THE IAEA AND THE COVID-19 PANDEMIC**

**Progress Update IV**

*Report by the Director General*



## FOREWORD

We are now in the third year of the COVID-19 pandemic and, while it still continues to affect our Member States, the IAEA has proved to be robust and agile – able to respond to the waves of the pandemic and the challenges it continues to impose on us all.

During the height of the restrictions, the Agency carried out its activities without stopping for a single minute. This year, we have been able to achieve a high level of effectiveness, comparable to pre-pandemic levels, due to the Agency having adjusted its ways of working, where necessary, and because travel restrictions and other health and safety measures introduced by many States in response to the pandemic have, in most cases, either ended altogether or been reduced over the last year.

In the area of safeguards, the Agency has this year inspected roughly the same number of nuclear facilities as it did before the pandemic. The same applies to the regular safeguards activities carried out at the Agency Headquarters and in the regional offices and the Agency's safeguards analytical laboratories in Seibersdorf which have continued to operate safely and securely under pandemic restrictions.

The Agency has also maintained its support to Member States for the operation, safety and security of nuclear and radiation facilities and activities. During the reporting period, its reporting systems have remained fully operational and through various forums facilitated information exchange on continuity of regulatory oversight mechanisms during the pandemic. The Agency continued this year to provide technical support and advice to countries in responding to the pandemic, including through the provision of equipment and materials to 306 laboratories in 130 countries and territories. This has been possible because of generous financial and in-kind support from several Member States and the private sector.

We remain vigilant and responsive. And we have been looking ahead - working on enhancing global preparedness to respond to and prevent the next outbreak of zoonotic diseases turning into a pandemic. Member States are participating actively in the IAEA Zoonotic Disease Integrated Action (ZODIAC) initiative for integrating nuclear and related techniques in this endeavour. 149 Member States have nominated a ZODIAC National Coordinator, and 125 have nominated a ZODIAC National Laboratory (ZNL).

We will continue to deliver our mandate through established and modified ways of working, while preparing for, and adapting to, changing circumstances. I will continue to update Member States on any Agency activities related to, or influenced by, the global pandemic through the Agency's regular reporting.

Rafael Mariano Grossi  
Director General



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Item 8 of the Conference's provisional agenda  
(GC(66)/1, Add.1 and Add.2)

# The IAEA and the COVID-19 Pandemic

## Progress Update IV

*Report by the Director General*

### Summary

- In response to the request by Member States (GC (65)/RES/2), this report is an update on “all matters related to the IAEA in relation to the COVID-19 pandemic, including the implications of the COVID-19 pandemic for the work of the Agency, as well as the impact of the Agency’s COVID-19 response”.
- This report covers the period since the Director General’s previous reports to the 65th regular session of the General Conference in September 2021 (GOV/INF/2021/33-GC(65)/INF/7, GOV/INF/2021/34-GC(65)/INF/8, GOV/INF/2021/35-GC(65)/INF/9). It provides an update to the report submitted to the Board of Governors in March 2022 (GOV/INF/2022/4) which consolidates the three areas covered under previous reports into a single document.



# The IAEA and the COVID-19 Pandemic

## Progress Update IV

*Report by the Director General*

### **A. IAEA Support to Member States Efforts in Addressing the Pandemic**

#### **A.1. Update on IAEA Support to Member States in their Efforts to Address the Pandemic**

##### **A.1.1. Delivery of diagnostic and protection equipment**

1. The Agency has received and responded to requests for assistance from 130 countries and territories in total in their fight against the pandemic (see Annex 1), mainly through the interregional technical cooperation project INT0098, ‘Strengthening Capabilities of Member States in Building, Strengthening and Restoring Capacities and Services in Case of Outbreaks, Emergencies and Disasters. By July 2022, the Agency had issued 2042 procurement orders for real-time reverse transcription-polymerase chain reaction (RT-PCR) and diagnostic kits and related items, delivered through approximately 2 600 shipments to 306 national laboratories.

2. Since the issuance of GC(65)/INF/7, the Agency has received four additional requests for assistance, which it has addressed.

##### **A.1.2. Education, training and guidance**

3. To address continuing requirements for accessible training, guidance and advice, recordings of IAEA webinars on a range of topics related to RT-PCR, delivered in Arabic, English, French, Russian and Spanish, remain available on the IAEA Human Health Campus<sup>1</sup>.

4. Recordings of other IAEA webinars for health care providers in nuclear medicine and radiology facilities also remain available. Eighteen instructional videos are also available on the use of personal protective equipment, collection, transportation and storage of samples, real-time RT-PCR for the detection of COVID-19, and the use of serology for evaluation of COVID-19 on the IAEA’s Human Health Campus website<sup>2</sup>, together with a video of frequently asked questions on real-time RT-PCR, and a wide range of information materials on COVID-19<sup>3</sup>.

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<sup>1</sup> <https://humanhealth.iaea.org/HHW/covid19/webinars.html>

<sup>2</sup> <https://humanhealth.iaea.org/HHW/covid19/nmdi/nmdi.html>

<sup>3</sup> <https://humanhealth.iaea.org/HHW/covid19/index.html>

# 130

countries and territories requested and received assistance (see Annex 1)



# 306

national laboratories/institutions received COVID support packages and technical guidance



# 2042

procurement orders for RT-PCR and diagnostic kits and related items ordered for countries



# 576

APH counterpart laboratories received updated SOPs, reagent information and validation data



5. Finally, 576 Animal Production and Health counterpart laboratories received updated standard operating procedures (SOPs), reagent information and validation data through the VETLAB platform.

