

Nuclear Waste Policy

a Low Level Radiation Campaign Briefing, February 2002

on the Department for Environment, Food and Rural Affairs Consultation called:
Managing Radioactive Waste Safely. Proposals for developing a policy for managing solid radioactive waste in the UK

DEFRA is consulting on the process of finding solutions to nuclear waste. This is not about any particular solution. A five stage process is outlined:

- 2001 - '02** Consult on how to develop policy (i.e. present consultation)
- 2002 - '04** Research and public debate on policy options
- 2005** Consult on proposed option
- 2006** Announce chosen option and consult on implementation
- 2007** Legislation, if needed

The consultation paper is available as a pdf file on the internet at www.defra.gov.uk/environment/index.htm, or 'phone Claire Herdman at DEFRA: 0207 944 6366.

The Consultation deadline is 12th March 2002.

Well done DEFRA

Massive opposition to waste dumps in the 1980s and the NIREX debacle in 1997 seem to have taught the Government to be cautious about imposing things on the public, and the Consultation Document makes laudable commitments on extensive open debate, inclusiveness and public acceptance. We agree. The nettle has to be grasped; society has to take responsibility for dealing with the residue of 50 years' of the nuclear industry, and the prospect of terrorists dropping a jumbo jet on the Sellafield tank farm should concentrate everybody's minds. Decades of hawing is not an option.

... but you've left something out!

There's a trap right at the beginning. The Consultation Document says there's one category of waste for which a solution already exists. This is *Very Low Level Waste (VLLW)*, described as *wastes with very low concentrations of radioactivity ... arising from a variety of sources, including hospitals and non-nuclear industry*. DEFRA says: *Because VLLW contains little total radioactivity, it has been safely treated ... by various means, such as disposal with domestic refuse directly at landfill sites or indirectly after incineration.*

The problem with the Consultation Document is not what it says but what it leaves out.

Treated?

The word *treated* here means chucking radwaste into a dustbin, flushing it down the drain, burning it, or sending it straight to landfill. This is supposed to be OK for single items up to 40,000 Becquerels, and up to 400,000 Becquerels per bin bag. Multiply these figures by 10 if the waste is Tritium or Carbon 14.

....safely?

The radioactivity contaminates our environment sooner or later, getting into the air and our food and water. Nobody disputes this; in fact the intention is to spread it out as thinly as possible to make sure the radioactivity is not concentrated enough to give anyone an unacceptable dose (though what's "acceptable" is open to debate). However, there is no dose of radiation too small to cause a genetic mutation which can lead to cancer and death or any genetic disorder.

So any single radioactive atom has the capacity to make you dead, just as any single lottery ticket may make you rich. The more lottery tickets you have the more likely you are to win, and by analogy every radioactive atom you are forced to inhale increases your chances of an early death. The real logic behind allowing nuclear pollution is to ensure that the resulting diseases are spread out so widely that no-one can prove who was responsible. The long time lag between radiation exposure and its effects (in the case of cancer it's usually some years) also helps to save the polluter from having to pay.

Internal radiation and health

Radioactivity floating around our environment gets inside us, causing low chronic doses. At these levels radiation biology is a morass of scientific uncertainties and new discoveries which no-one really understands, and a large and growing body of evidence shows that it is far more dangerous than the National Radiological Protection Board (NRPB) think. All our earlier briefings have dealt with this point in some detail so we're giving it a rest this time, 'though there is an important message on page 4. The good news is that the UK Government

... the assumptions underlying dust-bin disposal of radioactivity are unsafe.

has set up a new Committee to consider the internal problem. It's called CERRIE - the Committee to Examine Radiation Risk for Internal Emitters - and it includes representatives of the Low Level Radiation Campaign as well as NRPB and BNFL. When the report is published it will say what has been agreed and explain what has not. This is a new and potentially very valuable way for Government committees to work; if ministers see all sides of an argument instead of being spoon-fed by the Sir Humphreys they might be saved from the kind of grief they had to live with after BSE.

Just by setting up CERRIE the Government has acknowledged that the assumptions underlying dustbin disposal of radioactivity are unsafe.

Recommendation 1

LLRC rejects the assumption that dustbin disposal, landfilling and incineration of VLLW and "small" sources is safe. We call for this aspect to be brought into the policy development process and considered in the light of scientific uncertainty about the health effects of low levels of radioactive pollution.

Not a small matter.

