

A war raises fears about nuclear plant safety

As the 11th anniversary of the Fukushima accident passed in March, there were none of the regular articles that we see in the press every year to remind us how scary that event was. Often these articles have focused more on the nuclear accident and barely mentioned the catastrophic impact to Japan of the Great Tohoku earthquake, the cause of both the nuclear accident and more than 20,000 deaths.

This year the news was all about the shocking events in Ukraine, where it was reported that Russia occupied and attacked two nuclear sites; the Chernobyl site, home to the worst civil nuclear accident in history (1986), and the Zaporizhzhya plant – which is Europe's largest operating nuclear power station. This created a new level of fear for what may happen in the event these plants are damaged due to a planned attack.



Source: Pexels.com

The war in Ukraine is causing untold horror and suffering to its people. However, excessive worry about an event at a nuclear plant greatly increasing the devastation is misplaced. There could be military reasons to occupy a power plant such as the desire to control critical infrastructure. There is also the view that setting up a base at a nuclear plant would deter defensive attacks to avoid damaging the plant. Whatever the reason, the likelihood of actually trying to damage the plant and release large amounts of radiation to the environment is small. There have been many articles on why these nuclear plants are safe. Here is one to provide some context.

First of all, nuclear plants are extremely hardened against attack. The fire power needed to do damage that would result in large releases is substantial. It would be far easier to damage the switch-yard or transmission lines to stop energy from flowing. And when it comes to dramatic consequences, there are many easier industrial targets that would inflict more damage.

As of the most recent report from the IAEA on April 28, *"Regarding the country's 15 operational reactors at four nuclear power plants, Ukraine said seven are currently connected to the grid, including two at the Russian-controlled Zaporizhzhya NPP, two at the Rivne NPP, two at the South Ukraine NPP, and one at the Khmelnytsky NPP. The eight other reactors are shut down for regular maintenance or held in reserve. Safety systems remain operational at the four NPPs, and they also continue to have off-site power available, Ukraine said."*

There is also little to gain and much to lose from damaging a nuclear plant. Russia is on the border with Ukraine and would be at risk of radiation affecting its own territory. Prior to the war, Russia was the most prolific exporter of nuclear plants around the world with a reported project backlog in excess of \$100 Billion. This export market will certainly be impacted by this war. Russia would not want to demonstrate their plants are not safe and that they are readily subject to catastrophe.

This is not the first time fear of what may happen at a nuclear plant has exceeded the fear of the initiating event. In each case, the nuclear industry responded by making improvements at nuclear plants to reduce the risk. Following 9/11 in 2001, fear of a terrorist attack on nuclear plants resulted in much hardening of plants to withstand such an attack. Following Fukushima, all the plants in the world made changes to better withstand the impact of natural disasters such as earthquakes and tsunamis. And now, the fear of what

may happen at a nuclear plant seems to be even greater than other consequences of war.

This all comes down to the narrative that nuclear plants are just a whole different level of risk compared to the many other things that can cause serious consequences. Nothing can be further from the truth. In reality, people don't die from nuclear plant accidents. They do die from plane crashes, bombings, exploding gas from leaks and natural disasters. To date, many thousands have perished during this terrible war. Yet fear is greatest when thinking about what may happen should a nuclear plant have an accident. That being said, of course there can be consequences from attacking a nuclear plant and it is important that the plants in Ukraine are maintained and operated safely. But one thing is for sure, we need not be afraid of nuclear plants. We do need to be concerned about terrorism, natural disasters and of course, the horrific consequences of war.