

## General Conference

### Sixty-fourth regular session

Item 8 of the provisional agenda  
(GC(64)/1, Add.1 and Add.2)

**GC(64)/INF/4**

**GC(64)/INF/5**

**GC(64)/INF/6**

Date: 24 August 2020

**General Distribution**

Original: English

# THE IAEA AND THE COVID-19 PANDEMIC

*Reports by the Director General*

**IAEA Support to Member State Efforts  
in Addressing the COVID-19 Pandemic**

**IAEA Implementation of Safeguards  
during the COVID-19 Pandemic**

**IAEA Activities related to the Performance  
of Nuclear and Radiological Facilities and  
Activities during the COVID-19 Pandemic**



# Foreword

The COVID-19 pandemic has impacted the whole of humanity and the International Atomic Energy Agency (the Agency) is no exception. The Agency's nuclear verification as well as its development activities were put to the test. We, at the Agency, decided to remain proactive and face the challenge head-on.

The Agency went into a lockdown in March as cases of COVID-19 mounted. At the core of all the decisions has been the health and wellbeing of our staff primarily based on the evolving guidance from the Host Government. Business continuity arrangements were adjusted considering the specific health related needs in close coordination with the Agency medical service. The Agency quickly scaled up the IT infrastructure and adopted HR guidelines on working arrangements. Almost all staff, consultants and contractors, as necessary, were equipped to continue to work from home. The Agency quickly and effectively adapted to remote working conditions and continued to deliver on its mandate. Operations were as close to normal as possible under the new constraints. While the staff have gradually started coming back to the Agency premises from May 15, the conduct of our business remains mostly through virtual means due to the status of the pandemic in different parts of the world coupled with international travel restrictions.

Another challenge has been the organization of the meetings of the Agency's policy making organs involving the participation of representatives from 171 Member States in a virtual setting while scrupulously following the existing rules and procedures. Intense consultations among Member States on the framework of the meetings was followed in coordination with individual delegations present in Vienna, as well as at other locations, to establish and set up the adequate connectivity on a suitable platform for remote simultaneous interpretation. Dummy runs were conducted to improve confidence in the technical set up and to provide training to participants. Further to the efforts made by the Agency staff and the delegations, the meetings of the Programme and Budget Committee and the Board of Governors in May and June 2020 respectively were successfully conducted. This has given the Agency confidence and paved the way for organizing the 64th regular session of the General Conference in a blend of a virtual and physical setting.

As I had committed at the outset of the pandemic, the Agency is continuing to implement safeguards to prevent any misuse of nuclear material and activities for proscribed purposes, and at the same time continuing to provide assistance to countries to fight the pandemic.

The Agency has been implementing safeguards effectively, including through the conduct of in-field verification activities. All safeguards objectives are being met and there has been no loss of "continuity of knowledge" of nuclear material under Agency safeguards. Inspectors' schedules have been maintained despite travel restrictions, with the help of enhanced cooperation from Member States. Inspectors continue to follow all international and national health related regulations – for example, in relation to testing and self-quarantine – as necessary.

The Agency has been supporting countries in responding to the COVID-19 outbreak, through the provision of equipment to detect the virus using nuclear techniques, as well as relevant training and guidance. The Agency, in collaboration with the Food and Agriculture Organization, has provided guidance on COVID-19 detection to 259 medical and veterinary laboratories from over 125 countries. The Agency has been providing guidance on multiple topics including conducting a series of webinars to help health care providers around the world to cope with the pandemic while continuing to deliver their services. The Agency has been regularly participating in the COVID-19 United Nations Crisis

Management Team (COVID-19 CMT) led by the World Health Organization. The purpose of the COVID-19 CMT is to facilitate and align United Nations system efforts to enable coherent coordinated action, leveraging synergies and ensuring transparency and accountability in response to COVID-19.

Thanks to generous support from Member States and the private sector, the Agency has been able to respond to the request for assistance from over 125 countries. In the process, a dedicated Technical Cooperation Project through which the Agency assistance is being provided has become the largest ever, both in terms of disbursement of funds and number of beneficiary countries.

One of the most important lessons learned from the COVID-19 assistance project has been the recognition of the need for preventing future pandemics. That became the genesis of the Agency's ZODIAC (Zoonotic Disease Integrated Action) project.

We prepared three special reports for the June meeting of the Board of Governors under agenda item '*The IAEA and COVID-19*', taking stock of the impact of the pandemic on the main areas of our work. These are: *IAEA Support to Member State Efforts in Addressing the COVID-19 Pandemic* (GOV/INF/2020/6); *Safeguards implementation during the COVID-19 Pandemic* (GOV/INF/2020/7); and *The operation, safety and security of nuclear and radiation facilities and activities during the COVID-19 Pandemic* (GOV/INF/2020/8).

These reports have been updated with minor adjustments to their titles and bound together by virtue of their common topical relevance, for their publication to the General Conference.

Rafael Mariano Grossi  
Director General

# General Conference

**GC(64)/INF/4**

Date: 24 August 2020

**General Distribution**

Original: English

## Sixty-fourth regular session

Item 8 of the provisional agenda  
(GC(64)/1, Add.1 and Add.2)

# IAEA Support to Member State Efforts in Addressing the COVID-19 Pandemic

*Report by the Director General*

## Summary

- This report presents the latest status of the assistance rendered by the Agency to its Member States in their efforts to address the current COVID-19 pandemic, and indicates future steps.
- Agency assistance for the use of real time reverse transcription-polymerase chain reaction (real time RT-PCR) to address COVID-19 is being delivered through the technical cooperation project INT0098, ‘Strengthening Capabilities of Member States in Building, Strengthening and Restoring Capacities and Services in Case of Outbreaks, Emergencies and Disasters’, approved by the Board of Governors at its meeting in November 2019 as part of the 2020–2021 technical cooperation programme, with the objective of assisting Member States to restore capacities, competencies and services in the case of disease outbreaks, natural emergencies or other disasters.
- Real time RT-PCR is a highly accurate, nuclear derived technique used to detect viral pathogens, including those that cause zoonotic disease such as COVID-19. The Agency has built Member State capacities in the use of RT-PCR in response to previous outbreaks of zoonotic disease, including Avian influenza, Ebola virus disease and Zika virus disease.
- The Agency is delivering support to 126 countries and territories to address the outbreak of COVID-19. Several Member States have provided generous financial and in-kind support, which is enabling the Agency to respond rapidly and effectively to the urgent needs of its Member States. The Agency is working in cooperation with the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), and is a member of the WHO-led COVID-19 UN Crisis Management Team.
- Looking forward, the IAEA has launched a new initiative focusing on identifying, monitoring, tracing and early detection of zoonotic disease pathogens at the animal-human interface. This initiative, named ZODIAC (for Zoonotic Disease Integrated Action), will strengthen the ability of the IAEA and its Member States to prepare for and respond to zoonotic disease threats and outbreaks.



# IAEA Support to Member State Efforts in Addressing the COVID-19 Pandemic

*Report by the Director General*

## **A. Background**

1. Sixty percent of human pathogens are of animal origin, while 75% of emerging animal diseases can be transmitted to humans, causing zoonotic diseases such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). As pathogens evolve, they may become fully adapted to the human population (e.g. human immunodeficiency virus (HIV) or dengue).
2. The increase in zoonotic disease outbreaks is facilitated by human encroachment on natural habitats, and by changes in land use, including deforestation. It is exacerbated by population growth, the increased mobility of people and commodities, and climate change.
3. Coronaviruses are ribonucleic acid (RNA) viruses from the *Coronaviridae* family. Six types of coronavirus are known to infect humans. Four cause mild respiratory symptoms, while two, MERS and SARS, have resulted in epidemics with high mortality rates.
4. In December 2019, a new type of coronavirus, SARS-CoV-2, which causes COVID-19 disease, was identified. The disease spread rapidly, and on 30 January 2020, WHO declared the outbreak to be a public health emergency of international concern. On 11 March 2020, WHO declared COVID-19 a pandemic. As of 4 August 2020, the global number of confirmed infected people has reached 18 100 204, and the global number of deaths reported has increased to 690 257 people.<sup>1</sup>

## **B. RT-PCR technology and its applications**

5. Real time RT-PCR is a nuclear-derived deoxyribonucleic acid (DNA) amplification method, and it is one of the most sensitive, established and accurate methods to detect pathogens. It uses an enzyme to replicate, or amplify, a specific genetic region of a pathogen's DNA a billion-fold in just an hour. Scientists then detect, monitor and characterize this DNA amplification, or replicon, either through radioisotopes or by counting fluorescent molecules attached specifically to the DNA replicon. It is a highly accurate technique and is one of the most widely used laboratory methods for detecting the virus SARS-CoV-2.

---

<sup>1</sup> <https://covid19.who.int/>

## C. Previous IAEA support to Member States, delivered through the regular and technical cooperation programmes

6. The IAEA has a long and proven track record of developing and deploying nuclear and nuclear-related techniques for the rapid and accurate detection of animal and zoonotic diseases. Over the past two decades, in partnership with FAO, the IAEA has trained and equipped experts around the world to use real time RT-PCR to detect major zoonotic and animal diseases such as Avian influenza, Ebola and Zika virus diseases, often using its Veterinary Diagnostic Laboratory Network (VETLAB Network). The VETLAB Network was originally set up by the IAEA and FAO to combat the cattle disease rinderpest. Today, the network helps participating countries to improve the early detection and control of transboundary animal and zoonotic diseases

7. During the 2014–2016 outbreaks of Ebola virus disease (EVD) in West Africa, the IAEA and FAO, in collaboration with WHO and the World Organisation for Animal Health (OIE), helped African countries to strengthen their capacities to diagnose EVD, and other animal and zoonotic diseases, accurately and safely using RT-PCR through the regional TC project RAF5073, ‘Strengthening Africa’s Regional Capacity for Diagnosis of Emerging or Re-emerging Zoonotic Diseases, including Ebola Virus Disease (EVD), and Establishing Early Warning Systems’. In addition, networking was strengthened among national ‘One Health’ actors from the health, veterinary and wildlife sectors, in order to



The IAEA worked with 39 African countries to strengthen national capacities to diagnose Ebola virus. (Photo: L. Gil Martinez/IAEA)

improve the national/regional early warning system. More than 140 African experts from veterinary and public health sectors were trained to carry out early molecular diagnosis of zoonotic diseases under adequate bio-safety conditions and equipment and diagnostic kits needed to perform the assays was provided. More than 250 African experts were also trained through national training courses to carry out field and laboratory inspections safely and securely, and to collect samples from sick animals (both livestock and wildlife). Expertise gained by the region was used very successfully by Member States to fight against the highly pathogenic avian influenza outbreaks that occurred shortly afterwards. The Agency continues to strengthen Member State capacities to detect disease and establish early warning systems in all regions, through various technical cooperation projects.



