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Dounreay's plutonium traffic
Media briefing

November 2001

Under the Government's proposed Anti-terrorism, Crime and Security Act, the information contained in this briefing would be illegal. The proposed Act contains measures to stop the publication of information on nuclear technologies, nuclear sites and the transport of nuclear materials. Greenpeace, however, believes that people have a right to know about the nuclear industry and the risks that it imposes on them. We will continue to publish information that is in the public interest whether or not the Act becomes law.

The UK has just made the first in a number of consignments of plutonium fuel from Dounreay in Scotland to Germany. These shipments pose enormous risks to human health and the environment – and to international security.

The Dounreay shipments are just one facet in the UK's new era of plutonium trade.

What is the fuel?

In total there will be 82 fuel 'sub assemblies' shipped to Germany. There are likely to be four shipments in all by the end of the year.

The fuel is made of a mixture of plutonium and uranium. It was originally made to be used in a German Fast Breeder Reactor (FBR) at Kalkar. The Kalkar project was abandoned without the reactor being operated. The UK Atomic Energy Authority (UKAEA) then imported the unused fuel to the UK for possible use at its own FBR at Dounreay.

The fuel was shipped to Dounreay at the end of 1991 and the beginning of 1992. The Dounreay FBR programme was shut down in 1994, for technical and economic reasons. The imported fuel was never used, and has been stored at the site ever since.

How is it transported?

UKAEA transported the fuel from Dounreay to the port at Scrabster in an armoured truck on 16 November. The truck was loaded on to the MV Arneb and transported across the North Sea to Bremerhaven in Germany. It arrived on 18 November, and the truck then took the fuel to the Hanau nuclear plant near Frankfurt.

What are the risks?

This plan carries with it enormous risks, both to the environment and to international security.

safety:

- the MV Arneb was not designed specifically to carry nuclear materials. It is described by its owners as a 'genuine multipurpose vessel', which can be used as a roll on-roll off car transporter, or as a grain carrier[1]

- the flasks containing the plutonium fuel have not been tested in realistic accident conditions, and were not designed to withstand terrorist attack[2]

[1] http://www.argo-adler.de/arneb.html and www.seasearcher.com

- an accident resulting in the release of radioactivity into the environment could contaminate the seas around Scotland and further afield for thousands of years to come

security:
The shipments are taking place at a time of immense international insecurity, and pose a threat on a number of levels:

- the Arneb will not be accompanied by an armed escort vessel, as has happened with other plutonium fuel shipments around the world

- plutonium is the basic ingredient of nuclear weapons. The plutonium contained in the fuel could be separated out relatively easily[3] for use in nuclear weapons. Each fuel assembly is estimated to contain over 8 kgs of plutonium – enough to make a nuclear bomb

- alternatively, the fuel itself could be attached to conventional explosives and used as a 'dirty bomb'

- the boat itself provides a target for hijacking or direct attack

The consequences of any of these events could be catastrophic, both locally and globally. The release of long-lived radioactive elements such as plutonium into the environment would pose an incalculable threat to human and animal health.

What should happen to the fuel?
Transporting nuclear waste at any time is dangerous and irresponsible. Transporting it at the moment is insane. This plutonium fuel has been stored at Dounreay for 10 years. The risks that the shipment will pose, both in the event of an accident, or as the result of terrorist threat, are unacceptable. The fuel should therefore remain at Dounreay where it can be continue to be stored in monitorable and retrievable conditions. UKAEA must ensure that all possible measures are taken to ensure its security. Given that nuclear wastes will be stored at Dounreay for decades to come, this would not have a significant impact on the site's decommissioning and restoration plan.

For more information please contact the Greenpeace Press Office on 0207 865 8255

[2] The UKAEA has refused to confirm which tests the flask has been subjected to. However, it is almost certain that they are the 'standard' IAEA tests, requiring a flask to withstand a fire of 800°C for 30 minutes. However, the average ship fire burns at temperatures far in excess of this, and lasts for much longer than 30 minutes. Similarly, the 'penetration' test involves dropping a flask 1 metre on to a 15cm diameter bar. The flask is not designed to withstand, for example, armour piercing shells.

[3] Former Aldermaston scientist, Frank Barnaby, has said that plutonium could be extracted from 'MOX fuel by a second year undergraduate. MOX fuel, like the Kalkar fuel, is a mixture of plutonium and uranium, although it contains less plutonium.