

briefing



Date: 25 February 2004

No. 37

Subject: **Environment Agency Consultation on Radioactive Discharges from the Springfields Nuclear Fuel Fabrication Plant**

Introduction

This briefing asks NFLA member authorities to respond to the above consultation.

BNFL Springfields near Preston, Lancashire, makes fuel primarily for UK nuclear power stations. This entails discharges of radioactive waste to the River Ribble and to air, and disposals of solid radioactive wastes to local landfill. These actions are controlled by an Environment Agency authorisation. This is to be replaced. The Agency's proposals can be downloaded from www.environment-agency.gov.uk/yourenv/consultations. The Agency seeks views by 19 March 2004. These should be sent to: springfieldsreview@environment-agency.gov.uk

Different fuels are manufactured at Springfields but this briefing focuses on Magnox fuel fabrication.

Unacceptable delay by the Environment Agency

In October 2001 the Agency indicated public consultation would begin in August 2002 but this was delayed 16 months. A new authorisation will not impact until 2005. A 16 month delay has allowed further radioactive pollution in the interim. This is unacceptable.

Fuel manufacture cannot be viewed in isolation from its use and waste management

Magnox fuel causes pollution during:

- its *manufacture* at Springfields, planned until 2006; *but also* during
- its *use* in BNFL Magnox reactors, until the planned closure of the last station in 2010; and
- its *reprocessing* at Sellafield up to planned end of reprocessing plant in Dec 2012.



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Closing Magnox stations now and ending Magnox fuel fabrication would:

- reduce liquid discharges from Springfields from 120 Terabecquerel (TBq) p.a. to less than 20TBq p.a. ;
- avoid discharges and gamma 'shine' from Magnox stations: for example at Dungeness A, the maximum annual dose exceeds the National Radiological Protection Board's dose source *constraint* of 300 microsieverts (μSv); and
- reduce liquid discharges from Sellafield from 175TBq p.a. to 42TBq p.a. 2 to 4 years sooner than currently planned.

Manufacture, use and reprocessing of Magnox fuel - and attendant radioactive pollution – arise from electricity generation in Magnox stations. But these only produce around 4% of the UK's electricity when there is large generating overcapacity. BNFL admits Magnox stations are loss-making, but claims it would lose more money if they were closed immediately.¹

Can continuing fuel manufacture for Magnox electricity be justified?

The first principle of radiological protection - enshrined in law - is that no practice should be adopted unless the benefits outweigh the detriments. The Agency had responsibility for applying this principle, but this is now that of the Secretary of State.

Logically the justification for manufacture, use and reprocessing of Magnox fuel should be considered as a whole but this has not happened. However when the Magnox stations' discharges were re-authorised by the Agency in 2002, it recognised the need to consider fuel manufacture and reprocessing implications and Ministers undertook to review the justification for these continuing discharges, but this has not occurred.

So if it costs more to generate electricity in a Magnox reactor than to sell it, then ongoing pollution from manufacture, use or reprocessing will not be justifiable. However only a transparent and independent investigation into Magnox economics can determine this.²

Discharges and Doses

Reductions in *limits* on discharges proposed by the Agency are misleading, because

- actual beta discharges may be slightly higher for the next three years;
- actual alpha discharges to 2006 could be up to double those over the last decade;
- actual gaseous discharges of uranium could increase over the next three or four years.

The Agency has calculated the impact of discharges, at the maximum permitted, on the most vulnerable group it has identified: houseboat dwellers on the Ribble. They

(a) would receive 329 $\mu\text{Sv}/\text{yr}$ from liquid discharges from Springfields at the current maximum limits, *exceeding* the 300 $\mu\text{Sv}/\text{yr}$ maximum dose from a single source; and

(b) would still receive above 300 μSv until 2007 at the proposed new limits when the continuing impact of Magnox discharges from *Sellafield* is added in.

After 2007 houseboat dwellers are less affected than fishermen in the Ribble Estuary who would receive 49 μSv – but more than double the Government's 20 μSv target for 2020.

Major Uncertainties in assessing health impacts

Assessment is difficult due to uncertainties in environmental models and dose estimates. All the potential pathways for radiation exposure or ingestion of radionuclides may not be understood. 95% of the radioactivity discharged to the Ribble is contained in radioactive

thorium extracted from uranium ore. This has the capacity to impact on human health for vast timescales. Thorium-232 has a half-life of 14 billion years so that impacts over these entire periods should be factored in for the full period of their impacts. Alpha-particle radiation may increase thorium's chemical toxicity and damage the DNA - a theory advanced to explain the effects of depleted uranium on soldiers and civilians in recent conflicts.³

Technical options to reduce discharges: BNFL has failed to consult

BNFL says:

- it has assessed four possible options to reduce radioactive discharges
- these will be most useful before the planned Magnox fuel fabrication ends in 2007
- the cost would be around £8 – 12 million and take around 3 years to implement.