African experts were trained to carry out field and laboratory inspections safely, and to collect samples from diseased animals. (Photo: L. Gil Martinez/IAEA)

8. In March 2016, Zika virus infection was reported in 26 countries and territories in the Americas. WHO declared the Zika outbreak a public health emergency of international concern. The IAEA delivered RT-PCR equipment to 11 Member States and provided training for 31 scientists and medical personnel at its Seibersdorf Laboratories through technical cooperation reserve fund projects. Support to help Latin American and Caribbean countries to rapidly identify cases of Zika virus continued thereafter under RLA5074, ‘Strengthening Regional Capacity in Latin America and the Caribbean for Integrated Vector Management Approaches with a Sterile Insect Technique Component, to Control Aedes Mosquitoes as Vectors of Human Pathogens, particularly Zika Virus’. The project focuses on building capacity for the field validation of the sterile insect technique (SIT) applied to mosquitoes – the vector for dengue, chikungunya and Zika viruses. Since mid-2016 the project has provided training, equipment, supplies and materials to the participating countries for creating a robust entomological baseline. By the end of 2019 more than 210 scientists from the 16 participating countries had been trained in the different components of SIT and its application.



Training by the IAEA helped Latin American and Caribbean countries to identify cases of Zika rapidly. (Photo: O. Yusuf/IAEA)

## **D. Current support to Member States in their efforts to address COVID-19**

9. The Agency is currently providing support to Member States’ efforts to address COVID-19 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’. The project was developed based on previous experiences of successful

Agency responses to urgent Member State needs, and taking into consideration feedback from Member States regarding the kind of support most likely to be requested, and the need to enable tangible, on-the-ground impact as soon as possible. It was intended to facilitate the IAEA's response to increasing requests by Member States for assistance in coping with outbreaks of disease (such as EVD in Africa, Avian influenzas in Asia, lumpy skin disease in Europe, and Zika virus disease in Latin America), as well the consequences of devastating natural disasters (such as major earthquakes and floods). The interregional project was developed in anticipation of such outbreaks and events, in order to allow the IAEA to provide its assistance to Member States within an appropriate framework and in a timely fashion.

10. TC project INT0098 was approved by the Board of Governors at its meeting in November 2019 as part of the 2020–2021 technical cooperation programme. The project has a duration of four years and is fully footnote-a/ (unfunded), as it is difficult to forecast the nature of the emergencies Member States may face and the scale of the support Member States may need. The interregional project provides an available framework for timely response to emergencies, and has already proved its value and effectiveness in the current crisis.

11. At the outset of the COVID-19 outbreak, Member States began to submit requests for Agency support to use RT-PCR for the detection of COVID-19 infections, and by 18 March, 42 such requests had already been received. The Agency responded immediately, preparing the technical details for the procurement of detection equipment, kits and consumables, and approaching relevant suppliers promptly to establish the availability of and lead times for the necessary equipment and materials. On 24 March, the Director General approved the first batch of procurement for 42 Member States under INT0098.



Monitoring the loading of a shipment of equipment to a Member State. (Photo: MTPS/IAEA)

12. As of 4 August, 126 countries or territories (44 in Africa, 28 in Asia and the Pacific, 23 in Europe and Central Asia, and 31 in Latin America and the Caribbean) have requested support from the IAEA (Figure 1), and the Agency has delivered or is in the process of delivering support to those countries and territories.



Morocco receives equipment from the IAEA to assist national efforts to address COVID-19. (Photo: Ministry of Health, Morocco)

13. The equipment and materials procured are consolidated in a package which includes detection equipment, namely, real time RT-PCR and kits, together with reagents and laboratory consumables, as well as biosafety supplies such as personal protection equipment for the safe analysis of samples. Multiple suppliers are required for each package, as no single supplier can provide all the items in the package alone. As a result, the Agency has concluded separate purchase orders with five to six suppliers for each package. As so many purchase orders are required, and as the availability of the main piece of equipment (RT-PCR) is limited in the market, the Agency is delivering support in six batches, with 1537 purchase orders issued, and an additional 147 purchase orders for personal protection equipment, as of 4 August 2020. Figure 2 provides information on the number of purchase orders issued for each batch.



Unpacking equipment sent by the IAEA, Bosnia and Herzegovina. (Photo: Communication Office of University Clinical Center).

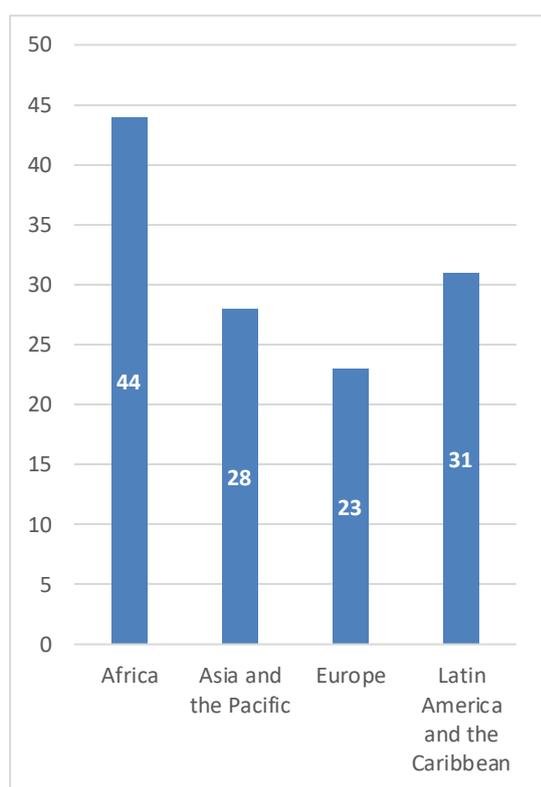


Figure 1: Countries and territories requesting IAEA assistance (as of 4 August 2020).

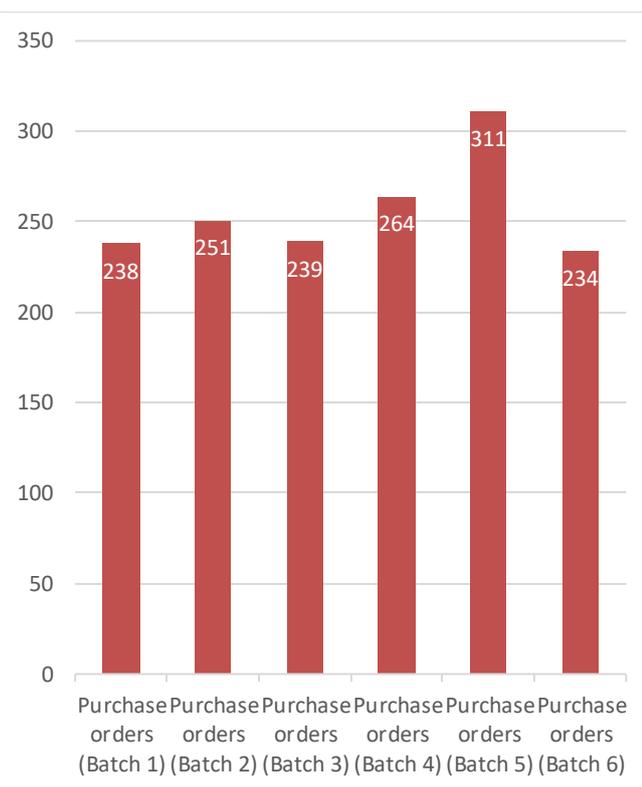
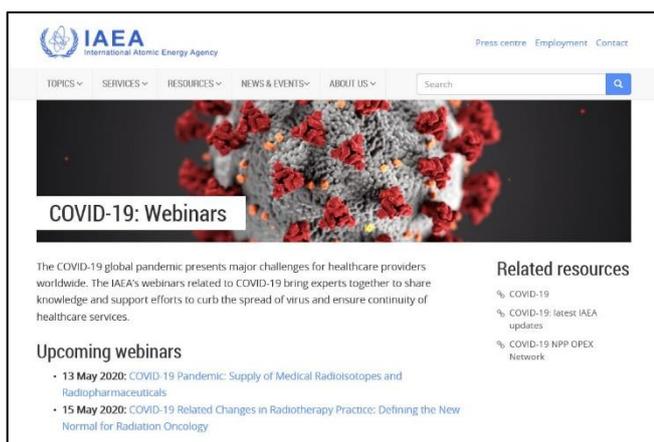


Figure 2: Purchase orders by batch (as of 4 August 2020).

14. The delivery of the packages is challenging. National lockdowns, reduced operations and staffing, global travel limitations, irregular cargo flights and other COVID-19 restrictions are affecting the suppliers' supply chain and the logistics for final delivery to countries, which has translated into delays that are having an impact on the initial suppliers' timelines. The Agency is making every effort to coordinate with suppliers and freight forwarders on the production and shipment of the necessary equipment and materials, in order to deliver this urgent support to Member States as soon as possible.



16. In addition, the IAEA is conducting webinars to help health care providers around the world to adjust their standard operating procedures to cope with the pandemic so that they can continue to deliver their services while protecting patients, staff, and the public. The webinars provide advice to nuclear medicine, radiology and radiation oncology departments, and offer best practices in rotation policy, use of personal protection equipment, and other institutional considerations and experiences. The IAEA



is also making online information materials on COVID-19 available on a dedicated page on the Human Health Campus<sup>3</sup>. The page offers responses to frequently asked questions from laboratory and health professionals, and includes links to recorded webinars, COVID-related articles, and other material.