### A.1.3. Related guidance and studies

6. As part of its support to Member States, the IAEA has published several guidance documents, and has conducted a number of studies on the impact of COVID-19 on the provision of nuclear medicine diagnostic and therapeutic procedures.

7. On 2 May 2022, the Agency published an ‘Update on guidance and best practices for nuclear cardiology laboratories during the coronavirus disease 2019 (COVID–19) pandemic: Emphasis on transition to chronic endemic state. An information statement from ASNC, IAEA, and SNMMI<sup>4</sup>,’ as well as a follow up to the ‘Guidance and best practices for reestablishment of non-emergent care in nuclear cardiology laboratories during the coronavirus disease 2019 (COVID-19) pandemic: An information statement from ASNC, IAEA, and SNMMI<sup>5</sup>, originally published on 24 July 2020.

8. Several scientific articles were also published: ‘Worldwide Disparities in Recovery of Cardiac Testing 1 Year into COVID-19’<sup>6</sup> was published on 24 May 2022 in The Journal of American College of Cardiology (JACC) which showcase the discrepancies in recovery; ‘Nuclear Medicine after COVID-19 (La medicina nucleare dopo il COVID)’<sup>7</sup>, was published in Italian on 9 June 2022; COVID-19 Impact on the Diagnosis of Cardiac Disease in Latin America: Findings of the IAEA INCAPS-COVID Study was

<sup>4</sup> [Update on guidance and best practices for nuclear cardiology laboratories during the coronavirus disease 2019 \(COVID-19\) pandemic: Emphasis on transition to chronic endemic state. An information statement from ASNC, IAEA, and SNMMI \(nih.gov\)](#)

<sup>5</sup> [Guidance and best practices for reestablishment of non-emergent care in nuclear cardiology laboratories during the coronavirus disease 2019 \(COVID-19\) pandemic: An information statement from ASNC, IAEA, and SNMMI | SpringerLink](#)

<sup>6</sup> [Worldwide Disparities in Recovery of Cardiac Testing 1 Year Into COVID-19 | Journal of the American College of Cardiology \(jacc.org\)](#)

<sup>7</sup> [La medicina nucleare dopo Covid-19- Corriere.it](#)

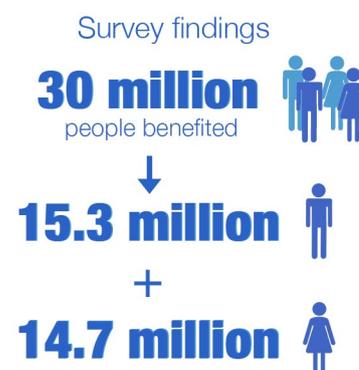
published in Portuguese on 11 January 2022<sup>8</sup> and in English in April 2022<sup>9</sup>; ‘Impact of COVID-19 Pandemic on Cardiovascular Testing in Asia: The IAEA INCAPS-COVID Study’<sup>10</sup> was published in September 2021; and ‘Reduction of cardiac imaging tests during the COVID-19 pandemic: The case of Italy. Findings from the IAEA Non-invasive Cardiology Protocol Survey on COVID-19 (INCAPS COVID)’<sup>11</sup> was published on 15 October 2021.

#### A.1.4. Assessing the impact of IAEA support

9. To confirm that IAEA COVID-19 assistance reached the intended end-users, and to identify its impact, the IAEA issued a survey to all laboratories receiving assistance. The survey measured the impact of the support provided by the IAEA and assessed its sustainability. While not all laboratories replied to the survey, extrapolations from the results received indicate that more than 30 million people (51% men and 49% women) benefitted from the enhanced testing capacities following IAEA assistance.

10. Of the responding laboratories, 13% had no PCR machine apart from that supplied by the IAEA. 84% (over 50% of which were in low- and lower-middle income countries) confirmed that the emergency assistance package provided by the IAEA could cover the initial gap in testing needs, and 92% acknowledged that IAEA support had enhanced their ability to detect COVID-19 and other pathogens, or to provide such services.

11. Ninety-two per cent of responding laboratories confirmed that they would be able to continue to provide testing beyond the initial IAEA assistance. The remaining 8% reported challenges in continuing testing, due to current global difficulties in procuring laboratory reagents and consumables.



## A.2. Funding, and Partnerships with the Food and Agriculture Organization of the United Nations and the World Health Organization

12. Member States and the private sector provided generous extrabudgetary funding totalling €26.8 million to support the IAEA’s COVID-19 related activities (see Annex 2).<sup>12</sup>

13. The IAEA joined the COVID-19 UN Crisis Management Team (COVID-19 CMT) led by the WHO<sup>13</sup> on 25 March 2020. Through cooperation in the COVID-19 CMT, the IAEA has ensured that the

<sup>8</sup> [O Impacto da COVID-19 no Diagnóstico de Doenças Cardíacas na América Latina Uma Subanálise do INCAPS COVID - PMC \(nih.gov\)](#)

<sup>9</sup> [The Impact of COVID-19 on Diagnosis of Heart Disease in Latin America an INCAPS COVID Sub-analysis - PubMed \(nih.gov\)](#)

<sup>10</sup> [Impact of COVID-19 Pandemic on Cardiovascular Testing in Asia: The IAEA INCAPS-COVID Study | JACC: Asia](#)

<sup>11</sup> [Reduction of cardiac imaging tests during the COVID-19 pandemic: The case of Italy. Findings from the IAEA Non-invasive Cardiology Protocol Survey on COVID-19 \(INCAPS COVID\) - PMC \(nih.gov\)](#)

<sup>12</sup> Please note that the contribution amounts include interest.

