COVID-19 Best Practice Information: Nuclear Industry Response

Background

- Nuclear medical technology applications show promise as a path to efficiently test for the 2019 novel coronavirus and sterilize medical supplies. Nuclear energy represents a reliable source of electricity for many areas worldwide.[1]
- The following is a list of key findings and considerations for jurisdictions and communities regarding ongoing coronavirus disease (COVID-19) pandemic operations across the country. These are best practices for consideration and do not constitute and should not be considered as guidance in any way.[2]

Key Considerations

- While technical experts are helping dozens of countries using a nuclear-derived technique called real time RT-PCR to detect COVID-19 by providing the necessary equipment, guidance and training, many countries still need support in setting up and using the technique.[3]
  - Real time RT-PCR detects the presence of specific genetic material from any pathogen, including a virus. In addition to delivering a reliable diagnosis as fast as three hours, RT-PCR is one of the most accurate laboratory methods available for detecting, tracking and studying COVID-19.
- Nuclear facilities have taken steps to protect their workforce and implement plans to ensure continued functioning of facilities.

Lessons Learned Related to COVID-19 Operations and the Nuclear Industry

Nuclear Medical Technology

- **Potential Best Practice**: The International Atomic Energy Agency (IAEA) is providing diagnostic kits, equipment, and training in nuclear-derived detection techniques to 14 countries in Africa, Asia, Latin

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[1] 2020 World Nuclear Association, COVID-19 Coronavirus and Nuclear Energy, https://www.world-nuclear.org/information-library/current-and-future-generation/covid-19-coronavirus-and-nuclear-energy.aspx

[2] This document contains references and links to non-federal resources and organizations. This information is meant solely for informational purposes and is not intended to be an endorsement of any non-federal entity by FEMA, U.S. Department of Homeland Security, or the U.S. government.

[3] 2020 IAEA, How is the COVID-19 Virus Detected using Real Time RT-PCR? https://www.iaea.org/newscenter/news/how-is-the-covid-19-virus-detected-using-real-time-rt-pcr

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America, and the Caribbean that requested assistance in preventing the spread of COVID-19.[4]

- **Potential Best Practice**: Diagnostic imaging augmentation for hospitals can help protect patients and staff while examining those potentially infected with COVID-19. To reduce the potential spread of COVID-19, nuclear medicine departments may consider supporting radiology departments with hybrid imaging scanners with a suitable Computer Tomography (CT) component, allowing other CT scanners to be dedicated for COVID-19 patients.[5]
- **Potential Best Practice:** In China, industrial irradiation facilities have been used to disinfect and sterilize medical supplies.[6]

Nuclear Energy as Electricity Supply Augmentation

- **Potential Best Practice:** Nuclear reactors can ensure that electricity supplies are maintained during the COVID-19 crisis, despite the decrease in demand for electricity during the crisis. Nuclear generation capability is virtually unlimited and contributes to electricity production in over 30 countries. In many countries, nuclear employees have been identified as essential to maintaining critical infrastructure.[7]

Nuclear Safety

- **Potential Best Practice**: The IAEA's Incident and Emergency Centre (IEC) continues to ensure that the communication channels for notification and information exchange in nuclear and radiological emergencies remain fully operational 24/7.[8]
- **Potential Best Practice**: Many nuclear facilities are offsetting work hours or asking essential staff to temporarily live on site. Operators are providing food, beds, and other essential items to support these onsite staff.[9]
- **Potential Best Practice**: Many facilities have introduced workforce social distancing and, in some cases, reduced or halted operations nonessential to the continued operation of nuclear power plants.[10]

Topics for the "Best Practices" series are generated from crowd sourced suggestions. Have an idea? Let us research it! Organizations and individuals can e-mail best practices or lessons learned to fema-cipsupport@fema.dhs.gov.

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[4] 2020 World Nuclear Association, COVID-19 Coronavirus and Nuclear Energy, https://www.world-nuclear.org/information-library/current-and-future-generation/covid-19-coronavirus-and-nuclear-energy.aspx
[5] 2020 IAEA, Helping Nuclear Medicine and Radiotherapy Departments Deal with Covid-19: IAEA Webinars Draw Thousands, https://www.iaea.org/newscenter/news/helping-nuclear-medicine-and-radiotherapy-departments-deal-with-covid-19-iaea-webinars-draw-thousands
[6] 2020 Workd Nuclear Association, COVID-19 Coronavirus and Nuclear Energy, https://www.world-nuclear.org/information-library/current-and-future-generation/covid-19-coronavirus-and-nuclear-energy.aspx
[7] 2020 World Nuclear Association, COVID-19 Coronavirus and Nuclear Energy, https://www.world-nuclear.org/information-library/current-and-future-generation/covid-19-coronavirus-and-nuclear-energy.aspx
[8] 2020 IAEA, COVID-19: latest IAEA updates, https://www.iaea.org/covid-19
[9] 2020 ESI-Africa, Global nuclear industry shares technique amid the COVID-19 pandemic, https://esi-africa.com/industry-sectors/generation/global-nuclear-industry-shares-technique-amid-the-covid-19-pandemic/
[10] 2020 World Nuclear Association, COVID-19 Coronavirus and Nuclear Energy, https://www.world-nuclear.org/information-library/current-and-future-generation/covid-19-coronavirus-and-nuclear-energy.aspx