17. The following webinars have been held so far:

- Coronavirus Disease (COVID-19) Pandemic – Challenges for Nuclear Medicine Departments (1384 participants from 108 countries accessing live, and over 2600 views of the recorded version as of 31 July 2020);
- COVID-19 Preparedness for Radiotherapy Departments – Towards Consensus on Best Practices (in Arabic, English, French, Spanish, Russian, 2817 participants in total);
- ESR Connect Special Reports – Radiology in the fight against COVID-19. (Joint webinar with the IAEA, the European Society of Radiology and the International Society of Radiology, over 600 participants);
- Reporting chest x-ray, computed tomography and ultrasound. (Joint webinar with the IAEA, the European Society of Radiology and the International Society of Radiology, over 500 participants);
- Africa Radiation Oncology NETWORK (AFRONET) (61 participants in total);
- COVID-19 Pandemic: Guidance for Nuclear Medicine Departments (744 participants from 68 countries accessing live, and over 890 views of the recorded version as of 31 July 2020);
- COVID-19 Pandemic: Nuclear Medicine Departments transitioning to a ‘New-Normal’ - When and How (212 participants from 42 countries accessing live, and over 221 views of the recorded version as of 31 July 2020);
- COVID-19 Pandemic: Supply of Medical Radioisotopes and Radiopharmaceuticals (821 participants from 74 countries);
- COVID-19 and Health Workers: Radiation Protection;
- COVID-19 Pandemic: Radiation Sterilization of PPE (530 participants);

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

- COVID-19 Webinar on RT-PCR: From understanding the zoonotic origin of the virus, to transmission and diagnosis in humans – A session with IAEA-FAO-WHO experts (544 log-ins from 94 countries).

18. Guidelines and recommendations based on expert advice, international best practices, current literature and the IAEA webinars have also been compiled, and a summary of these recommendations has been made available to support health professionals. In addition, 20 practical videos, available in English, Spanish, Portuguese and French, on sample collection, handling, processing, use of personal protective equipment and RT-PCR use for detection have been produced in cooperation with colleagues in Brazil, and frequently asked questions on RT-PCR have been produced in audio format.

19. In addition to the provision of equipment, guidance and standard operating procedures, the IAEA has planned a series of further technical training courses at its laboratories in Seibersdorf, Austria. The courses will cover crucial aspects of the detection, characterization and monitoring of the virus at the wildlife-domestic animal-human interface; biosafety during sampling and sample processing; the contribution of nuclear and nuclear-derived techniques to the identification of COVID-19; techniques for accurate characterization of virus strains in circulation in animals; and methods for monitoring virus circulation in the environment. The first training course was planned for 30 March – 9 April 2020, but due to the rapidly evolving global travel restrictions it was not possible for training participants to attend. The series of training courses are now planned to take place between August and the end of 2020. Similar training courses will also be held in the different regions, using existing capacities in Member State laboratories.

20. Upon request from several Member States, the Agency also reviewed the findings of tests on the use of ionizing radiation (gamma and electron beams) to sterilize used respiratory masks, such as models N95 and FFP2, that are commonly worn by medical personnel. Tests showed that radiation sterilization reduces the performance of the protective filters in respiratory face masks and is therefore not a viable method. However, the Agency promotes the application of radiation for sterilization of other medical equipment.

## **E. Funding, and partnerships with the United Nations Food and Agriculture Organization and the World Health Organization**

21. Several Member States provided generous extrabudgetary funding to TC footnote-a/ project INT0098, ‘Strengthening Capabilities of Member States in Building, Strengthening and Restoring Capacities and Services in Case of Outbreaks, Emergencies and Disasters’ through which the COVID-19 emergency assistance is being delivered. Australia, Canada, Finland, Germany, Japan, the Netherlands, Norway, Pakistan, Republic of Korea, the Russian Federation, San Marino, Sudan, Sweden, the United Kingdom and the United States of America, together with private entities including Takeda Pharmaceutical Company Limited, have offered extrabudgetary pledges and assistance, as shown in Table 1. As of 4 August, €25.2 million of extrabudgetary funds were allocated for this purpose.

22. In addition, the IAEA was offered an in-kind contribution by China of €1.84 million worth of equipment and materials for the detection of COVID-19. Malta also offered an in-kind contribution worth €25 000.

<b>Table 1: Extrabudgetary contributions* (as of 4 August 2020)</b>	
<b>Member States</b>	<b>Offered/Pledged</b>
Australia	46 023
Canada	3 268 401
Finland	200 000
Germany	500 000
Japan **	3 000 000
Korea, Republic of	264 000
Netherlands	500 000
Norway	2 065 433
Pakistan	39 960
Russian Federation	500 000
San Marino	67 021
Sudan	30 000
Sweden	190 840
United Kingdom	561 798
United States of America	9 854 000
<b>Other contributors</b>	
Takeda Pharmaceutical Company Limited	4 102 732
<b>Total</b>	<b>25 190 208</b>
<b>In-kind Contributions</b>	
China	1 842 000
Malta	25 000
<b>Total</b>	<b>1 867 000</b>
* All amounts in Euros are converted at the prevailing UNORE as per the IPSAS guidelines on Revenue recognition. Therefore, pledged amounts are not final until formal acceptance is completed	
** In addition, Japan contributed 1 million Euro in support of a project 'Detection of emerging and re-emerging transboundary animal and zoonotic pathogens at the animal-human interface' in connection with the COVID-19 outbreak	

23. The IAEA has been working closely with the FAO and with WHO since the beginning of the COVID-19 outbreak, strengthening collaboration as the situation progressed, with a view to providing a coordinated response to requests from its Member States.

### **E.1. United Nations Food and Agriculture Organization**

24. The Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture and the Animal Production and Health Division of the FAO have been sharing data and information on a daily basis, as well as through weekly teleconferences with FAO headquarters and FAO regional offices to discuss progress and status of assistance provided to Member States.

25. A programme of training courses, to be implemented when global travel restrictions are lifted, has been developed jointly with the FAO. In addition, the distribution of updated standard operating

procedures, reagent information and validation data to more than 259 laboratories (215 medical and 44 veterinary) involved in COVID-19 testing was done jointly, with many receiving one-on-one guidance and support. The cooperation and technical backstopping at field level was channelled through the VETLAB platform.

26. The Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, in close cooperation with its sister Divisions in the FAO, is also participating in discussions and analysis of the impact of COVID-19 on global food security.

## **E.2. World Health Organization**

27. The United Nations Crisis Management Policy has been activated for the COVID-19 pandemic. On 25 March 2020, the IAEA joined the COVID-19 UN Crisis Management Team (COVID-19 CMT) led by the World Health Organization<sup>4</sup>. The purpose of the COVID-19 CMT is to facilitate and align United Nations efforts to enable coherent coordinated action, leveraging synergies and ensuring transparency and accountability in response to COVID-19.

28. The IAEA has assigned focal points to the COVID-19 CMT and its relevant working groups, such as supply chain and communication. The supply chain working group has initiated a joint purchasing pipeline and is planning the provision of logistic support through various corridors. The UN communication group, which reports to the CMT, aims to ensure regular coordination and management of external communication on the COVID-19 outbreak, so that WHO situation reports and dashboards are used as authoritative sources of public health information by all UN system entities.

29. Through this strengthened cooperation, the IAEA has ensured that the equipment and materials procured to address IAEA Member States' requests are in alignment with the overall UN response.

## **F. The way forward: early detection and global response to zoonotic disease**

30. IAEA has worked extensively on transboundary animal and zoonotic disease outbreaks and emergencies, including emerging infectious diseases such as Ebola, Avian Influenza, SARS, MERS and COVID-19. These past episodes have demonstrated that outbreaks of zoonotic diseases, and their consequences, are occurring more frequently. An integrated approach, involving all relevant stakeholders, is needed to prevent, control and mitigate zoonotic diseases. Emergency assistance measures, such as those currently taken in the context of COVID-19, will be integrated into a holistic approach that ranges from identifying, monitoring, tracing and early detection of zoonotic disease pathogens at the environment-animal-human interface, to participation in global intervention and response to a potential outbreak. This approach will be based on the following pillars, with research, development and innovation at its core:

- Focus on the competitive and comparative advantage of nuclear and nuclear-derived molecular and immunological techniques;

---

<sup>4</sup> The COVID-19 CMT also includes 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.

- Laboratory-led research and technology development, including the integration of modern biotechnologies (omics and genomics); and
- Extension of the scope to include research and epidemiology studies at the wildlife-domestic animal-human interface.

31. Looking forward, and in order to be better prepared to deal with the challenges of zoonotic diseases, the IAEA has launched a new initiative entitled 'Zoonotic Disease Integrated Action' or ZODIAC. It will allow for the continuation of the current assistance as well as its integration to strengthen the ability of the IAEA and its Member States to prepare for and respond to zoonotic disease threats and outbreaks, which will include, but not be limited to:

- Enhanced national capabilities of Member States for surveillance, early detection and intervention against emerging/re-emerging zoonotic diseases;
- Availability of real-time decision-making support tools for timely interventions;
- Access to novel technologies for early detection of emerging zoonotic diseases;
- Access to data on the impact of zoonotic diseases on animal and human health.