<sup>13</sup> The COVID-19 CMT also includes the United Nations Development Coordination Office, United Nations Office for the Coordination of Humanitarian Affairs, International Maritime Organization, United Nations Department of Safety and Security, United Nations Children’s Fund, International Civil Aviation Organization, World Bank, World Food Programme, Food and Agriculture Organization of the United Nations, United Nations Department of Global Communications, Executive Office of the Secretary-General, Department of Political and Peacebuilding Affairs/Department of Peace Operations, Department of Operational Support, and additional members added as deemed necessary.

equipment and materials procured to address IAEA Member States' requests are in alignment with the overall UN response.

14. The IAEA has worked closely with the FAO and with the WHO since the beginning of the COVID-19 outbreak in order to provide a coordinated response to requests from its Member States.

### A.3. Way Forward

15. While the SARS-CoV2 coronavirus still remains a cause of concern, there are several interregional, regional and national initiatives aimed at enhancing the preparedness to prevent the next outbreak of zoonotic diseases turning into a pandemic. Member States are participating actively in the IAEA Zoonotic Disease Integrated Action (ZODIAC) initiative for integrating nuclear and related techniques in this endeavour. 149 Member States have nominated a ZODIAC National Coordinator, and 125 have nominated a ZODIAC National Laboratory (ZNL).

## Annexes

<b>Annex 1: Countries and territories that have requested and received IAEA support to address COVID-19 as of 15 July 2022</b>		
<b>AFRICA</b>		
Algeria	The Gambia (non-IAEA Member State)	Niger
Angola	Ghana	Nigeria
Benin	Guinea (non-IAEA Member State)	Rwanda
Botswana	Kenya	Senegal
Burkina Faso	Lesotho	Seychelles
Burundi	Liberia	Sierra Leone
Cameroon	Libya	South Africa
Chad	Madagascar	Sudan
Congo	Malawi	Togo
Côte d'Ivoire	Mali	Tunisia
Democratic Republic of the Congo	Mauritania	Uganda
Djibouti	Mauritius	United Republic of Tanzania
Egypt	Morocco	Zambia
Eswatini	Mozambique	Zimbabwe
Ethiopia	Namibia	
<b>ASIA AND THE PACIFIC</b>		
Afghanistan	Lebanon	Philippines
Bangladesh	Malaysia	Samoa
Cambodia	Maldives (non-IAEA Member State)	Sri Lanka
Fiji	Mongolia	Syrian Arab Republic
Indonesia	Myanmar	Thailand
Iran, Islamic Republic of	Nepal	Tonga
Iraq	Oman	Viet Nam
Jordan	Pakistan	Yemen
Kuwait	Palau	Territories under the jurisdiction of the Palestinian Authority

Lao People's Democratic Republic	Papua New Guinea	
<b>EUROPE AND CENTRAL ASIA</b>		
Albania	Hungary	San Marino
Armenia	Kazakhstan	Serbia
Azerbaijan	Kyrgyzstan	Slovenia
Belarus	Latvia	Tajikistan
Bosnia and Herzegovina	Montenegro	Ukraine
Bulgaria	North Macedonia	Uzbekistan
Croatia	Poland	
Czech Republic	Republic of Moldova	
Georgia	Romania	
<b>LATIN AMERICA AND THE CARIBBEAN</b>		
Antigua and Barbuda	Dominica	Nicaragua
Argentina	Dominican Republic	Panama
Bahamas	Ecuador	Paraguay
Barbados	El Salvador	Peru
Belize	Grenada	Saint Kitts and Nevis
Bolivia, Plurinational State of	Guatemala	Saint Lucia
Brazil	Guyana	Saint Vincent and the Grenadines
Chile	Haiti	Suriname
Colombia	Honduras	Trinidad and Tobago
Costa Rica	Jamaica	Uruguay
Cuba	Mexico	Venezuela, Bolivarian Republic of

<b>Annex 2: Extrabudgetary contributions in Euro (as of 31 July 2022)</b>	
<b>Member State</b>	<b>Contribution</b>
Australia	46 023
Canada	3 270 066
Finland	200 000
Germany	500 000
Japan*	3 000 000
Korea, Republic of	260 011
Netherlands	1 500 727
Norway	2 067 104
Pakistan	39 960
Russian Federation	500 000
San Marino	32 866
Sudan	30 000
Sweden	190 947
United Kingdom	562 316
United States of America	10 458 722
<b>Non-traditional partners and other contributors</b>	
Takeda Pharmaceutical Company Limited	4 105 691
<b>Total</b>	<b>26 764 433</b>
<b>In-kind Contributions</b>	
China	1 842 000
Malta	25 000
<b>Total</b>	<b>1 867 000</b>
* In addition, Japan contributed 1 million Euro in support of a project on 'Detection of emerging and re-emerging transboundary animal and zoonotic pathogens at the animal human interface' in connection with the COVID-19 outbreak.	

