



Fukushima's decision to release radioactive wastewater contained in storage tanks outside the nuclear station fuels a protest outside Japan's embassy in Seoul on Saturday.

BETTER THE DEVIL WE KNOW AT FUKUSHIMA THAN DEEP BLUE SEA

News that the Fukushima nuclear power station is discharging its stored cooling water into the Pacific Ocean is fueling controversy. Let me add to that.



Not being a nuclear scientist, I shall not elaborate on radioactive material components and their possible effects on the human body. They could include caesium-137, iodine-131, strontium-90, plutonium-239, tritium and many others.

These have "half-lives" ranging from tens to thousands of years, a measurement of how slow the radioactivity will decay.

Suffice to say that should they remain active and somehow get into a human body, the effects can be disastrous.

As there are not that many cases of radioactive-related diseases being monitored closely, scientists or medical professionals may not have an accurate assessment of the effects on patients.

Many cases have resulted in cancers, but it would be very difficult to correlate the exact causes and effects, as there are not enough established case records on dose strengths and the resulting cancer cases.

However, I hope I can explain the hazard from an engineering angle.

Nuclear power stations are inherently safe, if operated and maintained correctly. The cooling water path is normally isolated from reactors. Only when faults occur do traces of radioactive materials come into contact with the cooling water path.

Cooling water discharges during routine maintenance would not be hazardous, but a safety code ensures such effluents are monitored and do not exceed defined strict safety and environmental standards.

In Fukushima's case, hydrogen explosions, which were exceedingly rare in nuclear power station incidents, are known to have happened.

The melted reactor cores need cooling to prevent further damage and the cooling water used to keep the reactor from a meltdown was known to have come into direct

contact with radioactive materials. That is why they have constructed concrete and steel tanks to hold the water, purportedly for treatment before it can be discharged into public areas.

Some radioactive material leakage did occur, but that may have been inevitable.

Now after 10 years of storage and a cooling water buildup of millions of tonnes, the station decides to discharge it.

But we can all see a huge difference between discharging normal wastewater that *may* be radioactive, with a system to monitor the value, and purposely discharging water *known* to be radioactive.

Admittedly, there may be no reliable methods to totally purify the water and ensure that it has no radioactive content, but to discharge this bulk of contaminated water into the ocean is seen to be passing on a problem that the power station could not deal with, transferring the risks to others.

The most concerning aspect is that seafood lovers over the next few decades will never know if radioactive material has entered their bodies and what the likely effects of that could be.

This fear of the unknown will be widespread, especially as medical professionals have warned that even a minute amount of such contaminants could cause a serious threat of cancer to arise.

With many other alternative means of holding or treating the contaminated water, the least we can say is that the way it is proposed to be dealt with leaves a lot of uncertainties and questions.

Let us hope that common sense and responsibility will finally prevail to prevent a worldwide disaster.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over Hong Kong's iconic infrastructure