<b>Annex 1: List of countries and territories that have requested support from the Agency (as of 4 August 2020)</b>		
<b>AFRICA (44 official requests)</b>		
Algeria	Gambia, The (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 (28 official requests)</b>		
Afghanistan	Lao People's Democratic Republic	Papua New Guinea
Bangladesh	Lebanon	Philippines
Bahrain	Malaysia	Sri Lanka
Cambodia	Maldives (non-IAEA Member State)	Syrian Arab Republic
Fiji	Mongolia	Thailand
Indonesia	Myanmar	Viet Nam
Iran, Islamic Republic of	Nepal	Yemen
Iraq	Oman	Territories under the jurisdiction of the Palestinian Authority
Jordan	Pakistan	
Kuwait	Palau	
<b>EUROPE and Central Asia (23 official requests)</b>		
Albania	Hungary	Romania
Armenia	Kazakhstan	San Marino
Azerbaijan	Kyrgyzstan	Serbia
Belarus	Latvia	Slovenia
Bosnia and Herzegovina	Montenegro	Tajikistan
Bulgaria	North Macedonia	Ukraine
Croatia	Poland	Uzbekistan
Georgia	Republic of Moldova	
<b>LATIN AMERICA AND THE CARIBBEAN (31 official requests)</b>		
Antigua and Barbuda	Dominican Republic	Panama
Argentina	Ecuador	Paraguay
Barbados	El Salvador	Peru
Belize	Grenada	Saint Kitts and Nevis (non-IAEA Member State)
Bolivia, Plurinational State of	Guatemala	Saint Lucia
Brazil	Guyana	Saint Vincent and the Grenadines
Chile	Haiti	Trinidad and Tobago
Colombia	Honduras	Uruguay

Costa Rica	Jamaica	Venezuela, Bolivarian Republic of
Cuba	Mexico	
Dominica	Nicaragua	



# General Conference

**GC(64)/INF/5**

Date: 24 August 2020

**General Distribution**

Original: English

---

## Sixty-fourth regular session

Item 8 of the provisional agenda  
(GC(64)/1, Add.1 and Add.2)

# IAEA implementation of Safeguards during the COVID-19 Pandemic

*Report by the Director General*

## Summary

- At the outset of the COVID-19 pandemic, the Director General stated that, despite the difficult situation, the Agency would not interrupt its verification activities. This document reports on the measures taken by the Agency to continue to implement safeguards effectively during the pandemic.
- The Agency has implemented a series of mitigating actions, drawing from business continuity and disaster recovery measures that were already in development.
- These actions have enabled the Agency to conduct all of its most time-critical safeguards in-field verification activities and almost all safeguards activities that are normally carried out at Agency Headquarters and at its regional offices.
- The Agency has made adjustments to the operational conduct of safeguards activities at Headquarters and in the field, including the rescheduling of a number of activities.
- The contributions of the Agency's regional offices have been particularly instrumental in facilitating the continuity of the Agency's safeguards activities.
- States have played a very important role in supporting the Agency's work, including by ensuring the Agency's continued access to nuclear facilities, movement across borders and transfers through airports.
- The Agency will continue to rely on the essential cooperation of States to implement safeguards, including to support any increase in the frequency and intensity of its in-field verification activities in the remainder of 2020 as a consequence of rescheduling.
- The Agency currently assesses that it will be able to draw soundly-based safeguards conclusions at the end of the year for all States, providing that it continues to receive their necessary cooperation and support and that ongoing challenges related to the pandemic can be overcome.



# IAEA implementation of Safeguards during the COVID-19 Pandemic

*Report by the Director General*

## **A. Introduction**

1. The impact of the COVID-19 pandemic has been far-reaching. Governments around the world have adopted and implemented strict measures related to health and safety for the containment of the coronavirus, such as physical distancing, restricting travel and free movement of people, grounding flights and restricting other means of travel, and closing borders. These measures have had a significant impact on the Agency's implementation of safeguards, in particular on its ability to conduct a number of its planned in-field verification activities. This required the Agency to take a number of measures to overcome new challenges or mitigate their impact.
2. This document reports on the measures that the Agency has taken so far, to continue to implement safeguards effectively during the pandemic in order to be able to draw soundly-based safeguards conclusions.

## **B. Safeguards implementation**

3. To achieve its safeguards objectives for a State, the Agency needs to implement safeguards activities for the State in accordance with its safeguards agreement and, as applicable, the additional protocol, to provide credible assurance that the State is abiding by its safeguards obligations. The frequency and intensity of safeguards activities are determined in accordance with the safeguards agreement, taking into account the State's nuclear fuel cycle and related technical capabilities, the type of nuclear material, and other State specific factors.<sup>1</sup>
4. Each year, the Agency prepares an annual implementation plan (AIP) for each State with a safeguards agreement in force which specifies the in-field and Headquarters safeguards activities to be conducted, and the frequency and intensity with which they are to be implemented, to attain the safeguards technical objectives.<sup>2</sup> If a planned activity cannot be conducted, or if a safeguards technical objective is not attained or an inconsistency is found, the AIP may be adjusted and follow up activities planned and conducted.

---

<sup>1</sup> See GOV/2014/41 and Corr.1, Sections C.5 and C.6.

<sup>2</sup> See GOV/2014/41 and Corr.1, Section C.4.

## C. State responses to COVID-19

5. The measures introduced by a significant number of States, and the consequent impact on safeguards implementation, in response to COVID-19 can be summarized as follows:

- **Flight restrictions:** severe commercial flight restrictions on the vast majority of routes, resulting in widespread cancellations have meant that many States are much harder to reach, and some are not currently reachable via commercial flights.
- **Travel across State borders:** the introduction of strict immigration measures, such as only allowing entry to citizens and residents of the State concerned, has meant that some States are harder to access for non-residents.
- **In-country restrictions:** the introduction of in-country restrictions, including on the movement of people, and the availability of other services, such as hotel accommodation, has had deleterious consequences for Agency inspectors and technical staff.
- **Access restrictions to Agency offices and laboratories:** following the Republic of Austria's guidelines regarding COVID-19, the Director General instructed Agency personnel in Vienna and Seibersdorf to work from home from 16 March to 30 June 2020 (see para. 28 below); similar measures were requested by Japan with respect to the Agency's regional office in Tokyo and by Canada with respect to the Agency's regional office in Toronto.<sup>3</sup>
- **Access restrictions to facilities and sites:** the closure of, or introduction of strict access restrictions to, nuclear facilities or sites has meant that Agency inspectors and technical staff have either not been able to access some facilities or locations outside facilities (LOFs) or are have found it harder to do so.
- **Health and safety requirements:** include, the introduction of quarantine restrictions; requirements to wear appropriate personal protective equipment (PPE) - which was in short supply worldwide; and medical testing requirements upon arrival in the State concerned and before accessing nuclear facilities, which varied between States and changed at short notice.

## D. Impact on safeguards implementation and Agency responses

6. Despite these circumstances, the Agency continued to pursue its verification mission to deter the spread of nuclear weapons through the early detection of the diversion of nuclear material and the misuse of nuclear technology.

7. The measures introduced by States in response to COVID-19 have had an impact on planning and implementing Agency safeguards activities, in particular those in the field. The Agency, in turn, took a number of actions and introduced a number of measures to mitigate this impact as much as possible.

---

<sup>3</sup> Agency staff, including inspectors, are required to observe the health and safety rules and regulations of the host State, whether in the field or at Agency Headquarters and regional offices.

## **D.1. Business continuity measures**

8. The Agency is committed to the resilience of its critical operations, even during a disruptive event, to ensure that it can continue to implement its legal obligations under relevant safeguards agreements, carry out other verification activities and make safeguards-relevant information available on a secure basis. Drawing from business continuity and disaster recovery measures already in development, some of the immediate actions taken by the Agency to mitigate the effects of the pandemic on safeguards activities included:

- Prioritizing time-critical in-field verification activities (with subsequent periodic reassessment);
- Completing ongoing inspection-related work, to the extent possible, prior to the initiation of the Agency's remote working arrangements, and storing safeguards equipment and PPE outside the premises, to ensure they are readily available to inspectors and technical staff;
- Establishing a temporary centralized capability within the Office of the Deputy Director General for Safeguards to review and monitor scheduled in-field verification activities on a daily basis;
- Conducting systematic polymerase chain reaction (PCR) testing, with support from the Vienna International Centre (VIC) Medical Services, for all Agency inspectors and technical staff prior to and after duty travel in order to comply with State regulations and, where possible, avoid quarantine;
- Ensuring that Agency staff were equipped with the necessary IT capabilities to enable secure remote working for an extended period.

9. The global travel restrictions and health and safety measures have presented various challenges. Access to consistent and up-to-date information about frequently changing restrictions and measures poses a particular challenge when planning in-field verification activities. Close collaboration with States, including particularly the Republic of Austria as the host State, remains essential to overcome these operational obstacles.

## **D.2. In-field verification activities**

10. As mentioned above, travel and in-country restrictions have made it harder for the Agency to reach a large number of nuclear facilities, sites and other locations. In order to accommodate such restrictions, intensive coordination efforts have been required at Agency Headquarters. Moreover, there have been numerous examples of Agency inspectors and technical staff making extraordinary efforts to fulfil their duties, for example, by isolating for up to 14 days in their destination State, driving long distances and crossing various national borders to conduct an inspection instead of flying, embarking on missions without knowing in advance how or when they would return to Vienna, and having the length of missions extended significantly.

11. The cost of flying to a number of destinations to conduct in-field verification activities has increased; for many States, mandatory quarantine periods add significantly to the length of verification missions; and frequently, travel logistics and quarantine requirements prevent the Agency from combining travel to carry out verification activities in different States. Consequently, performing a number of verification activities has required more and longer trips by Agency staff.

12. In response to the unavailability of many commercial flights, the Agency has, for the first time in its history, concluded contracts for the provision of aircraft charter services to transport inspectors and technical staff to and from States, using extra-budgetary support.<sup>4</sup> This arrangement has already been used successfully to transport 90 Agency inspectors and technical staff to conduct inspections in six States. In a handful of cases, Agency staff were permitted to use “repatriation flights”, otherwise used solely for nationals of the State concerned, to return from an inspection.

13. In light of COVID-related restrictions, the Agency has adjusted AIPs to focus inspection effort on achieving the most time-critical and time-bound safeguards objectives and, where appropriate, has rescheduled inspections, design information verifications and complementary accesses (CAs). Where necessary and feasible, the Agency has also implemented compensatory measures, such as the additional use of remote monitoring, to maintain ‘continuity of knowledge’ and minimize the future impact of any delayed activities. Despite the difficulties, the Agency has been able to conduct all of its most time-critical verification activities. On the assumption that the Agency is able to continue to do so throughout the remainder of the year, and to implement those verification activities that had been postponed from earlier in the year, it is envisaged that the Agency will be able to achieve all safeguards objectives.