## **B. The Operation, Safety and Security of Nuclear and Radiation Facilities and Activities During the Pandemic**

### **B.1. Actions Undertaken by the Agency to Support Member States in Mitigating the Impact of the Pandemic**

#### **B.1.1. Facilitating Information Exchange with Member States**

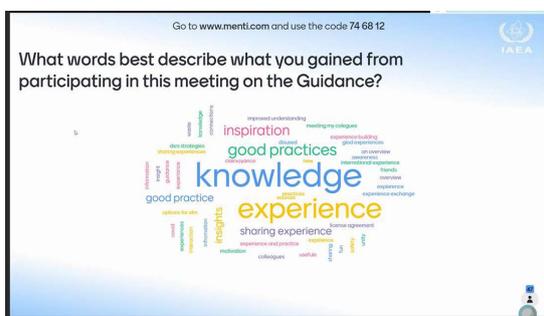
16. The Agency's reporting systems remain fully operational. A comparison analysis of the Incident and Trafficking Database reporting trends for the past five years indicates that the reporting of new incidents during the period in the scope of this report continued to trend lower, possibly due to altered work practices introduced to contain the spread of the pandemic. At this time, an upward trend is observed, which may be attributed to work practices beginning to return to normal. In other reporting systems, such as the Nuclear Power Plant Operating Experience Network, Incident Reporting System for Research Reactors and the Fuel Incident Notification and Analysis System, no further reports related to COVID-19 were received from Member States during the reporting period.

17. The new approach to include specific consideration of regulatory implications of pandemic situations within the Agency's Integrated Regulatory Review Service (IRRS) missions was implemented once in 2021, during an IRRS initial mission to Switzerland in October 2021. This approach can be included in future IRRS missions, if requested by Member States.

18. The Agency facilitated a survey of the International Nuclear Security Education Network (INSEN) to better understand the impact of the pandemic on nuclear security education and how universities continued to provide nuclear security courses during the pandemic and to share related good practices. During the INSEN annual meeting held in August 2021, a plenary panel session was held to discuss the results of the survey and further share INSEN members' experiences, best practices and lessons learned in mitigating the impacts of the pandemic.

19. To support Member States in their work on improving the physical protection of facilities, the Agency developed online workshops to train relevant stakeholders in Member States on the characteristics of adequate physical protection systems and on performing remote assessment of facilities hosting high activity radioactive material.

20. The Agency held the International Conference on the Safety and Security of Radioactive Sources: Accomplishments and Future Endeavours in Vienna in June 2022, where a special session on the lessons learned during the pandemic was held.



*Survey after the European Virtual Meeting on Implementation of the Guidance on the Management of Disused Radioactive Sources (Photo: IAEA)*

21. The Agency held an Open-ended Meeting of Legal and Technical Experts on the Implementation of the Guidance on the Management of Disused Radioactive Sources virtually in August 2021, to keep Member States engaged and maintain the sharing of information in relation to the safety and security of radioactive sources during the pandemic, and to promote the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary Guidance.

22. Experience of Member States with ensuring safety during the pandemic was discussed during

several Agency meetings, including a Technical Meeting for the National Coordinators of the Incident Reporting System for Research Reactors in September 2021, a Technical Meeting on the Safety of Research Reactors under Project and Supply Agreements and Review of their Safety Performance Indicators in November 2021, and the virtual CANDU Senior Regulators Group meeting in November 2021.

### **B.1.2. Safety Standards and Nuclear Security Guidance**

23. The Agency undertook an analysis of its safety standards and nuclear security guidance to identify whether these publications currently address pandemic situations.

24. The Commission on Safety Standards strategic planning meeting concluded that revision the safety standards in light of the pandemic was not a priority. The Secretariat is continuing to collect, in a centralized manner, experiences and findings from Member States on challenges faced by regulatory bodies and licensees during the pandemic. Further possible implications of the pandemic, as well as other situations posing safety related challenges, will be included in Agency safety standards being developed and revised under the medium-term plan for the safety standards.

25. The Agency developed a draft Technical Reports Series publication provisionally titled *Member States' Experiences and Insights in Ensuring Safe, Secure and Reliable Operation of Nuclear and Radiation Facilities and Activities During the COVID-19 Pandemic*, which is expected to be issued in 2022. The draft report was presented at the 31st plenary meeting of the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development (OECD)'s Working Group on Human and Organisational Factors in March 2022.

26. The Agency developed a draft Technical Reports Series publication provisionally titled *Notification, Authorization, Inspection and Enforcement for the Safety and Security of Radiation Sources*, which recommends that regulatory bodies should develop a set of measures to be introduced under special circumstances, such as pandemics. Measures aimed at ensuring effective implementation of regulatory functions, especially the conduct of inspections, are proposed in the publication, which is expected to be issued in 2022. Additionally, terms of reference were developed for a publication on virtual inspections of facilities and activities with radiation sources. The publication will provide further advice on the rearranging of inspection activities during pandemics.

### **B.1.3. Emergency Preparedness and Response**



*IEC Full Response Exercise March 2021  
(Photo: IAEA)*

27. The Agency's Incident and Emergency System continues to be operational, and the programme of emergency exercises continues to be carried out.

