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Welcome to our newsletter specific to radiation, laser safety and X-Rays. Each bi-monthly newsletter will cover educational topics to assist lab personnel and students that work with radioactive isotopes or use lasers within the lab.

Radiation, X-Rays, and Laser Safety Focus

In the News

Fukushima Plant Cleanup Continues

After 14 years, the Fukushima nuclear power plants' radiation levels have dropped significantly. Workers can now walk freely in many areas around the plant wearing only surgical masks. However, PPE is still needed to enter the reactor building damaged by the 2011 earthquake and Tsunami. This includes full face masks with air filters, multi-layered gloves and socks, shoe covers, hooded hazmat coveralls with a waterproof jacket over them, and helmets. The decommissioning of the plant is finally at the stage where they must deal with the 880 tons of melted nuclear fuel. Operators are using robots to enter the reactor and take samples close to the center of reactors to determine the current radiation levels. The robots themselves are not immune from the effects of high radiation levels. Cameras often fail and have short lifespans due to the extreme conditions. Workers have also been working diligently removing treated radiative wastewater in addition to melted nuclear fuel.

Small Nuclear Reactors replacing Natural Gas

As the demand for electricity continues to soar across the country, nuclear power is starting to emerge as the answer to meet these demands driven by the expansion of data centers and artificial intelligence. To address its growing future electric needs, Dow is trying to transition its 4,700-acre manufacturing complex to run on advanced small modular reactors from X-energy. The four proposed reactors could supply up to 320 megawatts of electricity or 800 megawatts of thermal power. The project is supported by the Department of Energy's (DOE) Advanced Reactor Demonstration

Contact Us

Environmental Health and Safety Case Western Reserve University 2220 Circle Dr. Cleveland, OH 44106 216-368-2906 cwruehs@case.edu www.case.edu/ehs

Staff

Felice Porter, RSO <u>fst2@case.edu</u>

Joseph Nikstenas, ARSO jen@case.edu

Yelena Neyman yxt13@case.edu

Kumudu Kulasekere <u>kck40@case.edu</u>

Jeffrey Neistadt Jxn393@case.edu Program. According to the Nuclear Regulatory Commission, permits for the reactors are expected to take up to three years. X-energy is also collaborating with Amazon to bring more than 5 gigawatts of new nuclear power projects across the county by the year 2039. Amazon and other tech companies have committed to using renewable energy to meet the growing demand from power consuming data centers and artificial intelligence to address climate change.

Radioactive Ohio Landfill Reveals Deep Fractures

A Department of Energy (DOE) landfill in southern Ohio has citizens concerned about potential contaminated water leaking through the fractured bedrock and into the aquifers below. The \$650 million landfill takes the radioactive and hazardous wastes from a Cold War era facility that enriched uranium for America's nuclear power plants and atomic bombs. The landfill includes an engineered liner, compressed clay, piping to catch and carry leachate away from processing as well as other safety features that keep toxic materials from being released into the environment. The main concern is where the DOE decided to place the landfill. The DOE stated that the fractures to the bedrock under the then proposed landfill did not present any risk and there were no fractures deeper than 20 feet. But members of the village council, where the landfill is located, wanted more information regarding the potential concerns to the groundwater below. Not getting the answers they desired from the DOE, the village council hired a strategic consulting firm out of Washington D.C. to conduct an individual evaluation of the DOE's data on the landfill location. The startling results revealed that not only was the bedrock fractured at depths of over 20 feet, but there were also much deeper fractures in approximately 50% of the land area. The report raised serious concerns about the landfill and concluded that the fractured bedrock could cause a release of radioactive and hazardous waste to the ground and surface water.

Results were sent to the DOE but unfortunately, no response was received. The DOE eventually responded to the study with the standard safety statement but never addressed any of the real concerns of the village council or their residents. In the end, the small town in Pike County could not afford the costs associated with fighting the federal government and the landfill continues today. What tomorrow brings for the community's water supply is yet to be determined.

Updated Policy on NORM

The radiation safety office just updated its policy on Naturally Occurring Radioactive Material (NORM). The U.S. EPA defines NORM wastes as "the radioactive residues from the extraction, treatment, and purification of minerals, petroleum products, or other substances obtained from parent materials that may contain elevated concentrations of primordial radionuclides. The most used NORM compound on campus is uranyl acetate. NORM contaminated dry solid waste (paper towels, pipettes, gloves, and/or other plastic ware) shall be collected in a plastic non rad bag, sealed, and labeled with a radioactive waste tag. NORM waste will be picked up with the chem waste. All NORM contaminated liquid, whether aqueous or non-aqueous, shall be collected in an approved sealed container, labeled with a radioactive waste tag and picked up during regular chemical waste disposal. For more information, please visit the Radiation Safety Manual @ https://case.edu/ehs/radiation-and-laser-safety.

EHS Training – Formaldehyde is now an Annual Requirement

Are you caught up on your mandatory Environmental Health and Safety EHS training including Formaldehyde? EHS offers several courses for training the Case Western Reserve community in safe practices. Initial training is taken via Zoom (https://case.edu/ehs/training). Retraining is completed on Canvas (canvas.case.edu).

Training includes:

- Biosafety
- Driver Safety
- Formaldehyde
- Hazard Communication
- Hazardous Materials Shipment
- Laboratory Safety
- Laser Safety
- Radiation Safety
- Respiratory Protection
- Ultraviolet Safety
- X-Ray Safety

Go to case.edu/ehs/training for more information.