14. Between 1 March and 31 July 2020, the Agency conducted 757 inspections, 237 design information verifications (DIV) and 44 CAs. These activities involved around 3 500 days of inspectors’ verification effort and over 6 300 days spent in the field by inspectors and technical staff.<sup>5</sup>

15. The availability of the resident Agency staff at the Agency’s regional offices in Tokyo and Toronto to conduct verification activities in the States where those offices are located has avoided some of the problems encountered by staff who have had to travel between States to conduct inspections.<sup>6</sup> The regional offices have been instrumental in facilitating the conduct of 111 inspections, 33 DIVs and 7 CAs between 1 March and 31 July 2020.

16. In a few countries, the introduction of COVID-19-related restrictions has prevented the Agency from conducting a number of CAs, short-notice inspections and unannounced inspections. The Agency is assessing the implications of these instances and will seek to address them as part of its rescheduling of verification activities for the remainder of the year.

17. All safeguards equipment requests from within the Department have been processed, including the provision of verification equipment and PPE to Agency inspectors and technical staff prior to duty travel. The Agency’s investment in remote monitoring systems over the past two decades has proved invaluable during the pandemic, with more than 1 700 data streams continuing to deliver safeguards equipment data from facilities in 30 States<sup>7</sup> to Agency Headquarters. As a consequence of the pandemic, certain routine work at nuclear facilities has been suspended and non-essential activities deferred. However, between 1 March 2020 and 31 July 2020, the Agency has conducted 20 trips related to inspection support and 34 trips related to the maintenance or installation of safeguards equipment.

### **D.3. Verification activities at Headquarters and regional offices**

18. Overall, as a result of a substantial adjustment of some processes and workflows, regular activities carried out at Agency Headquarters and in the regional offices have continued to deliver results that are

---

<sup>4</sup> Provided by France, Germany, the United Kingdom and the United States of America.

<sup>5</sup> While this data is accurate for the period described, it should not be considered indicative for the whole of 2020 or comparable to figures for the equivalent period in 2019. Such statements and activities are based on annual implementation plans and should be considered on an annual basis.

<sup>6</sup> Approximately 24% of inspections carried out by the Agency are conducted in Canada and Japan.

<sup>7</sup> And Taiwan, China.

close to pre-pandemic levels, although with some delays. Information analysis and associated collaborative teamwork by Agency staff have continued; the processing of State reports and declarations and associated feedback have been performed in accordance with the Agency's related obligations; the evaluation of nuclear material balances and the evaluation of analysis of environmental sample results have been maintained at close to normal levels; and the Agency has continued to collect, process, evaluate and internally provide other safeguards-relevant information, such as open source information, including satellite imagery.

19. State evaluation and the development of new State-level safeguards approaches (SLAs) have continued, albeit at a reduced pace due to the need to maintain the security of highly confidential information. While some of the work has been conducted by Agency staff remotely, using, *inter alia*, a newly-deployed secure IT solution, the drafting of State evaluation reports (SERs) and development of SLAs need to be carried out within the highly secure, integrated safeguards environment (ISE), accessible only at Headquarters and in the regional offices. In addition, preparatory work related to inspections, such as equipment contamination checks and seals verification, can only be carried out at Headquarters. Hence, at the outset of the pandemic it was necessary to provide a limited number of Agency staff with authorized access to the VIC to carry out such work. By 1 July 2020, all Agency staff had access to the VIC once more (see para. 27 below).

20. Progress on the Departmental project aimed at improving the development of SLAs using a structured approach, as described in the Safeguards Implementation Report (SIR) for 2019,<sup>8</sup> has continued uninterrupted, although with some initial delay.

21. The Agency has continued to provide statements on the activities and results of its in-field verification activities to relevant States: in the period between 1 March and 31 July 2020, the Agency submitted 437 statements on inspection results (90(a) statements or equivalent), 166 statements on the conclusion drawn from its inspections (90(b) statements or equivalent) and 142 DIV acknowledgement letters, and 46 statements on CAs (10(a) statements).

22. At Seibersdorf (Austria) and Rokkasho (Japan), the Agency's safeguards laboratories have remained safe, secure and in good operating condition. All requests from inspectors for environmental sample kits have been met. For an initial period between 16 March and 18 May 2020, the processing of new nuclear material samples was suspended due to restrictions on the number of Agency staff permitted in the Seibersdorf laboratories, after which normal operations resumed. The large geometry secondary ion mass spectrometer (LG-SIMS) for environmental samples has continued operating throughout, albeit at minimal capacity for the first month. After an initial slowdown, the laboratories are now receiving all inspection samples for analysis from the field and dispatching samples to the network of analytical laboratories (NWAL), which is fully operational again after earlier disruptions to the processing of new samples.

#### **D.4. Health, safety and welfare**

23. While a number of Member States were willing to provide financial assistance to the Agency to purchase PPE, the global PPE shortage became a critical issue. The Agency continues efforts to identify possible suppliers and it is hoped that a longer-term commitment to satisfy the Agency's needs is provided through the standard Agency procurement process. A shortage of the FFP3-type masks - vital in providing the necessary high-level of protection during inspections - remains an issue, although efforts by the Secretariat to secure new suppliers are ongoing. Since the onset of the pandemic, the

---

<sup>8</sup> GOV/2020/9, paras 115 and 116.

Agency has used its existing PPE stocks procured or manufactured onsite and, in parallel, has identified Austrian suppliers which has partially addressed some of the current needs.

24. COVID-19 health and safety measures in some States, involving quarantine requirements, have necessitated Agency inspectors spending longer periods in country. Other States, however, have facilitated the Agency's implementation of safeguards by not applying such restrictions or waiving them on submission of negative test results for COVID-19 upon arrival in the country. The support provided by the VIC Medical Services, including the availability of testing, and, more recently, the commercial availability of testing at Vienna airport and other laboratories in Vienna, has enabled Agency staff to be tested before and after duty travel. This has allowed those staff who test negative to immediately resume work without the need for quarantine, in accordance with the host country requirements.

## **D.5. Recruitment and training**

25. The Agency has continued to recruit staff, including 21 new inspectors who started at the Agency in April and May 2020. Two Introductory Courses for Agency Safeguards (ICAS) for the new inspectors were delayed by one month and two months, respectively. To mitigate the risks of COVID-19 transmission and to adhere to the recommendations of the VIC Medical Services, the courses were re-designed to integrate remote learning. Pending the start of their formal training, the Agency prepared the inspectors for their work by launching the ICAS preparation portal on the Agency's learning management system. For other staff, training courses have been rescheduled, delivered remotely or modified.

## **D.6. Assistance to States**

26. With regard to training provided to States, four SSAC courses, originally planned for before the end of June, have been rescheduled for 2021. The Agency is working to develop alternative means to deliver safeguards-related training and assistance to Member States, including by increasing the availability of on-line resources and by developing remote learning modules. The Safeguards Traineeship Programme has been redesigned to engage the trainees through remote presentations, assignments and workshops.

## **E. Operational adjustments**

27. The Agency continues to make operational adjustments to AIPs to compensate for those activities it was not able to carry out in the field earlier in the year. In many cases, these adjustments have included planning of greater frequency and intensity of in-field verification activities during the latter part of 2020. The Agency has identified and planned essential safeguards activities in the field for the coming months on the basis of current travel restrictions and will regularly review these plans to take account of any further changes. All containment and surveillance measures have remained in place and all remote monitoring equipment has operated normally. Analysis of inspection results and State evaluation of safeguards relevant information has continued – with work on highly confidential information still being conducted at Headquarters.

28. A gradual return to working at full capacity at the VIC and the safeguards analytical laboratories in Seibersdorf was put into operation on 15 May 2020 and completed on 1 July 2020. The gradual return of staff to regional offices in Tokyo and Toronto has been put into operation in accordance with local regulations.

## **F. Role of States**

29. Member States' Missions in Vienna and their national authorities have played a very important role in ensuring the Agency's continued access to nuclear facilities, movement across borders and transfers through airports. Specific examples include accepting COVID-19 test results in lieu of undergoing quarantine and facilitating flight clearances when airspace is otherwise closed. The Agency is grateful for the support received from all States in their interactions with Agency staff at Agency Headquarters and for Agency inspectors and technicians.

30. In many instances, in-country COVID-19 restrictions have led to a reduced availability of relevant national staff, including facility operators, to support Agency inspectors in the performance of their duties. While the Agency was able to eventually gain cooperation from the States concerned, the impact of the delay in gaining access is still being assessed by the Agency at the State and/or facility level and may require additional in-field verification effort and activities in the remainder of the year.

31. The Agency has also experienced a few cases in which its main State interlocutors were not familiar with the obligations under their country's safeguards agreement(s) and who had to be reminded that under no circumstances does any State have the right to suspend unilaterally the implementation by the Agency of its access and in-field verification activities provided for under those agreements. Nevertheless, such initial difficulties have since been largely resolved. The Agency will need increased cooperation and support from State authorities and operators in order, where necessary, to implement increased frequency and intensity of in-field verification activities in the coming months to ensure it will meet its safeguards objectives.

32. Many State and Regional authorities (SRA) have continued to provide the Agency with the reports and declarations required under relevant safeguards agreements, although there was also a significant increase in late reporting by States when compared to previous years. Between 1 March and 31 July 2020, the Agency received 6024 reports related to nuclear material accountancy (NMA). In return, the Agency provided feedback (or addressed) to the State or regional authorities: 126 summary letters and 252 acknowledgment letters. The Agency provided States with semi-annual book inventories and import communication statements (59 original letters and attachments). The Agency has been informed by one State that it has not been able to provide its declarations due to local work/travel restrictions. The Agency is currently assessing the impact of these delayed submissions.

33. Outcomes from the 2020/2021 Departmental Development and Implementation Support Programme for Nuclear Verification, funded by Member States, are expected to be largely unaffected, although around one quarter of individual programmes may experience a delay or be otherwise impacted by restrictions related to COVID-19, such as the current difficulties in accommodating in-field testing of equipment under development.