28. In November 2021, the Agency delivered a Regional Workshop on Preparedness and Response for a Nuclear or Radiological Emergency Combined with Other Incidents or Emergencies. The workshop, which took place in Istanbul, Türkiye, addressed, inter alia, considerations of nuclear or radiological emergencies occurring in a pandemic situation.

29. In October 2021, due to pandemic-related travel restrictions, the Agency facilitated, for the first time, a virtual assistance mission to provide expert medical advice in treating the effects of accidental radiation overexposure for two individuals in Thailand. The French Institute for Radiological Protection and Nuclear Safety provided the specialized medical expertise for the mission.

30. In October 2021, the International Conference on the Development of Preparedness for National and International Emergency Response (EPR2021) was held in a hybrid format. The impact of the pandemic on emergency preparedness and response (EPR) arrangements was discussed.



*The Director General addresses participants at EPR2021 (Photo: IAEA)*

31. An addendum to the *Emergency Preparedness Review (EPREV) Guidelines* (IAEA Services Series No. 36) has been developed to enable future missions to consider the impact of the pandemic on national EPR frameworks and to acquire lessons learned about the impact of the challenges caused by the pandemic in the implementation of international safety standards in EPR at the national level.

#### **B.1.4. Collaboration with Other United Nations Organizations and Other International Bodies**

32. The Agency hosted a virtual Information Exchange Meeting in October 2021 to coordinate efforts and avoid duplication of activities in nuclear security undertaken by the European Atomic Energy Community (EAEC), the European Union Agency for Law Enforcement Cooperation (Europol), the Global Initiative to Combat Nuclear Terrorism (GICNT), the International Criminal Police Organization (Interpol), the International Maritime Organization (IMO), the United Nations Office for Disarmament Affairs (UNODA), the 1540 Committee of the United Nations Security Council, the United Nations Office of Counter-Terrorism (UNOCT), the United Nations Office on Drugs and Crime (UNODC), the Vienna Center for Disarmament and Non-Proliferation (VCDNP), and the World Institute for Nuclear Security (WINS). The participants exchanged information, discussed various themes within nuclear security, and gained a better understanding of activities being undertaken by each organization, particularly including lessons learned and experiences related to conducting activities under the pandemic-related restrictions.

33. In September 2021, the Agency delivered a webinar “COVID-19 and the Nuclear Supply Chain — What have we learned?” in cooperation with FORATOM<sup>14</sup> at a joint event titled “Management Systems for a Sustainable Nuclear Supply Chain”.

#### **B.1.5. Other Support to Member States**

34. The Agency’s Nuclear Supply Chain Webinar Series continues to highlight the global view of the nuclear supply chain, presents challenges and avenues for the future, and takes stock of the recent Agency work in the area. It covers, for example, pandemic-related disturbances, with a webinar titled

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<sup>14</sup> FORATOM was recently renamed ‘nucleareurope’.

“Remote and Hybrid Verifications, Audits and Inspections — What have we learned?” held in January 2022.

35. The Ninth Meeting of the Working Group on Radioactive Material Security was held virtually in October 2021. Part of the meeting was dedicated to sharing challenges and adaptations related to the security of radioactive material and associated facilities in light of the pandemic. A majority of the participants reported that such adaptations had assisted in the improvement of their regulatory framework for security of radioactive material, and that the pandemic had positively influenced regulatory innovation.

36. The pandemic-related restrictions created an opportunity to adapt the manner of engagement with Member States embarking on nuclear power programmes. Several virtual activities were conducted to provide support to those countries (Bangladesh, Belarus, Türkiye and the United Arab Emirates) in regulatory oversight of nuclear power programmes, as well as to countries that are in earlier phases of nuclear power programme development. Continued assistance to newcomer countries was ensured.

37. During the Organizational Meeting for the Joint Eighth and Ninth Review Meeting of the Contracting Parties to the Convention on Nuclear Safety in October 2021, a working group was established to discuss contingency planning and business continuity, as well as other proposals aiming to improve the review process of the Convention. The Agency held the first meeting of the working group in Vienna in July 2022.

#### **B.1.6. Sustaining Agency Activities**

38. The Agency’s radiation safety technical services continued to be operational, and the workers and workplace monitoring programme supporting staff field activities was adapted to fulfil the statutory mandate of applying the safety standards to the Agency’s own operations and to operations assisted by the Agency.

39. To sustain the services provided to Member States, the Agency implemented new virtual formats for many of its activities. While recognizing that virtual events cannot always efficiently replace in-person ones, the Agency organized, where feasible, virtual training courses, postgraduate educational courses, workshops, missions, Technical Meetings and conferences such as the International Conference on the Safe and Secure Transport of Nuclear and Radioactive Materials. The Agency accumulated experience in conducting online events and providing online services, and it is prepared to continue offering its remote services to Member States, where necessary.

## **B.2. Actions Undertaken in Member States to Mitigate the Impact of the Pandemic**

### **B.2.1. Nuclear Power Plants**

40. The main change that affected nuclear power plants (NPPs) was the rapid transition to working from home for part of the workforce, whenever its functions, roles and responsibilities allowed. This presented the same challenges that other industries faced around providing the necessary equipment, access and security for people to work effectively from home. Non-essential projects and workstreams were slowed down or put on hold in order to minimize unnecessary physical contacts. In 2022, the Agency observed during its on-site safety review missions that many NPPs and regulatory bodies in Member States were making a concerted effort to reduce the accumulated backlogs of work, such as in-person inspections and maintenance operations, with the easing of COVID-19-related restrictions.

