

Ethylene dibromide

Tighter rules on use proposed*Washington*

Two federal agencies intend to issue tight new restrictions on the use of ethylene dibromide (EDB), a fumigant used widely in grain milling and the citrus industry and a potent animal carcinogen. The Environmental Protection Agency is expected to propose a partial ban on the use of the substance in agriculture. The Occupational Safety and Health Administration (OSHA) may propose a massive reduction in the permissible daily dose to employees — from 20 parts per million (p.p.m.) at present to 0.1 p.p.m.

In Congressional hearings last week OSHA was accused of having delayed action on EDB for several years despite mounting evidence that it posed a health hazard to humans and an appeal for emergency action by its own research arm, the National Institute of Occupational Safety and Health (NIOSH). George Miller, chairman of the House of Representatives committee on labour standards, contrasted the federal government's inaction with the prompt action taken by California when EDB was used as a pesticide during the Medfly crisis in 1981. In addition to imposing a maximum dose level 150 times lower than the federal standard, the state demanded special training for exposed workers and the use of respirators and protective clothing.

Documenting OSHA's record on EDB, the committee said its director, Thorne Auchter, refused to respond to trade union appeals for tougher controls in the wake of a 1981 National Cancer Institute study showing that 40 per cent of test animals inhaling 10 p.p.m. EDB (half the OSHA standard) developed cancer. In 1982 NIOSH, which had been calling for tighter controls since 1977, recommended an emergency temporary standard to protect workers while new standards were being devised. Auchter again decided against taking action.

Explaining his decision, Auchter claimed last week that OSHA did not then believe it had enough evidence of the danger of EDB to promulgate an emergency standard that would stick in court. Pointing out that four out of five OSHA emergency standards for other substances contested in court had been struck down, he said a hastily drawn up regulation would have wasted time and damaged the agency's credibility. This assertion is, however, apparently contradicted by an internal 1981 OSHA memorandum released by the committee. Drafted by OSHA's associate solicitor, the memorandum advised Auchter that although it could be difficult to defend an emergency standard, "we would have a reasonably good chance of success before a sympathetic forum".

Donald Miller, NIOSH's director, told

the committee that about 169 million pounds of EDB were produced in 1981, mainly for use as an anti-knock compound for leaded gasoline (petrol) and in fumigants for soil, grains, fruit and vegetables. About 108,000 workers are potentially exposed to EDB during its production and use, and another 875,000 potentially exposed to very low concentrations while working with leaded gasoline. NIOSH studies found exposures as

high as 2.9 p.p.m. for workers loading fumigated fruit onto transport trucks.

Miller said that human epidemiologic studies, based on small sample sizes and the possibility of subject exposure to other hazardous substances, had been inconclusive. Animal studies, however, had detailed extensive mutagenic effects, reproductive abnormalities and increased cancers as a result of EDB exposure. Risk assessments by NIOSH and the Environmental Protection Agency suggested that at a dosage of 20 p.p.m. 900 or more cancer deaths could be expected for each 1,000 exposed workers.

Peter David

Fast reactors**Europe's ambitions surface**

FAST reactors may yet proliferate in Europe. Proposals for collaboration on fast breeder development now being negotiated between Britain and the other five members of the European fast reactor "club" include the phased construction of Commercial Demonstration Fast Reactors (CDFRs) in Britain, France and West Germany. So much was made clear last week by Sir Peter Hirsch, chairman of the UK Atomic Energy Authority (UKAEA), launching the authority's annual report.

The first of the three CDFRs would be France's Superphénix II, which is already under development. No decision has yet been taken on where the second CDFR would be built, but Britain would seem to be the obvious choice. Britain's prototype fast reactor at Dounreay is particularly suitable for fuel development, and the on-site fuel reprocessing plant has given Britain practical expertise in this area. West Germany's first prototype fast reactor, in contrast, will not come into operation before 1986.

On the assumption that Britain aims to have a fully commercial fast breeder by the year 2015, construction of a British CDFR should start in the early 1990s. UKAEA's report says that the fast reactor is of "major strategic significance" for future energy supplies. It enables about sixty times as much energy to be extracted from a given quantity of uranium as from the thermal reactors now in use.

Whether the governments concerned will listen to this siren song is not yet clear. Nuclear energy agencies may propose but only governments can dispose. On the face of things, however, it should suit the French government to have some immediate help with the cost of Superphénix.

Although there have been some expensive problems with leaking welds in boiler circuits at the Dounreay reactor, UKAEA is delighted with progress on fuel development. The fuel "burn-up target" for a CDFR has been increased from 10 to 15 per cent and fuel elements designed to reach this performance are now being manufactured. Efficiency of plutonium

recovery in reprocessing has reached 99.6 per cent.

Collaboration has been prompted by reduced estimates of future electricity demand (on both sides of the channel). The British fast breeder budget — now running at £100 million per year — will be reduced by 10 to 15 per cent over the next few years, although UKAEA expects that the necessary staff reductions will be achieved through natural wastage. Collaboration with the United States and Japan, who are also developing the fast reactor, may be possible once the European programme is under way. The other countries involved are Italy, Belgium and the Netherlands.

Despite the euphoria over the fast breeder programme, UKAEA is giving "high priority" to improving the economic performance of advanced gas-cooled reactors, of which five are in operation or being commissioned and a further two being built. UKAEA now expects that with a suitable choice of coolant, it will be possible to reduce deterioration of the graphite moderators in order to achieve a reactor operating life of 40 years, ten more than planned.

Further savings of £700 million are expected through the development of more highly enriched fuel and improvements in techniques for on-load refuelling. In the past year, on-load refuelling at 30 per cent thermal power has been accomplished, and this figure is expected to increase.

On the disposal of low-level wastes, Sir Peter last week complained about action of the National Union of Seamen in preventing the dumping of low-level waste in the Atlantic (see *Nature* 8 September, p.86). He pointed out that the rules for disposing of low-level waste were devised by oceanographers and marine biologists whose primary responsibility was for the marine environment, and added: "It would be very sad if the case for sea disposal in accordance with the procedures currently approved, which so many scientists find completely acceptable, should be overwhelmed by prejudices derived from emotion rather than reason".

Tim Beardsley