## **G. Conclusion**

34. At the outset of the pandemic, the Director General stated that, despite the difficult situation, the Agency would not interrupt its verification activities. This report shows that the Agency has continued to implement safeguards effectively during the COVID-19 pandemic. Despite the difficulties, the Agency has effectively adapted itself to the new circumstances, focused its effort on the most critical safeguards activities, both in the field and at Headquarters, and taken a series of remedial and mitigating measures. The Agency currently assesses that it will be able to draw soundly-based safeguards conclusions at the end of the year for all States, providing that it continues to receive their necessary cooperation and support, including in relation to any increase in the frequency and intensity of planned activities for the remainder of 2020, and that ongoing challenges related to the pandemic can be overcome. Nevertheless, any changes in COVID-19-related restrictions and measures, or their subsequent re-imposition by States would, naturally, require the Agency to reassess the impact on safeguards implementation.

# General Conference

**GC(64)/INF/6**

Date: 24 August 2020

**General Distribution**

Original: English

---

## **Sixty-fourth regular session**

Item 8 of the provisional agenda  
(GC(64)/1 and Add.1)

# IAEA Activities related to the Performance of Nuclear and Radiological Facilities and Activities during the Covid-19 Pandemic

*Report by the Director General*

---

## **Summary**

This document summarises the Agency's actions undertaken to facilitate information exchange among stakeholders, collect feedback, and gather support for requesting Member States in mitigating the impact of COVID-19 on the operation, safety and security of nuclear and radiation facilities and activities. It provides summary information on actions taken by operators and regulators during this period. This document also identifies elements of the pandemic's impact on the Agency's support to Member States for the operation, safety and security of nuclear and radiation facilities and activities.



# IAEA Activities related to the Performance of Nuclear and Radiological Facilities and Activities during the Covid-19 Pandemic

*Report by the Director General*

## **A. Introduction**

1. The impact of the COVID-19 pandemic has been far reaching. Governments around the world have adopted and implemented strict health and safety related measures such as physical distancing, restricting inbound and outbound travel, free movement and closing borders.
2. National policy decisions made by governments have direct and indirect repercussions on organizations in the nuclear and radiological field, for example in the area of human resources. Decisions in one country could have affected facilities in other countries, for example through introducing supply chain difficulties in large scale projects such as outage management, major refurbishment or new plant construction. Any impact causing delay of services could have also affected the transport of time sensitive products such as medical isotopes. The stretching of government infrastructure capacity could also potentially have an impact on the emergency preparedness of nuclear and radiation facilities.
3. The nuclear industry has always learned from experience and sought to improve already high levels of safety and security while improving operational performance, including following the accidents at Three Mile Island, Chernobyl and Fukushima Daiichi. Institutional and technical measures were enhanced to improve resilience, and international legal instruments, IAEA safety standards and national regulations were strengthened. Member States have recognized the COVID-19 pandemic as an external event and the nuclear industry was prepared to take special measures to cope with its impact. Nevertheless, COVID-19 is the first pandemic of this scale in the history of the nuclear industry.
4. In Member States, organizations implemented predetermined actions from already prepared pandemic plans designed to ensure safety, security and continuity of business, and adapted them as the pandemic progressed. The Agency significantly adjusted its ways of working to maintain and enhance its support to Member States. In particular, the Agency's efforts to facilitate information exchange were enhanced in order to gather and share experiences, including good practices, of Member States as the pandemic spread. This rapid mobilization enabled the Agency to understand the specific challenges faced by Member States and to respond via appropriate support.

## **B. Actions undertaken by the Agency to support Member States in mitigating the impact of the COVID-19 pandemic**

### **I – Facilitating information exchange with Member States**

5. The International Reporting System for Operating Experience (IRS) for nuclear power plants (NPPs), the Incident Reporting System for Research Reactors (IRSRR) and the Fuel Incident Notification and Analysis System (FINAS) for nuclear fuel cycle facilities remain fully operational and reports relating to plans and actions taken to mitigate the impact of the COVID-19 pandemic have been received from Member States through these systems.

6. The Incident and Trafficking Database (ITDB) remains fully functional.

7. The Agency's Incident and Emergency Centre (IEC) continued to ensure that the communication channels for notification and information exchange on nuclear and radiological emergencies remain fully operational on a 24/7 basis.

8. Member States have provided details on the pandemic's impact on NPP performance, including details on outage scope, schedules and timing, through the Power Reactor Information System (PRIS). The Country Nuclear Power Profiles resources were applied to gather, collate and summarise open source information related to the pandemic's impact on operating NPPs as well as advanced new build projects.

9. The Agency rapidly developed and piloted an international peer-to-peer network, the NPP COVID-19 Operating Experience Network (COVID-19 OPEX Network), through the Technical Working Group (TWG) on NPP Operation. The Network was established for information and experience sharing between operating organisations, technical support organisations, relevant international organisations and other stakeholders, and has proven to be very valuable with 26 reports from 10 Member States and 5 international organizations. From the beginning of April, the Agency developed weekly summary reports to share information via the COVID-19 OPEX Network on mitigating actions implemented at NPPs to limit the impact. The focus was on operating plant performance, but information on energy markets and new construction projects was also included.

10. Information on the pandemic's impact on training activities and human resources policies, gathered through the TWG on Managing Human Resources in the Field of Nuclear Energy, was shared in the Nuclear Energy Capacity Building Hub, hosted on the NUCLEUS platform and will be discussed and validated in a special session of the TWG meeting in October 2020.

11. The Agency set up a network for research reactors, similar to that for NPPs. This network used a dedicated webspace for operators of research reactors to share information on their status and the remedial measures being implemented.

12. The Agency keeps an open communication with national regulatory bodies for nuclear and radiation safety. In addition, the Agency has conducted a survey with radiation safety regulators with the objective to have a first overview of the impact of the COVID 19 pandemic on the safety of radiation sources and their regulatory oversight. The survey was launched on April and responses were received from 93 regulatory bodies.

### **II – Safety standards and nuclear security guidance**

13. The process for developing and revising safety standards and nuclear security guidance has continued. Instead of the regular Headquarters meetings set for the first half of 2020 for the Commission on Safety Standards (CSS), the Safety Standards Committees (SSCs) and the Nuclear Security Guidance Committee (NSGC), procedures for online review and approval of documents, using video-conference meetings of members were adopted.

14. The Secretariat initially undertook a preliminary analysis of safety standards and guidance to identify whether pandemic situations are currently addressed, and whether the guidance in this field should be strengthened. On the basis of this initial work, the Secretariat has mapped its preliminary analysis of safety standards and guidance against drafts currently under revision and has already included enhanced guidance addressing pandemic situations in several draft Safety Guides that will be presented to the CSS, the SSCs and the NSGC for final approval in 2020.

15. As a second step, a deeper analysis of the standards and guidance is underway, with the involvement of the CSS, SSCs and NSGC, as well as the international organizations involved in their development.

16. An Ad Hoc sub-group of the NSGC held a meeting in July 2020 to discuss the need for updates to the Nuclear Security Series to provide guidance on nuclear security during pandemics. The results of that meeting will submit recommendations to the full NSGC at their meeting scheduled currently for 30 November to 2 December 2020.

17. The Secretariat is developing a Technical Report synthesising the actions taken by various stakeholders (regulatory bodies, operating organizations and other authorized parties for facilities and activities, including contractors and vendors) in Member States and by international organizations to manage the risks posed by the pandemic to the safe, secure and reliable operation of facilities and activities. This publication will help to identify good practices and form the basis for any later additional consensus guidance on pandemic situations.

18. In addition, the International Nuclear Safety Group, (INSAG) had a virtual meeting in May with wide attendance that was predominantly focused on the implications of the COVID-19 pandemic on nuclear safety. There was discussion of the uncertainty surrounding the future trajectory of the pandemic and of the long-term implications of measures to deal with COVID-19 for the operation of nuclear facilities and the assurance of safety. As a result, INSAG will continue to pursue the subject. As a first step, reflections on the implications of the response to COVID-19 for nuclear safety were the focus of the annual letter sent by the Chairman to the Director General in June. The letter will be circulated to Member States during the General Conference. It was also agreed that the implications of the pandemic should be the focus of the upcoming INSAG Forum, which occurs on the margins of the General Conference.

### **III – Emergency preparedness and response**

19. The Agency's Incident and Emergency System continued to be operational and a programme of emergency exercises continued to be carried out. The IEC continued conducting and planning for Conv-Ex (Convention Exercises) in accordance with existing plans.

20. Of particular note was the ConvEx-2b exercise conducted on 24 – 26 March 2020 in order to test the arrangements for a request for assistance and the provision of assistance. Thirty-five Member States and two Regional Specialized Meteorological Centres (RSMCs) of the World Meteorological Organization (WMO) participated in the exercise. This timely and successful three-day exercise was conducted while the responders in many Member States and in the Secretariat worked remotely and operated in an even more challenging environment. For instance, Requesting States' plans provided for additional precautions to protect the Field Assistance Teams deployed by the Assisting Member States.

21. A ConvEx-2a exercise was conducted on 12 May 2020 to test the availability of contact points to complete the appropriate reporting forms and to upload monitoring data on IAEA's International Radiation Monitoring Information System (IRMIS). Fifty-eight Member States participated in the exercise.

22. The IEC provided a virtual workshop on arrangements for notification, reporting and assistance in nuclear or radiological incidents and emergencies to assist Member States in developing national operational arrangements that are consistent with the Operations Manual for Incident and Emergency Communication. This included a virtual tour of the IEC. Twenty-eight participants from 24 Member States participated in the workshop.

#### **IV – Meetings of Conventions and other legal instruments**

23. The Eighth Review Meeting of the Convention on Nuclear Safety (CNS) was postponed by a consensual decision of the Contracting Parties and will be held from 15 to 26 March 2021. The Presidency has assured Contracting Parties that the agenda of the Meeting will remain unchanged and the Meeting will be conducted as initially planned.

24. COVID-19 pandemic had also direct impact on the 7th Review Cycle of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention). As agreed by the Contracting Parties, the Third Meeting of the Joint Convention Working Group to Prepare the Fourth Extraordinary Meeting of the Contracting Parties to the Joint Convention, scheduled for 17-18 March 2020, will not proceed, and the Fourth Extraordinary Meeting of the Contracting Parties to the Joint Convention, scheduled for 26-27 May 2020, will be held as a physical meeting at a date to be determined in due course. The Organizational Meeting for the Joint Convention Seventh Review Meeting of the Contracting Parties was postponed by a consensual decision of the Contracting Parties and will be held as a virtual meeting over four days from 28 September 2020 to 2 October 2020. The Seventh Review Meeting of the Contracting Parties to the Joint Convention remains unchanged and will be held at the IAEA Headquarters in Vienna from 24 May 2021 to 04 June 2021, as agreed to during the 6th Review Meeting.