41. Globally, the pandemic has weakened various activities on nuclear sites that are facing or conducting decommissioning. In a number of countries, the implementation of decommissioning projects has been affected by the pandemic due to limited staffing and disruption in the supply chain of components and services. However, there are also examples of planned decommissioning activities that are successfully continuing despite the COVID-19-related restrictions.

42. There has been notable progress in new nuclear power plant projects despite the challenges arising from the global pandemic. United Arab Emirates, China, Finland and Pakistan connected new units to the grid during 2021-first half of 2022.



*The first HTR-PM unit at Shidao Bay nuclear power plant, China (Photo: CNEA)*

43. Two Integrated Nuclear Infrastructure Review missions were conducted in-person during the reporting period, in Sri Lanka and Uganda, in compliance with the pandemic-related restrictions of the host countries.

### **B.2.2. Research Reactors and the Production of Radioisotopes**

44. The Agency resumed Integrated Nuclear Infrastructure Review for Research Reactors missions that require in-person participation of many stakeholders to review the development of national nuclear infrastructure for new research reactor projects. The first such mission since the beginning of the pandemic was implemented in Thailand for two different research reactor projects in November and December 2021, and an Operation and Maintenance Assessment for Research Reactors mission was conducted to Chile in July 2022, with preparatory activities implemented using virtual means.

45. Pandemic-related travel restrictions negatively impacted activities related to nuclear capacity building using research reactors, such as regional research reactor schools and access to research reactor facilities provided by the International Centres based on Research Reactors (ICERRs). At the same time, Member States, in collaboration with the Secretariat, continued to increase their offers of distance learning tools for capacity building in this area. Two Internet Reactor Laboratories, hosted by research reactors in the Czech Republic and the Republic of Korea, started transmission of their experiments to students in other countries.

46. The Agency held pre-Integrated Safety Assessment of Research Reactors missions to the Belgian Reactor 2, and to the Miniature Neutron Source Reactor and the Heavy Water Zero Power Reactor in the Islamic Republic of Iran in June 2022.

47. Production of medical radioisotopes and radiopharmaceuticals has generally remained sufficient to meet the demand. Overall demand has decreased during the pandemic. The Agency recognizes the need to encourage governments, operators and Member States concerned to strengthen arrangements for distribution of medical radioisotopes. Medical radioisotopes and radiopharmaceuticals should be treated as perishable goods, owing to their short half-life. Their transport and distribution should have priority treatment; they are lifesaving goods.

### **B.2.3. Nuclear Fuel Cycle Facilities**

48. Strengthening of technical capacity in Member States continued through virtual training workshops, webinars and e-learning. The month-long Joint ICTP-IAEA International School on Radioactive Waste

Package Performance Testing was held virtually in November 2021. Meanwhile, the Agency resumed some in-person capacity building activities on the safety of nuclear fuel cycle facilities.

49. The Agency continued its support for the safe and secure management of disused sealed radioactive sources. Owing to the pandemic-related constraints, the highly specialized removal of a high activity caesium-137 source from Bahrain was conducted with virtual oversight from the Agency, which enabled close coordination between the Agency and local authorities during the implementation of the complex operations.

50. Broad outreach was achieved during the International Conference on Radioactive Waste Management: Solutions for a Sustainable Future, held in November 2021, with 57% of participants attending virtually.

## C. Implementation of Safeguards during the Pandemic

### C.1. Safeguards implementation

#### C.1.1. Impact on safeguards implementation and Agency responses

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Inspectors and technical staff spent a total of

**961** days

in quarantine outside Austria

Operations Division A:

**888** days

Operations Division B:

**62** days

Operations Division C:

**11** days

51. From a logistical perspective, the travel restrictions and other health and safety measures introduced by a large number of States in response to the pandemic have, in almost all cases, either ended altogether or been reduced over the reporting period. Consequently, the impact on the Agency's ability to implement safeguards activities has eased significantly over the past year. In particular, the requirement of quarantine for significant periods now only applies in a very small number of States. Where such quarantine requirements remain in place, they do have an impact on the Agency's ability to conduct short notice inspections. However, the Agency was able to use certain safeguards measures in order to mitigate this impact to a degree. While the Agency has still needed to conduct additional administrative work associated with travel, including fulfilling testing requirements, completing passenger locator forms and in securing visas, this burden has eased considerably over the reporting period. Nevertheless, inspection schedules are still being disrupted by last minute changes to personnel necessitated by staff testing positive for COVID-19 just before they were due to travel on an inspection.



### C.1.2. Business continuity measures

52. Global travel restrictions and health and safety measures introduced by States, and their dynamic nature, have continued to present various challenges, albeit on a reduced scale over the period. On occasion, access to reliable and up-to-date information about changing national restrictions and measures has posed a particular challenge when planning in-field verification activities. Close collaboration with States, including particularly Austria as the host State, have been essential to overcome these operational obstacles.