VLLW is only one part of a problem which, like dry rot in a building, is far-reaching, complex, insidious and largely unseen. Nuclear power stations are being decommissioned, atom bomb factories dismantled, and contaminated sites cleaned up so that they can be sold off. Our environment is being polluted by vast quantities of contaminated material of all kinds - metal, concrete, soil, oils, and combustible trash. Not all are "wastes"; some may be recycled, others may be re-used in, for example, civil engineering, landscaping, and the manufacture of building materials, roads, playground surfaces and many other products. If the materials come from a licensed site this is called *Clearance*, but we should note that Clearance does not cover cleaning up contaminated land.

And then there's the separate issue of businesses which use relatively small amounts of radioactivity and so don't have to enter the regulatory system at all. These are known as *Exempt*, and they too can put radwaste in bin bags without accounting for it.

These different pollution routes fall under the jurisdiction of different bodies (the Environment Agency, DEFRA, and the Health and Safety Execu-

tive) so nobody is seeing the full picture and, in terms of public awareness and scrutiny, it's getting worse - the big and notorious polluters have caught onto the idea of splitting themselves up into small outfits which nobody takes much notice of. Some of these still need licences but are small enough to escape consultation on their waste disposals; there are more than 6000 of these in the UK. Some will be exempt from regulation; nobody knows how many of these there are.

Is it legal?

A European Directive requires Member States to assess population doses and the kinds of radioactivity people might swallow or inhale. But nobody knows how much Very Low Level Waste, exempt wastes or Cleared materials there will be. Nobody knows how much radioactivity they contain in all, so nobody can assess what we are being exposed to.

Recommendation 2

The public is entitled to know the quantities and qualities of radioactivity that might be released to the environment in VLLW and Exempt waste, through Clearance, and as a result of delicensing land. The process of developing policy on nuclear waste management provides a suitable forum in which to explore mechanisms for gathering this information.

Managing the Debate

1. Missing expertise

The first step in the debate is being taken largely in the dark:- the DEFRA project called *Identification of the Information Needed to Decide with Confidence on the Long-Term Management Options for Long-Lived Radioactive Waste* (see Consultation Document para. 6.6) has a Steering Group which includes NGOs but not us. The Government's long-standing Radioactive Waste Management Committee (RWMAC) is supposed to include environmental NGOs but has nobody competent to address the health effects of low level radiation. The Board of Nirex is in the same fix, unless LLRC has a secret admirer in Angela Rippon, and it is amusing to read the Consultation Document's account of the 1999 UK CEED Citizen Panel on waste policy (it's on p. 45-46) if you happen to know that the Panel wasn't allowed to hear the evidence we offered them.

64,000 tonnes of material were recently removed from one Ministry of Defence site alone! We don't know where it went.

We recognise that whichever methods are chosen to engage the public in the debate over managing radioactive waste, the process will only work if the information given to the public is accepted as accurate, objective and complete by all interested parties. (DEFRA Consultation Document para. 6.2)

2. The myth of independence

The Government seems anxious to get an independent committee to run the consultation and gather information. But nobody is independent. Anyone who has enough expertise to be worth listening to comes with baggage - affiliations, prejudices, past training, and their own research priorities and career prospects. Two dozen scientists who hold a wrong or partial view may shout down one scientist who is right, especially on a committee which is supposed to be producing a consensus report, and this problem extends even to the people who run the committee, since the deliberations of experts require secretarial staff who can understand what's being said.

3. A new system of Scientific Advice

We pay politicians to take decisions. They ought to do this on the basis of published reports which contain all the relevant facts about all the arguments rather than by rubber stamping the recommendations of committees meeting behind closed doors. In order to balance industrial sponsorship of academic research and the Whitehall lobbyists

which only industry can afford, the Government should set up a Scientific Advice Unit run by civil servants to commission and fund reports from scientists working in the public interest. These ideas are fully described in *I Don't Know Much about Science: Political Decision-making in Scientific and Technical Areas: Green Audit*,

According to a recent ICM poll public trust in scientists is now lower than their trust in policemen. (I Don't Know Much about Science...)

May 2000. ISBN 1-897761-21-X. It's downloadable from www.greenaudit.org and is reviewed at www.llrc.org/pick.htm.

Recommendation 3

DEFRA should convert the Information Needs Project into a pilot for a Scientific Advice Unit as outlined above.

New build?

