

Science & Technology Briefs

Monkeypox Continues To Spread

The WHO and the CDC have advised that the global situation regarding monkeypox should be closely monitored, even though the International Health Regulations (2005) Emergency Committee, meeting June 23, declined to declare that it currently constitutes a Public Health Emergency of International Concern (PHEIC).

A PHEIC is defined as “an extraordinary event which constitutes a public health risk to other states through the international spread of disease and to potentially require a coordinated international response,” implying a situation that is serious, sudden, unusual or unexpected; carries implications for public health beyond the affected state’s national borders; and may require immediate international action.

Although monkeypox isn’t fatal, it is a distant relative to smallpox. The WHO also noted that, “a large part of the population is vulnerable to monkeypox virus, as smallpox vaccination, which is expected to provide some protection against monkeypox, has been discontinued since the 1980s. Only a relatively small number of military, frontline health professionals, and laboratory workers have been vaccinated against smallpox in recent years.”

Symptoms include a rash and skin lesions; fever, chills, and swollen lymph nodes. Recently identified cases have developed skin lesions in the genital, groin, and anal regions that might be confused with rashes caused by common diseases such as herpes and syphilis.

Cases are expected to rise in the

summer months in the Northern Hemisphere, due to many “free love” concerts and fairs throughout Europe.

Indonesia To Build New Capital City

In August, as a key part of Indonesian President Joko Widodo’s economic development program—which includes a hydroelectric dam and roads—Indonesia will begin construction of a new national capital city, Nusantara, to be inaugurated in 2024. Located on the undeveloped east coast of the island of Borneo in East Kalimantan province, Nusantara will replace Jakarta, on the island of Java, which has functioned as the national capital since 1945. “Nusantara” means “Outer Islands” in Javanese, and was chosen to embody the national vision known as Wawasan Nusantara, “The Vision of the Indonesian Archipelago.”

The President, commonly known as “Jokowi,” said during a visit to the site June 22: “What is most important is that we want to be Indonesia-centric, not Java-centric. When we draw a line from west to east and north to south, the center point is this East Kalimantan province.”

Russia Reorients Transportation, Builds a New Sea Port

Western sanctions against Russia are indeed backfiring, as key transportation infrastructure projects Russia had been procrastinating on launching are being given top priority. In May, President Vladimir Putin ordered a reorientation of Russia transportation from Europe to the East and South.

Crucial to this directive is the completion of the International North-South Transport Corridor (INSTC) that connects St. Petersburg, on the Baltic, to the Caspian Sea, on to Iran, and from there to the Indian Ocean port of Mumbai, India. The corridor helps to integrate Central Asia, giving sea access to the landlocked region. The INSTC was central in the discussions at the June 29 Sixth Caspian Summit, where the leaders of host Turkmenistan, Azerbaijan, Iran, Kazakhstan, and Russia met in Ashgabat.

While St. Petersburg and Kaliningrad have come under threat from the West’s sanctions and other anti-Russian policies, Russia has decided to anchor the northern part of the INSTC, not at St. Petersburg, but further north at a new Arctic port in Murmansk on the Kola Peninsula. On June 20, Putin [met](#) with Murmansk Region Governor Andrey Chibis, and made it clear that in 2023 Russia will solve the problem of the import and export of goods through the opening of the country’s largest commercial port in Murmansk, the first new port in decades.

NASA Clears Artemis 1 for Launch

NASA has now fully examined the data from the June 20 “wet dress rehearsal” of the Space Launch System (rocket and boosters), complete with the Orion crew capsule—all intended for multiple “Artemis Project” manned missions to the Moon during this decade. NASA has cleared the system for launch. That launch is now set for a “window in late August,” according to a June 24 NASA [release](#).

Said Tom Whitmeyer, Deputy Associate Administrator for Common Ex-

ploration Systems at NASA HQ:

“During the wet dress rehearsal activities, we have incrementally added to our knowledge about how the rocket and the ground systems work together, and our teams have become proficient in launch procedures across multiple sites. We have completed the rehearsal phase, and everything we’ve learned will help improve our ability to lift off during the target launch window. The team is now ready to take the next step and prepare for launch.”

