

Plans by the National Radiological Protection Board to tighten the dose limit for members of the public have been rejected by the government following nuclear industry pressure. The new limit could have led to nuclear plant closures, reports IAN FAIRLIE, who is engaged in PhD studies in nuclear waste matters at Imperial College, London.

RADIATION DOSE LIMITS

Government forces NRPB to back down

LAST year, moves by the National Radiological Protection Board (NRPB) to tighten the public limit for exposure to radiation ran into strong opposition from the nuclear industry and the Nuclear Installations Inspectorate (NII).

In 1985 the International Commission on Radiation Protection (ICRP) and the NRPB recommended a public limit for radiation exposures from all sources of 1mSv per year.⁽¹⁾ This was formally accepted by the Government in 1986,⁽²⁾ and has been the de facto public limit used by the nuclear industry since then. In 1991, the NRPB, following a fivefold increase in risk estimates from radiation, proposed a dose constraint of 0.3mSv per year for members of the public exposed to radiation.⁽³⁾ A constraint — a new concept introduced by ICRP 60 in 1990 at the urging of senior members of the NRPB — is different from a limit. It would be an upper limit for ALARA (As Low As Reasonably Achievable) practices, and would remove the main deficiency of ALARA: its subjective nature. The new constraints would apply to all radiation sources, ie existing and new ones.

Although breach of a constraint would not be a criminal offence, constraints would be much quicker to implement and amend. In practice, they would result in the NRPB using its persuasive authority to secure reductions in radiation exposures, rather than the Health and Safety Executive's NII using its legal powers. With the NII's slothful past record in regulating the nuclear industry, this would probably be a worthwhile step, especially as the proposed new constraint, 0.3mSv per year, was tighter than 1mSv per year.

However, from the nuclear industry's responses⁽⁴⁾ and the NRPB's final recommendations⁽⁵⁾ the government and the nuclear industry were not happy with the NRPB's 1991 proposals. After two years of behind the scenes arm twisting, they forced the NRPB, in late 1993, to recommend yet again the old 1mSv limit, which the government had already accepted back in 1986. They also forced the NRPB to restrict

its proposed new constraint to "new sources", not existing nuclear plants. This must have represented quite a climb-down for the NRPB. But the board didn't back down silently: it added a rider to its recommendations in uncoded language in which it stood by its convictions:

"The Board believes that, in general, it should be possible for existing plant to be operated so that the dose to individual members of the public does not exceed 0.3mSv per year. However, it recognises that in some cases a realistic assessment of doses may suggest that the facility cannot be operated within this figure. In these cases, the operator must demonstrate

limits as low as 0.2mSv, which Sellafield can't meet.

The DoE is soliciting comments on the statement: "The government considers that the concept of a constraint is a useful complement to the principle of optimisation in the design of new installations particularly in cases where members of the public could be exposed to radiation due to discharges from several installations located in close proximity. It also agrees that a distinction should be drawn between new and existing installations. The government is minded to accept the NRPB's advice that the dose constraint should not exceed 0.3mSv/y for members of the public and that this

figure should be applied in the design of new nuclear installations. But it should be seen to complement rather than replace the primary dose limit of 1mSv/y (for members of the public from all non-medical man-made sources of radiation), and the dose target of 0.5mSv/y (in respect of the limits set in discharge authorisations for

a single site at which existing and/or multiple installation are located). Views are invited on this system of limits targets and constraints." □



that the doses resulting from the continued operation of the plant are as low as reasonably achievable and within the range of tolerable risk."⁽⁶⁾

It is well known within the nuclear industry that Sellafield cannot be operated within the NRPB's proposed constraints, so the constraints had to be scaled down; the new limits have been decided by political rather than radiological and health considerations.

Nuclear review

This matter merits further investigation, especially given the government's on-going nuclear review and in particular its review of radioactive waste management policy. The Department of the Environment's (DoE) consultation document on radioactive waste management repeats the NRPB's rider but significantly changes the last six words from "within the range of tolerable risk" to "within dose limits".

The reason for this change is that the tolerable risk range results in dose

References:

1. ICRP, Statement from the 1985 Paris Meeting of the ICRP Annal. ICRP 15(3) Pergamon Press, Oxford.
2. Parliament 1986, Radioactive Waste: the Government's Response to the Environment Committee's Report. Cmmd 9852. 1986 HMSO London. See para 13(c).
3. NRPB. Board advice following publication of the 1990 Recommendations of ICRP. NRPB-M321, 1991.
4. NRPB Report-M377, 1992.
5. NRPB, response by NRPB to the 1990 Recommendations of ICRP. NRPB Bulletin, April 1993. Chilton, Harwell, Oxon.
6. Department of Environment. Review of Radioactive Waste Management Policy Preliminary Conclusions: A consultation Document. August 1994.