25. The Tenth Meeting of the Representatives of Competent Authorities identified under the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency took place as a virtual meeting from 15-19 June 2020. A total of 252 participants from 96 States and twelve international intergovernmental organizations, members of the Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE), participated in the meeting. The Meeting reviewed the implementation of conclusions from the ninth meeting, held in 2018, and endorsed nine conclusions with 22 associated action items. These actions, for both the Secretariat and Member States are expected to be completed before the next Competent Authorities Meeting in 2022. This includes actions related to adherence to the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, the Unified System for Information Exchange in Incidents and Emergencies (USIE), Response and Assistance Network (RANET), public communication in a nuclear or radiological emergency, IAEA's role on assessment and prognosis, International Radiation Monitoring Information System (IRMIS), Convention Exercises (ConvEx), and reporting nuclear and radiological incidents and emergencies irrespective of their cause.

26. The open-ended Meeting of Legal and Technical Experts on the Implementation of the Guidance on the Management of Disused Radioactive Sources, Supplementary to the Code of Conduct on the Safety and Security of Radioactive Sources, which was scheduled take place from 8 to 10 June 2020, has been postponed to 16 to 18 February 2021.

27. In support of the Meeting of the Preparatory Committee for the 2021 Conference of the Parties to the Amendment to the Convention on the Physical Protection of Nuclear Material (A/CPPNM), the designated Co-Chairs of the Preparatory Committee have prepared a draft agenda and programme for the 2021 Conference, as well as draft Rules of Procedure to be discussed during the Preparatory Committee Meeting. Although the Agency has had to postpone some promotional events as well as the

Preparatory Committee Meeting itself, it has taken steps to ensure that this does not impact the robustness of the preparations for the 2021 Conference.

## **V – Collaboration with other United Nations organizations and other international bodies**

28. Regular interaction between the IAEA and the World Organisation of Nuclear Operators (WANO), the OECD Nuclear Energy Agency and others permitted an effective exchange of information as well as independent validation of relevant information. These discussions are intended to support the resumption of assistance and advisory missions offered by the Agency together with other international organizations while minimising risk to both mission participants and host organizations.

29. There has been significant disruption in the distribution of medical isotopes and radioisotopes. The Agency has contacted stakeholders to ascertain means to support mitigation of these disruptions including the International Civil Aviation Organisation (ICAO), the International Air Transport Association (IATA) and the International Federation of Air Line Pilots' Associations (IFLAPA). The Secretariat is developing a strategy on how the Agency can work together with relevant international organisations, including WHO and ICAO to address this critical challenge.

## **VI – Other support to Member States**

30. In order to support the Safeguards inspection programme, the Agency's Radiation Safety Technical Services have continued providing the essential services and radiation monitoring and workplace monitoring and emergency response services to ensure the safety of the Agency's laboratories is maintained throughout the shutdown period.

31. The Agency continued supporting Member States on projects related to remote monitoring and verification of physical protection systems at nuclear facilities. Procurements and development of work related to planned nuclear security projects continued during this period.

32. E-learning courses on nuclear security, emergency preparedness and response and radiation protection are available to Member States. The Secretariat has noted an increase in enrolments in and completion of its e-learning courses in in this regard. In addition, the Agency successfully tested and deployed several upgraded e-learning modules as planned. The Agency also provided Member State organizations with training course material in order to conduct training themselves and provided human resource development (HRD) planning and training support and reviewed Member States' HRD documentation.

## **C. Actions undertaken in Member States to mitigate the impact of the COVID-19 pandemic**

### **I – Nuclear Power Plants**

33. Member State actions focussed on ensuring the safety and wellbeing of staff through prompt action to minimise the risk of the pandemic's spread, while maintaining business continuity and adequate levels of safety and security of NPPs. No Member State reported the enforced shutdown of any nuclear power reactors resulting from the effects of COVID-19 on their workforce or essential services such as supply chains. Regulatory bodies have generally applied graded approach during the pandemic and adjusted the scope of regulatory inspections based on their safety significance.

34. Member States indicated different levels of impact on planned outages, scheduled maintenance plans or programmes due to limited availability of manpower caused by travel restrictions as well as for the protection of health of their employees, while ensuring adequate levels of safety and security at the NPPs. In some cases, the operators have proposed to the Regulatory bodies the deferment of the planned outages to the next year, which could eventually show higher than average yearly contributions to electricity production from the nuclear power in the country in 2020. In some cases, economic slowdowns led to decreased energy demand leading to the operators to reduce power or even shutdown. Some of the actions in relation to the above are brought out in the next paragraphs.

35. In Canada, two units under major refurbishment and life extension program returned to the grid after completing work with COVID-19 measures in place. In Hungary, the scope of planned 2020 outage activities have been reduced mainly due to travel restrictions of foreign vendor companies. In the Republic of Korea, the schedule and duration of an NPP outage was adjusted to ensure worker safety.

36. In Armenia, the shutdown dates for preventive maintenance were postponed for 45 days due to the consequences of the COVID-19 pandemic. France made fleetwide adjustments to maintenance plans that adapted to the pandemic's impact on electricity demand. In Mexico, the level of maintenance staff on shift was optimised to the level necessary to complete the minimum preventive and corrective maintenance activities. In the USA, operators are scaling back some planned maintenance work to limit the number of individuals on site and performing health screenings of all employees and contractors coming to the plants.

37. Economic slowdowns led to decreased energy demand in France, resulting in requests for NPPs to reduce power or even shutdown. To ensure a reliable and sufficient power supply through the winter of 2020-2021, outages were rescheduled during the summer and autumn periods to ensure that the maximum number of reactors would be available during the winter months.

38. Changes in demand are major sources of disruption for NPP operation and maintenance in a number of Member States. NPPs in Belgium, Canada, China, France, South Africa and Ukraine are estimated to produce less electricity during 2020 as a result of the pandemic. In a few countries, electricity demand fell dramatically by more than 10% between 9 and 15 March and the week after.

39. For NPPs in Brazil, Finland, the Islamic Republic of Iran, the Netherlands and Switzerland, generation is expected to exceed original 2020 estimates because outages were either shortened or deferred to 2021.

40. In addition to following national government recommendations on hygiene and physical distancing, operating organizations of NPPs reported that they are implementing a number of special measures. For example, at the Russian nuclear power plants, operational personnel working at nuclear facilities have special living conditions. This includes separate accommodation, meals, leisure and constant medical control.

41. Other steps taken include regular medical screenings of staff, body temperature checks of staff, travel restrictions, self-isolation and physical meeting restrictions. Where COVID-19 cases were confirmed among staff, entire shifts have been quarantined and the conditions for reactor shutdown have been reviewed. It is also important to note that there is potential for common cause failure, as operators reside together in communities.

42. Pandemic mitigation plans at some facilities result in a need for more authorized or licensed personnel. This need is being satisfied by newly trained as well as previously qualified staff, including recent retirees and instructors. However, this approach in itself is facing challenges in maintaining the required quality and quantity of training in the context of other restrictions limiting the ability to assemble employees.

43. Some Member States reported that work management practices were adapted by reviewing maintenance and surveillance tests to identify which activities could be postponed without any impact on regulatory requirements, safety or reliability. This assessment involved reviewing required materials and spare parts to ensure critical item availability and evaluating upcoming outage plans to minimise access of external contractors. Support staff adapted to remote working through maximised use of IT platforms and distance collaboration tools. Some facilities have decided to reduce, postpone or cancel work of contractors on the site during the COVID-19 pandemic.

44. Ongoing and future challenges include the implementation of planned maintenance activities to ensure interim- to long-term reliability. Current mitigation actions minimise the site presence of external staff by deferring online and outage work that is not necessary to ensure safety. This work is being rescheduled, but uncertainties regarding how the pandemic might progress are posing a challenge for many Member States.

45. The pandemic also impacted resources being applied to construct new plants in Belarus, United Arab Emirates, Turkey and Bangladesh, but did not stop the construction activities. The impact on schedules continues to be assessed. After incorporating COVID-19 measures, major milestones were achieved at new nuclear units such as fuel load in Belarus and the Russian Federation while first criticality was achieved at new units in China, India and the United Arab Emirates. As planned before the COVID-19 pandemic, a unit in France and the United States were permanently shutdown.

46. Member State regulatory body actions focussed on maintaining an adequate level of regulatory oversight whilst ensuring the safety and wellbeing of staff. Regulatory bodies generally reported adopting remote working practices with some able to maintain a physical regulatory presence at nuclear installation sites through resident inspector offices.

47. The United Kingdom Office for Nuclear Regulation (ONR) reported that since the introduction of COVID-19 restrictions in March it had stopped routinely deploying inspectors to nuclear sites, this has meant no routine on-site presence since then as ONR does not have resident inspectors on nuclear sites. The ONR stated that its priorities were to gain assurance via regular licensee submissions on the effectiveness of the licensee pandemic responses, including staffing levels, supply chain resilience, continuing safety related maintenance, security resilience and social distancing. Further the ONR had carried out remote compliance inspections to oversee site operations which ONR stated would be augmented under very specific circumstances by a site visit should it be essential to providing the necessary assurance. ONR also stated maintaining close liaison with the licensee internal regulatory and challenge functions was a high priority.

48. The Canadian Nuclear Safety Commission (CNSC) stated it was committed to maintaining its regulatory oversight of the Nuclear Power Plants (NPP) during the pandemic and had made some changes to its approach. Site Inspections involving an on-site presence were suspended, unless absolutely necessary (such as reactive inspections in response to a significant event) to support physical distancing measures. The documentation aspects of on-site inspection continued through desktop inspections accompanied by teleconferences/videoconferences with the licensee. The CNSC inspectors continued their surveillance and monitoring activities remotely through participation in the licensee's daily meetings as well as monitoring the licensee's corrective action program. CNSC reported it is committed to identifying learning opportunities from the pandemic crisis through developing an exit strategy to implement a "new normal" including sharing experience with national and international stakeholders.