### C.1.3. In-field verification activities

53. The cost of transportation, especially relating to conducting in-field verification activities, remains above pre-pandemic levels. Mandatory quarantine periods, by significantly extending the length of verification missions, have also added to the cost. Over the past year, Agency inspectors and technical staff on mission spent a total of 961 in quarantine outside Agency Headquarters in Austria.<sup>15</sup>

54. During this reporting period, the Agency spent €0.53M of the extrabudgetary support<sup>16</sup> that had been made available for the provision of aircraft charter services to transport inspectors and technical staff to and from States. Over the past year, this arrangement has been used successfully to transport some 62 Agency inspectors and technical staff to conduct in-field verification activities in five States. During this reporting period, the Agency's reliance on extrabudgetary support to cover pandemic associated travel costs such as quarantine costs, PCR test entry requirements, pandemic-related travel allowances, etc. has diminished significantly.<sup>17</sup>

55. As previously reported, in light of pandemic-related restrictions, where necessary the Agency adjusted its annual implementation plans (AIPs) to focus verification effort on achieving those safeguards objectives that are most time-critical. However, the difficulties diminished overall over the course of the reporting period and the Agency was able to achieve a level of safeguards effectiveness comparable to pre-pandemic level. Nevertheless, in a few cases, extensive quarantine requirements or difficulties in securing visas in a timely manner led to the postponement of certain, less urgent activities.

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Since June 2021, the Agency has used aircraft charter services to transport **62** Agency inspectors and technical staff to conduct inspections in **5** States.



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<sup>15</sup> Inspectors from the Division of Operations A (responsible for countries in Australasia and East Asia) spent a total of 685 days in quarantine outside Austria, inspectors from the Division of Operations B (responsible for countries in the Americas, Africa, the Middle East and South Asia) spent a total of 16 days, inspectors from the Division of Operations C (responsible for countries in Europe, and in Northern and Western Asia) and inspectors from the Office for Verification in Iran spent no days in quarantine outside Austria. In addition, technical staff spent 260 days in quarantine.

<sup>16</sup> As of 30 June 2022, this extrabudgetary support had been provided by Belgium, France, Germany, Republic of Korea, Saudi Arabia, the United Kingdom, the United States of America and the European Commission.

<sup>17</sup> Between December 2021 to June 2022, the Agency used €0.04M of extrabudgetary support to cover such costs.

56. Over the reporting period, the Agency conducted 2262 inspections, 676 design information verifications (DIVs) and 140 complementary accesses (CAs). This reflects the fact that during this period the Agency has inspected roughly the same number of nuclear facilities as it did before the pandemic. These verification activities involved:

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**Agency verification activities  
(1 July 2021 to 30 June 2022)**

**Inspections:**

**2262**

**Design Information  
Verifications:**

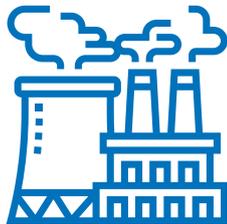
**676**

**Complementary Accesses:**

**140**

**Inspector and technical staff  
days in the field:**

**21 146**



- 14 194 days of inspectors' verification effort and 21 146 days spent in the field by inspectors and technical staff;

- During duty trips, about 1921 calendar days were spent in the field by 54 technical staff to maintain, upgrade and install safeguards equipment, including 275 days dedicated to safeguards verification activities with 149 person-days of inspection (PDIs) accumulated by staff designated to conduct inspection work;

- 279 shipments of safeguards equipment from Headquarters and 102 return shipments; and

- Equipment Radiation Monitoring Laboratory monitoring of 32 325 items returned from the field, for surface contamination.

57. To a certain extent, the availability of resident Agency staff at the Agency's regional offices in Tokyo and Toronto to conduct verification activities in Japan and Canada, respectively, has helped to overcome some of the problems encountered by those staff who have needed to travel across borders to conduct inspections during the pandemic.<sup>18</sup> As quarantine restrictions remain in place in Japan, the Tokyo office continues to play such a useful facilitating role. In Canada, on the other hand, where such restrictions were lifted early in this reporting period, work practices have practically returned to normal.

58. All safeguards equipment requests from within the Department of Safeguards continue to be processed, including the provision of verification equipment and items of personal protective equipment (PPE) to Agency inspectors and technical staff prior to duty travel, as well as the provision of antigen test kits for COVID-19 during duty travel.

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<sup>18</sup> Approximately 20% of all inspections carried out by the Agency were conducted in Canada and Japan.



*Equipment being returned to the Equipment Radiation Monitoring Laboratory for surface contamination monitoring (Photo: IAEA)*

59. The Agency's investment in remote monitoring systems over the past two decades has proved invaluable during the pandemic, with more than 1648 data streams continuing to deliver safeguards equipment data from facilities in 33 States<sup>19</sup> to Agency Headquarters.

#### **C.1.4. Verification activities at Headquarters and regional offices**

60. Regular activities, including all significant projects, carried out at Agency Headquarters and in the regional offices continue to deliver results that have returned to pre-pandemic levels. State

evaluation and the development of new State-level safeguards approaches (SLAs) has continued, while maintaining the security of highly confidential safeguards information.

61. The Agency has continued to provide statements on the activities and results of its in-field verification activities to relevant States: in the past year, the Agency submitted 1596 statements on inspection results (90(a) statements or equivalent), 582 statements on the conclusion drawn from its inspections (90(b) statements or equivalent), 607 DIV acknowledgement letters, and 153 statements on CAs (10(a) statements).



