Nuclear waste: Bury it and forget?

Publishers who are anti are more dangerous than the professionals from Greenpeace. Rge piece sounds balanced but it is not.

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Cows graze in pasture near a nuclear power plant at Sellafield, Cumbria in this September 9, 1997 file photo. The nuclear industry believes it could be granted a new lease of life as the world searches for an alternative to fossil fuels, such as coal and oil, that produce carbon emissions, blamed for global warming.

It is the regular beeping that grates. But if it stops, prepare to be scared.

The signal audible every second in every corridor of the high-level toxic nuclear waste plant on Britain's sprawling Sellafield site is a sign all the alarms are working. If it stops, or changes tone, something has gone very wrong.

"The people who work here every day tell me they get used to it. But it tends to get on the nerves of everyone who visits the plant," Sellafield information officer Ben Chilton told Reuters on a tour of the site 300 miles northwest of London.

The alarms are crucial for an industry that believes it could be granted a new lease of life as the world searches for an alternative to fossil fuels, such as coal and oil, that produce carbon emissions, blamed for global warming.

The nuclear industry says its technology emits no carbon and does not cause global warming but for many, still wary after disasters like the 1986 explosion at Chernobyl, the lingering fear is that the toxic waste might leak and kill.

Sellafield, and a plant at La Hague in northern France, can each reprocess 5,000 tons of spent nuclear fuel each year, accounting for roughly a third of annual global output.

But there will be more waste. China plans to build 30 new nuclear reactors by 2020, India has struck a deal with the United States to build several more plants, the United States is lining up tax incentives for new generators and Britain is considering new plants to plug a looming energy gap.

The sludge that flows down the heavily armored pipe into Sellafield's vitrification plant after plutonium and uranium have been taken from spent fuel rods for reuse is a hell's brew still emitting 40 times a lethal dose of radiation.

In shielded chambers with technicians watching through yard-thick leaded glass windows and using remote mechanical arms, the toxic stew is cooked down to a powder, combined with molten glass and poured into stainless steel urns.

These are cooled, closed and scrubbed before being sealed in insulated steel flasks and taken away for storage where, standing 10 deep in a concrete core and capped by a 10-footplug, the heat from the radiation is still tangible.

There are nearly 4,000 of these containers stored at Sellafield, which was the world's first commercial nuclear power plant when it opened in 1956, with room for 4,000 more.

Final disposal of the waste involves burying it in geologically stable formations. The half-life of plutonium is 24,000 years -- in other words, it would take up to 250,000 years before it degrades completely.

Chilton said waste comes from Britain, which has 11 nuclear plants, and from countries as far away as Japan, the third biggest nuclear power user after the United States and France.

Sellafield's scientists are confident they have the answers on waste and believe nuclear power can help ease climate change.

"From a technical point of view we can deal with any waste that comes from nuclear plants," said Graham Fairhall of Nexiasolutions, the research arm of the British Nuclear Group.

But for the green lobby, nuclear waste is an unacceptable legacy, whatever the benefits of nuclear power.

"Nuclear power is dirty, dangerous and expensive," said Tony Juniper of Friends of the Earth. "We are only talking seriously about nuclear power again because of climate change. But it is not the answer."

Environmentalists say the costs of nuclear energy are not clear because of government subsidies and the toxic waste.

The latest estimate on the cost of cleaning up the waste from the last 50 years is 56 billion pounds ($97 billion), Juniper said.

"There may be technical solutions to dealing with the waste that will be generated, but note that they are still trying to deal with the waste they have already created," he told Reuters.

The British government, which has covered the costs so far, says finance for new reactors must come from the private sector.

An energy review in Britain, which faces a 20 percent power shortfall within a decade as aging nuclear and coal-powered plants shut down, is due to be ready by the middle of the year.

It is not just the high-level waste from fuel rods that has to be dealt with. Intermediate-level waste such as the casings of nuclear fuel rods, and low-level waste such as that produced in hospitals also has to be processed and stored.

Intermediate waste is chopped up and put in steel barrels that are filled with concrete and stored, while low-level waste is put in steel boxes that are crushed and put in a container, which is then filled with concrete and buried.

Industry experts say high, intermediate or low-level waste does not pose a security risk as one would need industrial-style resources -- like protective gear and surroundings -

- to even approach the high-level waste, and the other two forms are either non-retrievable or non-lethal.

Public opinion in Britain is gradually swinging toward accepting nuclear energy to help combat climate change -- 54 percent were in favor according to a poll this year -- despite worries about the waste and security.

But while the nuclear industry says a Chernobyl-scale disaster could not happen here because the technology is different, some of the legacy problems remain a major headache. At Sellafield, 49 years after a fire forced the closure of the Windscale I military reactor, scientists are still trying to work out how to dismantle the chimney-top filter that trapped the radioactive smoke and stopped a nuclear catastrophe.