

Why we should Not Risk Irreversible Damaging Levels of Radioactive Contamination to our Marine Environment from the UK's Proposed New Nuclear Reactor Installation Programme

By: Mike King MARINET Great Yarmouth
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All Nuclear power stations have to be built on the coastline because they use vast quantities of sea water for cooling.

Consequently there is always risk of damage to them from a severe coastal erosion event caused by beach draw down undermining sea defences, storm surges or land slips.

If the erosion event is insufficiently severe to damage the reactor it can (as history has proven) cause damage to pipework and the cooling water systems which allows radioactive contamination to leak into the sea and surrounding environment.

There is also the risk of, and there have been such events, of unacceptable levels of radioactive contamination being discharged into the sea due to corroded or defective pipe work (as explained below) or uncontrolled events. Furthermore there is the more serious risk of high levels of radioactive contamination being discharged into the sea from unforeseen events. Our present nuclear power stations have a poor record in this regard.

In a nuclear power station all spent fuel rods and their handling systems have to be kept underwater and the reactor has to be cooled by water at all times. The radioactive water for the spent fuel rods is contained in ponds and an isolated pipework system. The radioactive reactor cooling water is also contained in an internal isolated pipework system. The sea water cooling system, which sucks in and discharges huge volumes of sea water, cools this sealed radioactive water via a heat exchanger system.

However the sealed radioactive water cooling and seawater system's pipework corrodes, develops cracks and defects, even with the regular non-destructive testing, inspection and maintenance regime that these stations have. When these events occur radioactive contaminated water is released into the sea water cooling system and the sea. Consequently as these pipework systems age some leakage of (hopefully low level) of radioactive contamination discharge into the sea is inevitable.

The sea water discharge is monitored, but it is not possible to shut down the cooling system's defective pipework section instantly when increased levels are detected, so some discharge into the sea occurs – this is always played down and quite often the public is not notified. Repairs to corroded or defective pipe work and the large diameter seawater intake and discharge system have to wait until the reactor is shut down and the outage maintenance programme starts.

There is also the risk and there have been events of unacceptable levels of radioactive contamination discharged into the sea and/or becoming airborne from unforeseen events such as the following "Near Miss" event that took place at Sizewell on 7 January 2007.

On this occasion a potential nuclear disaster was averted when a contractor working on decommissioning Sizewell A reactor noticed cooling water leaking on to the floor from pipe work attached to the pond holding spent fuel rods. He realised that this leakage must be radioactive and reported it. None of the plant's sophisticated alarms had sounded and if the contractor had not noticed or reported the incident the pond could have drained low enough to expose part of the nuclear fuel rods before the next patrol inspected this area, and the partly exposed fuel rods would have caught fire sending a plume of airborne radioactive contamination along the coastline.

Our coastal waters are already polluted by sewage discharges, high levels of plastic debris and other contaminants, but radioactive particles contamination which can cause damage and mutations to fish and other marine life can and will get into the food chain and consequently into the human population.

Evidence from local fishermen supports this: Inshore fishermen in areas around Sizewell (Southwold and Aldebrough) have reported that a significant number of fish are being caught with mutations, sores and growths. The fishermen attribute this to radioactive contamination discharged into the sea from the Sizewell cooling system.

Is this an acceptable price to pay for energy?

Surely it is better to have lots of (some would say unsightly) wind turbines and other eco- friendly solutions?

Note: The author's experience with Nuclear Power stations has been as:

A Radiation Protection Supervisor for Contractors.

A Health and Safety Officer for the Outage Programme at Bradwell Nuclear Power Station.

A HSQE Adviser for contractors submitting proposals and working at Nuclear Power Stations.

An Industrial Radiographer and NDT Technician.