49. The Republic of Korea Institute of Nuclear Safety (KINS) regulatory expert organisation reported that nuclear on-site inspection had been prioritised according to safety significance. The use of non-physical presence inspection techniques such as document review, video surveillance related to

important maintenance and telephone interview with the licensee had been adopted. The utilization of inspectors at the site resident inspection offices had allowed some normal inspection activities to continue with necessary precautions.

## **II – Research reactors and the production of radioisotopes**

50. Most research institutions and universities, which operate many research reactors for education, training, and research, decided to temporarily shut down the facilities. They have also implemented measures to maintain safety of the reactors during the extended shutdown state, for example by partial unloading fuel from reactor cores and monitoring safety in accordance with existing procedures for long-shutdown periods.

51. Most Member States decided to postpone (or reduce the scope of) regulatory inspections during the pandemic period. Along with the universities and research institutions in which they operate, many research reactors that focus on training and research are in temporary shutdown – a state in which a reactor’s operations are on hold until circumstances change.

52. Most research reactors in operation remain operable, with specific measures implemented to address the pandemic.

53. Six of the major producers of radioisotopes surveyed continue to operate and have developed business continuity plans with defined proactive measures to ensure safety of the facility and personnel during the pandemic, while continuing production. These include revised staffing arrangements (minimum staffing during operation shifts, on-call duties and non-essential staff work from home), and implementation of the national health requirements on the spread of the COVID-19 virus (physical distancing, hygienic procedures, similar to the actions taken in NPPs).

54. Production of medical radioisotopes and radiopharmaceuticals has been recognized as “essential services” in most countries. The production has currently remained sufficient to meet the demand. However, the COVID-19 crisis resulted in a re-prioritization of hospital medical procedures, and a drop of around 20% of the global demand of Mo-99. The IAEA held a Webinar on “COVID-19 Pandemic: Supply of Medical radioisotopes and Radiopharmaceuticals” in April 2020 to evaluate the situation worldwide.

55. A reduction in nuclear medicine procedures worldwide has been reported, reaching up to 45% to 80% depending on the procedure and the country. This is due to postponement of non-urgent procedures and the disruption in the supply chain. The regions most affected are Africa, Latin America, Middle East and South East Asia, with some cases of suspension of services. Plans have been made to restore the deferred services.

## **III – Nuclear Fuel Cycle Facilities**

56. Most nuclear fuel cycle facilities continue operation, except some radioactive waste management facilities and some mining and processing facilities, which have been temporarily shut down.

57. Operating organizations of nuclear fuel cycle facilities have adopted measures aimed to ensure business continuity, nuclear safety and security, and the security of supply of nuclear fuel required for the operation of NPPs and research reactors. Typical measures include prioritization of strategic activities such as the manufacture and transport of nuclear fuel and the elimination of non-essential activities. Similar to NPPs, measures also focus on minimizing the potential transmission of the virus among personnel by physical distancing, enhanced personal hygiene protocols, revised staff arrangements especially for operating personnel, non-essential staff working from home, and reduced contractor presence on site.

58. In addition, many facilities have provided support to pandemic mitigation measures. Examples include 3D manufacturing of ventilators or donation of masks and other personal protective equipment.

#### **IV – Facilities using radiation sources**

59. The survey on the impact of the COVID-19 pandemic on the regulatory activities for the safety of radiation sources has identified a number of issues that may be of interest for the regulatory oversight in the current circumstances. The survey indicates that users may be constrained due to economic challenges to continue business thus may fail to ensure safety of sources including disused sealed sources. Some of the facilities, for example, may not be able to meet necessary staffing needs thus could jeopardise the safety of radiation sources, occupational workers, patients or the facilities itself.

60. Almost all the regulatory bodies are following a graded approach and adjusting their inspection programme to deal with the challenges presented by the pandemic.

61. Medical physicists in a diagnostic radiological setting queried the potential impact on medical and occupational radiation protection from COVID-19 pneumonia imaging activities. With chest CT being used in the management of patients with known or suspected COVID-19 infection, sometimes repeatedly, and with the imaging sometimes being performed in locations outside the traditional radiological imaging departments, a continued focus on radiation protection of patients and workers is strongly recommended. The prevention of COVID-19 infections of patients and medical staff also needs to be considered in these imaging activities.

### **D. Final Remarks and future work**

62. The COVID-19 pandemic is a common concern. Response actions have been implemented by operating organizations and regulatory bodies in Member States to ensure safety, security and reliable generation of electricity, production of isotopes or supply of other relevant products and services to the extent possible. Supply chains, however, must continue to be monitored to ensure that latent risks from broader industrial shutdowns are properly managed to ensure future nuclear installations safety, security and reliability.

63. While the pandemic is disrupting operation and maintenance activities as well as outage scope, timing or duration at many NPPs to accommodate local pandemic mitigating actions, the Agency estimates, on the basis of the information received, that the actions taken by operators and regulators are focused to maintain adequate levels of safety and security at the world's operating nuclear power reactors. The Agency encourages Member States to continue the sharing of operating experience and associated good practices in ensuring safety, security and continuity of operations of NPPs during the pandemic. The Agency will continue to monitor the impact of the pandemic through the NPP COVID-19 Operating Experience Network and the IRS.

64. Some significant Agency meetings were either cancelled, postponed or reformatted to accommodate virtual meetings. These included meetings related to several Conventions, Codes of Conduct and preparations for international conferences. Furthermore, some Agency peer review and advisory services were also deferred during this period. Nevertheless, the long-term impact of these cancellations and postponements is expected to be minimal.

65. Reports of events continued to be received by the Agency through existing mechanisms, as did the notification and information exchange in nuclear and radiological emergencies. The development of Agency standards and guidance also continued throughout the period.

66. Member State reports support the flexibility and resilience of NPPs under the impact of the pandemic. No Member State reported the enforced shut down of any nuclear power reactors resulting from the effects of COVID-19 on their workforce or essential services such as supply chains. The Agency has received reports of impact on plant operation from fourteen Member States and examples of the impact included modifications to shift arrangements, training and access restrictions. Seventeen Member States indicated some impact on in-progress or planned outages.

67. The pandemic's broad impact on the global economy and industrial activity will continue to challenge the global supply chain for months or years to come. That impact could threaten NPP performance over the interim- to long-term, for example, delaying long lead time items for new build or major refurbishment projects.

68. The IAEA received reports of outage impacts at NPPs in 26 of the 30 Member States with operating NPPs. In some cases, outage scopes were reduced by eliminating non-critical work to minimise external staff brought on-site. In other cases, outages were extended to allow work to proceed at a slow pace that accommodated physical distancing constraints. In still other cases entire outages were deferred to next year. The full impact will play out over at least the next year as future outage plans are revised to complete deferred work.

69. To collect information and make an assessment, the Agency initiated a survey at the end of April of radiation safety regulatory bodies in order to identify any impact of the COVID-19 pandemic on the safety of facilities using radiation sources and on their regulatory oversight. One of the anticipated challenges for Member States is that some companies may close as a result of the economic impact of the pandemic and there could be an increased risk of radioactive sources to become orphan. Reporting about the COVID situation at nuclear installations was enhanced through new and existing ad-hoc mechanisms.

70. The Agency will continue to support Member States mitigate and manage the impact of COVID-19 as it continues to evolve. The Agency, at an appropriate time and in collaboration with peer and partner organizations, will reflect on and share lessons learned from the pandemic and the relevant global response to it. Joint reports are foreseen. In July, the Agency held a Webinar on COVID-19 and its impact on the Nuclear Power Supply Chain providing examples of responses and future initiatives from Member States. The webinar also provided feedback to the Agency on additional supply chain themes to explore in the future.

71. The Secretariat continues to review and strengthen its standards and guidance. A deeper analysis of standards and guidance is underway, including the guidance on emergency preparedness and response. The Secretariat is developing a publication synthesising the actions taken by Member States. This publication will promote the enhancement of preparedness, response and recovery plans for future pandemics by identifying good practices and will form the basis for any later additional consensus guidance in new or revised standards and guidance.

72. To discuss the impact of the pandemic situation regarding the safety of nuclear facilities and activities, the Secretariat will continue its regular meetings with the Commission of Safety Standards, the Safety Standards Committees, the Nuclear Security Guidance Committee, the International Nuclear Safety Group, the Advisory Group on Nuclear Security and a sub-group of the Nuclear Security Guidance Committee. The Standing Advisory Group on Nuclear Energy will convene similar discussions about the impact of the pandemic on NPP performance, including outage planning and implementation.

73. The analysis of the data collected through the survey on the impact of the COVID-19 pandemic on the safety of facilities using radiation sources and on their regulatory oversight will continue, as more

responses are being collected. The conclusions of the survey will be shared appropriately with Member States.

74. Member State experience related to supply chain disruptions will be gathered to share lessons learned. Collaboration with peer, international organizations will continue to share available information on impact and to resume assistance and advisory missions through the systematic and effective management of pandemic related risks.

75. As for the long-term impact of the pandemic on major nuclear power projects, delays in the tendering processes as well as uncertainty on the level of available financing for new build projects will need to be assessed to determine how they will affect the contribution of nuclear power to Climate Change mitigation.

76. Most research reactors whose production of isotopes used in medicine is vital for health care continue to operate at reduced staffing levels. The Agency is currently reaching out to operators who are members of its TWG on research reactors to gather information on the status of those research reactors that produce medical isotopes during the COVID-19 crisis as well as issues related to world-wide supply.

77. The IAEA recognizes the need to encourage the governments of the producers and users of medical radioisotopes, the operators of research reactors, and the relevant Member States involved in production and transport of radioisotopes to continue to take steps to strengthen arrangements for deliveries. This action will allow mitigation of potential supply risks as the pandemic continues at different rates in Member States.



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*

[www.iaea.org](http://www.iaea.org)

International Atomic Energy Agency  
PO Box 100, Vienna International Centre  
1400 Vienna, Austria  
Tel.: (+43-1) 2600-0  
Fax: (+43-1) 2600-7  
Email: [Official.Mail@iaea.org](mailto:Official.Mail@iaea.org)