*IAEA staff in the Nuclear Material Laboratory in Seibersdorf process samples*

62. The Agency's safeguards analytical laboratories in Seibersdorf (Austria) have continued to operate safely and securely under pandemic restrictions. All requests from inspectors for environmental sample kits have been met. The analysis of nuclear material samples continues, as does the analysis of environmental samples, including bulk analysis requests and the operation of the large geometry secondary ion mass spectrometer (LG-SIMS) for particle analysis requests. The laboratories have received all inspection samples for analysis from the field within established timeliness goals and have dispatched environmental samples to the Agency network of analytical laboratories (NWAL) as normal.

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<sup>19</sup> And Taiwan, China.

### C.1.5. Health, safety and welfare



*VIC Medical Services supporting IAEA staff with COVID testing and related analysis  
(Photo: IAEA)*

63. Although the number has fallen over the reporting period, some States still require recent (within 48 hours prior to arrival) COVID tests for transit as well as arrivals and some facility operators require this as well. This obliges Agency inspectors to be tested multiple times before, during and after trips. During this reporting period, 1797 PCR tests were conducted (1694 pre-travel and 103 post-travel) by the VIC Medical Service for inspectors and technical staff. This has enabled Agency staff who test negative after their return to Headquarters, in line with the host country requirements, to immediately resume work without the need for quarantine. This figure of 1797 does not include the many hundreds of tests conducted *during* duty travel.

### C.1.6. Recruitment and training

64. To mitigate the risks of COVID-19 transmission, parts of the Introductory Course on Agency Safeguards (ICAS) were re-designed to integrate remote learning: this remained an important component for planning in 2022. A total of nine new inspectors who commenced ICAS in March 2021 completed the course in late autumn 2022. ICAS commenced in-person for 12 new inspectors in March 2022. While the IAEA continues to build its own capabilities to ensure delivery of training and a number of staff courses have been re-designed and delivered as remote learning, access to external facilities has increased in this period, particularly in the fourth quarter of 2021. Specialized training at facilities outside Vienna increased compared to the previous year, with a total of 25 external training courses, in addition to 11 safety courses held outside Headquarters and two visits to the Nuclear Power Plant at Zwentendorf. The Department obtained its target for the implementation of high and medium priority courses during the reporting period.

### C.1.7. Assistance to States

65. The Agency has developed various approaches in order to continue to deliver safeguards-related training and assistance to States throughout the pandemic and has held a number of national, regional and international courses online, involving a total of over 400 participants during the reporting period. The Agency launched a series of interactive webinars aimed at enhancing national authorities' understanding of their safeguards obligations and supporting effective and efficient safeguards implementation. In the five webinars conducted in the period, there have been over 1500 participants, representing over 100 States.

66. The Agency has continued to increase its online offerings via the Agency's Cyber Learning Platform for Network Education and Training (CLP4NET), which has been visited by more than new 600 users in the reporting period. The Safeguards Traineeship Programme for 2022 commenced in February 2022 with nine participants and is due to be completed in November 2022.

67. With regard to the IAEA Comprehensive Capacity-Building Initiative for SSACs and SRAs (COMPASS), the Agency continued implementing the COMPASS workplans that were developed for the seven pilot States over the past year. Equipment procured under COMPASS was successfully

delivered to pilot States despite the logistical challenges caused by the pandemic. During the reporting period eleven in-person courses were held for COMPASS States, as well as ten webinars, three technical visits, three virtual workshops and two online training courses, through which COMPASS States and supporting Member States share and discuss good practices related to safeguards implementation. Consultations with donors, Member State Support Programmes (MSSPs) and other supporting States were held online and in person, including expert missions to COMPASS States.



*COMPASS pilot State participants receive COMPASS-procured identifiers and receive on-site training from IAEA staff (Photo: IAEA)*

## **C.2. Role of States**

68. The Permanent Missions of Member States in Vienna and their national authorities continue to play a very important role in ensuring the Agency's access to nuclear facilities, locations outside facilities, sites and other locations, as well as facilitating movement across borders and transfers through airports. The Agency is grateful for the support received from all States in their interactions with Agency staff during the course of their duties. The Agency continued holding regular safeguards implementation meetings with State/regional authorities, although many were conducted in a virtual format.

69. State authorities provide the Agency with the reports and declarations required under relevant safeguards agreements. Postal service interruptions, however, have made it impossible for the Agency to send statements to some States and for some States to deliver required safeguards reports and declarations. Fortunately, the State Declaration Portal has helped alleviate this problem in a number of cases. Over the past year, the Agency received 7681 nuclear material accountancy reports. In return, the Agency provided feedback (or addressed) to the State or regional authorities: 448 summary letters and 765 acknowledgment letters. The Agency also provided States with semi-annual book inventories and import/export communication statements (240 original letters and attachments).

## **D. Conclusions**

70. COVID-19 is the first pandemic of this scale in the history of the nuclear industry and its impact has been far reaching. The Agency continues to support Member States under these unprecedented circumstances, delivering on its mandate through routine and novel ways of working. The Agency will continue to undertake its activities during the ongoing pandemic while regularly reviewing its working methods and continuously adapting to the new circumstances. The Director General will continue to update Member States on any Agency activities related to, or influenced by, the global pandemic through the Agency's regular reporting.





# IAEA

International Atomic Energy Agency

*Atoms for Peace and Development*

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