Not only did the rehearsal test the physical launch and safety shutdown procedures, it also allowed engineers to test the software and control transfer procedures that will take place in an actual launch event.

The Artemis 1 mission is an unmanned expedition around the Moon, designed to test all space and orbital maneuvering systems and techniques the rocket will be expected to use during a crewed mission to the Moon. While much of that mission, including the design and shape of the capsule itself, will be recognizable to anyone with experience of the Apollo lunar missions of the 1960s, Artemis will have the benefit of almost 50 intervening years of knowledge gained by NASA, even while underfunded and encumbered with political resistance. Artemis 1 will, for example, perform maneuvers in lunar orbit which the Apollo mission was not capable of.

A 2017 NASA video of the flight schematic can be viewed [here](#).

World Turning to Nuclear Power

USA: Even the green Biden Administration is being forced to take measures to preserve its nuclear energy capabilities in the face of the ongoing energy crisis sparked by Biden’s own sanctions mania. The Washington Examiner reports that the Biden Administration is launching a \$6 billion effort

to financially save distressed nuclear plants in the United States. No new construction is on the table beyond Plant Vogtle in Georgia—heaven forbid!—but money is being made available to keep the present plants in operation. Financial constraints have forced the closure of a dozen U.S. nuclear facilities before their licenses expired.

Netherlands: While the German government sticks to its suicidal obsession to exit from nuclear power by the end of 2022, the government in neighboring Netherlands wants more nuclear.

The Dutch government will reveal plans this week to develop two new nuclear power stations, in what will be “a good addition to all sustainable techniques” in the Netherlands, Climate and Energy Minister Rob Jetten has said. “We are fully committed to wind, sun and other sustainable energy sources. But you also want a stable CO₂-free energy source in that energy mix,” he explained, according to *NL Times*.

South Korea: At a recent Cabinet meeting, President Yoon Suk-yeol, who took office in May, vowed to reverse former President Moon Jae-in’s phasing out nuclear power, and announced an energy policy that will have nuclear’s share of the national energy mix at 30% by 2030. Yoon called for the construction of the third and fourth units of the Shin Hanul nuclear power plant.

The Ministry of Trade, Industry and Energy said in a statement:

“Amid the global push for carbon neutrality and the escalation of the Russia-Ukraine conflict and global energy supply chain uncertainties, energy security and attaining carbon neutrality goals are now more critical than ever.”

The Ministry also plans to export ten nuclear plants by 2030 and develop a Korean design for a small modular reactor.

A Fusion Reactor in Ten Years

Last September, scientists and engineers at Commonwealth Fusion Systems in Cambridge, Mass. slowly charged a 10-ton, D-shaped electro-magnet, pushing up the field strength until it surpassed 20 tesla—a record for a magnet of its kind. The company’s founders say the feat addressed the major engineering challenge required to develop a compact, inexpensive fusion reactor. The company is a spin-off from MIT’s Plasma Science and Fusion Center.

Fusion power has been a dream of physicists for decades. At temperatures well above 100 million degrees, atomic nuclei fuse, releasing a massive amount of energy in the process. Once this can be done in a controlled and sustained way, it will provide a crucial source of cheap, always-on, carbon-free electricity, using nearly limitless fuel sources.

In one approach, magnets are used to confine a gas of ions and electrons, known as a plasma, within doughnut-shaped reactors called tokamaks. More powerful magnets mean less heat escapes and more fusion reactions can occur within a smaller, cheaper facility. And not by just a little: doubling the strength of the magnetic field reduces the volume of the plasma needed to generate the same reactions.

Despite decades of research and billions of dollars’ investment in the past, no one has yet built a fusion plant that can produce more energy than it consumes. But Commonwealth and its backers are hopeful, and other fusion startups and research efforts have reported recent progress as well.

Commonwealth is building a factory to mass-produce the magnets, laying the groundwork for a prototype reactor. If all goes as hoped, the startup plans to deliver fusion energy to the electric grid by the early 2030s.