Finally, dealing with a historic legacy of waste is one thing. The waste arising from a new generation of nuclear power plants would be quite another.

So, would the public acceptability of a solution for dealing with radioactive waste be compromised by the pro-nuclear bent of Tony Blair and energy minister Brian Wilson? Would it be affected by Blair's plan to bulldoze Major Infrastructure Projects past the planning system? We're sure you can answer these questions for yourselves, just as we have.

Your comments on the consultation should be sent by 12th March to Claire Herdman, Radioactive Substances Division, DEFRA, Zone 4F/7, Ashdown House, 123 Victoria Street, London SW1E 6DE. fax 0207 944 6340
email radwaste.consultation@defra.gsi.gov.uk

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Here's the *important message* about radiation releases (see page 1). It's addressed to the few people in the anti-nuclear movement who don't seem to understand what we say.

For more than a decade we have pointed out that the risk factors advised by the International Commission on Radiological Protection (ICRP) are based on inappropriate observations and inadequate modelling.

We have also drawn attention to evidence that, as far as internal radioactivity is concerned, ICRP's advice contains very large errors. A number of published studies of infant leukaemia and genetic mutation after Chernobyl, and prostate cancer in internally contaminated nuclear industry workers and leukaemia in their children are unequivocal evidence that these diseases are between 100 times and 2000 times more sensitive to radioactive pollution than ICRP predicts. These numbers are not guesswork - they can be calculated from the doses and the background rates for disease and genetic mutation - and workers from widely differing backgrounds have agreed on the arithmetic. The values vary because different diseases, age-groups and exposures are involved. For example the notorious and undisputed Seascale childhood leukaemia cluster implies a 300-fold error on the basis of known contamination.

Nevertheless some campaigners accuse us of being *politically inept*. They say we should not claim that ICRP could have made such a large error *because the numbers are too big to be believed*. These people prefer to argue that there could be a 10-fold error. They are missing the point - the boundary between science and politics may be fuzzy but the truth is not negotiable and we cannot abandon the inductive reasoning inherent in scientific method. Here's the logic in respect of just one part of the evidence:

Official figures show a sharp and statistically significant increase in infant leukaemia in several countries after Chernobyl. Is anybody arguing that the figures are wrong? If the figures are right then the likelihood that the increase happened by chance is extremely remote. So we infer that it had a cause. Does anybody have a better candidate than Chernobyl, the origin of a huge quantity of radioactivity - a known cause of leukaemia? Is there **any** other plausible candidate? No, and only ICRP's risk factors prevent the conclusion that Chernobyl was to blame, because according to ICRP the measured doses were too small to cause the numbers of leukaemia cases registered. Inductive reasoning therefore

requires us to consider that the low dose risk factors don't describe reality, and that we should trust the observations. We should be all the more prepared to suspect the risk factors since we know that ICRP's view of the effects of low doses is a long and very uncertain extrapolation based on high acute doses of gamma and x rays alone, whereas the fallout caused low chronic internal exposure including alpha and beta emitters. Another aspect of scientific method is that the large number of similar observations (like Seascale) increases the strength of the conclusions we draw. As NRPB put it: *Greatest weight should be placed on results which are consistent across several studies*. This reasoning cannot be set aside by scientists unless it follows from false premises.

It's possible that our critics think that if radiation were as dangerous as we say then natural radioactivity would have kept life on Earth at the primeval soup stage. If so, they are failing to see that many man-made radioactive substances have qualities which make them different from natural radioactivity. These novel qualities include sequential decay pathways, Auger emissions, affinity for DNA and the propensity for man-made and anthropogenic radioactivity to occur in the form of insoluble hot particles. Unlike the studies which suggest the 10-fold error favoured by the politically astute, these uniquely man-made characteristics are significant only for internal radiation. The scientific community is only just beginning to research the effects of this kind of exposure at the dose levels commonly associated with environmental pollution.

That this area of study has been so neglected is surely the greatest public health scandal of all time, with implications for every aspect of policy from nuclear medicine to Trident and from Depleted Uranium weapons to Magnox decommissioning. It is our experience that obtaining a research programme to make good the neglect is a demanding political project. We expect that it will remain difficult, but it would perhaps become easier if the anti-nuclear movement were to start speaking with a more unified and scientifically coherent voice. So if anyone has views on this issue, especially if they think we overstate the case, we invite them to meet us and discuss it. We could even organise a one day conference. Our contact details are below.