The information provided is insufficient to judge: BNFL's Best Practicable Environment Options Study can no longer be found on the Environment Agency's Springfield's web-site. Public consultation is essential to a BPEO⁴ but BNFL has thus far failed to undertake this.

Decommissioning policy: the Environment Agency has failed to consult

Agency policy is found in "Decommissioning Of Nuclear Installations: The Environment Agency's Role And Objectives" (Sept 2002). DTI policy is set out in "Modernising the Policy for Decommissioning the UK's Nuclear Facilities"(Nov. 2003). Both policies affect Springfields. DTI has consulted the public on its policy, but the Agency has not.

One of the Agency's principles is that "radioactive waste should be disposed of as soon as reasonably practicable". This seems to underpin BNFL's transfer of an annual average of 26,000 tonnes of uranium waste off-site to Clifton Marsh.⁵

Clifton Marsh Landfill

The Environment Agency proposes Clifton Marsh take:

- (1) wastes up to 100Bq/gramme under a blanket permission; and
- (2) Uranium bearing wastes up to 400Bq/gramme subject to specific prior approvals

It seems volumes would be higher (a) to reduce on-site tipping and (b) to reduce use of scarce space at Drigg (the low-level waste site near Sellafield). It seems total radioactivity would not increase but, in part, to achieve this, BNFL would use cleaning techniques on-site to lower radioactivity in wastes sent to landfill or scrap metals sent for smelting and recycling. Contaminated cleaning fluids would increase liquid discharges. On site storage of solid waste is preferable to disposal at Clifton Marsh landfill, pending identification of a national radioactive waste management policy.

Recommendations and Conclusions

- (1) The delays to the start of this consultation process were unacceptable.
- (2) The Government should urgently examine the justification for the whole Magnox cycle. An independent economic appraisal is required.
- (3) Actual discharges may go up between now and the end of 2007 compared with the past years. Major reductions are not projected until 2008.
- (4) Doses to critical groups, including the contribution from Sellafield, should be reduced to below 300 µSv as soon as possible.
- (5) Doses to the critical group, from discharges at the new limits, would still be above the 2020 target of 20 µSv after 2008. The Agency should explain how it proposes to achieve this target, and why it cannot be achieved now.

(6) The Environment Agency needs to take into account recent research on depleted uranium, for example by the Royal Society, and assess whether there could be synergistic effects caused by the contamination in the Ribble Estuary.

(7) The 'Best Practical Environmental Options' Study for Springfields needs to be re-evaluated with full public consultation.

(8) The Agency should consult on its principles for decommissioning. This should have been done at the same time as the DTI consultation on decommissioning policy.

(9) Waste management should be based on the principle of concentrate and contain rather than dilute and disperse. Decommissioning work at Springfields that treats some equipment and scrap metal with cleaning fluids causing further liquid discharges should be stopped.

(10) It is premature to make decisions about increasing waste disposal at Clifton Marsh until decisions are made at a national level about future low-level radioactive waste management.

This note draws principally on a detailed presentation by Greenpeace to members of Lancashire County Council and the English Forum of Nuclear Free Local Authorities: the full briefing is available from rochepete8@aol.com

¹ House of Commons Trade and Industry Committee, Managing the Nuclear Legacy: Comments on the Government White Paper, Fifth Report of Session 2001-02, Volume II: Minutes of Evidence and Appendices para 273,

² Letter from nuclear economist Gordon MacKerron to David Chaytor MP 18 October 2003: "There can be little public confidence in the idea that Magnox avoidable costs are definitively below the selling price of electricity. Testing this proposition again in a transparent and accountable way would seem to be a necessary condition for any future justification and approval of Magnox operation, and this would in turn require the appointment of genuinely independent experts to carry out the necessary work"

³ A recent Royal Society report said:- "There is recent evidence that uranium may directly damage genetic material and there is a possibility of damage to DNA due to the chemical effects being enhanced by the effects of the alpha-particle irradiation" Uranium-238 (the main component of depleted uranium) decays to Th-234 and Pa-234m. Both these isotopes have been detected in soil samples from conflict zones. It may be, therefore, that the same synergistic effects are occurring around the Ribble Estuary.

⁴ According to the Royal Commission on Environmental Pollution, a BPEO should be:-
"...the outcome of a systematic consultative and decision-making procedure which emphasises the protection of the environment across land, air and water ... the procedure should be open ... openness and accountability are central to BPEO ... there should be the widest possible opportunity for others who may be affected to contribute to the decision ... where the trade-offs are difficult or controversial, the selection of BPEO cannot be left to scientists, industrialists and regulatory experts alone. Public involvement is needed so that the public values underlying the choice of BPEO are identified ...The public should be involved in the formulation of strategies rather than merely being consulted on already drafted proposals". [RCEP October 1998, 21st Report, Setting Environmental Standards]

⁵ The Agency rejected a Guardian claim on 16 Jan 2001 that this was being deposited dangerously.