

**SEA DISCHARGES OF TECHNETIUM-99 FROM SELLAFIELD TO FALL
BY 90%**

The Environment Agency and the Nuclear Installations Inspectorate (NII) of the Health and Safety Executive today (April 21st 2004) announced that discharges of radioactive technetium-99 (Tc-99) into the Irish sea from the BNFL plant at Sellafield will be reduced by 90 per cent, following the implementation of a new waste treatment technique.

The Environment Agency required BNFL to carry out work towards reducing Tc-99 discharges to sea and has worked closely with the NII, BNFL and Nirex towards implementation of the technique.

A trial was carried out late last year which involved the use of TPP (tetraphenylphosphonium bromide) to remove Tc-99 from liquid waste, known as medium active concentrate (MAC), at Sellafield. The Environment Agency and the NII have assessed the outcome of the trial and BNFL will now begin implementing the new technique to remove Tc-99 with immediate effect.

In response to the Environment Agency requirement, BNFL has, since July 2003, diverted all new arisings of MAC to high active storage and treatment plants for incorporation into glass blocks in a treatment process known as vitrification.

Following on from the success of this process change, which ensured that no new MAC was sent for storage in tanks, the new TPP technique means that historic MAC currently held in storage can now be treated and the date set by the Agency for substantially reducing the Tc-99 discharges to sea of 2006 can be met with two years to spare.

The reduction of annual Tc-99 discharges into the Irish Sea from Sellafield will result in lower concentrations of Tc-99 detected in the marine environment and particularly shellfish. Although the impact of Tc-99 is very low, its detection in the marine environment, particularly off the Scandinavian coast, has caused concern.

The present level of radiation exposure from Sellafield discharges to the most exposed members of the UK public is within legal limits. The reduction in discharges of Tc-99 from Sellafield will lead to a reduction in radiation exposure by up to 28 microsieverts per year. This is about 10% of the radiation exposure from all liquid discharges.

The implementation of the Environment Agency's requirements will also mean that the storage tank facility (known as B211) used for the storage of MAC will be emptied of this waste sooner than would otherwise have been the case. This substantially reduces the hazard associated with this ageing facility in line with the NII's objectives.

The implementation of the new TPP technique marks the culmination of many years' work by the Agency aimed at the reduction of Tc-99 discharges. In particular it represents the completion by BNFL of requirements set out in the Agency's decision related to the regulation of Tc-99 discharges in September 2001.

Commenting on the success of the TPP trials, Environment Agency Chief Executive Barbara Young said: "This will result in a substantial reduction in Tc-99 discharges to sea in line with the Environment Agency requirements and UK Radioactive Discharges Strategy."

"Furthermore the use of TPP has allowed existing stored waste to be effectively treated, which will advance the future decommissioning of the facility."

"We have achieved this result by using robust regulatory powers and effective partnership working between the Agency, the Nuclear Installations Inspectorate, Nirex and British Nuclear Fuels plc."

Lawrence Williams, HM Chief Inspector of Nuclear Installations, commented: "NII's agreement to the treatment of MAC with TPP is the culmination of a significant programme of work undertaken by the NII, the Environment Agency, Nirex, and the Licensee."

"The development of the TPP process to address the Tc-99 discharge issue is welcomed. Significant quantities of legacy materials held on the Sellafield site in the form of MAC liquors can now be suitably treated and conditioned. The treatment and disposal of the MAC will facilitate the eventual decommissioning of the storage tanks which currently hold these liquors."

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Notes to editors:

- A microsievert is a unit of radiation dose. The annual limit on radiation dose for members of the public is 1,000 microsieverts per year. The exposure from discharges from a single site, such as Sellafield, is required to be within 50% of this limit i.e. 500 microsieverts per year. To put these exposures into context, on average everyone in the UK receives a radiation dose from natural sources of radiation of 2,200 microsieverts per year.

- The Environment Agency published, in September 2001, its proposed decision on the future regulation of Tc-99 discharges from Sellafield. The *Proposed Decision Document* was made available to the public.
- The main objectives of the Tc-99 review were to ensure that the Best Practicable Environmental Option (BPEO) was chosen for the Medium Active Concentrate (MAC) waste stream, and that the Best Practicable Means continue to be used to ensure that radiation doses are as low as reasonably achievable. MAC gives rise to the great majority of the Tc-99 currently discharged to sea from Sellafield.
- MAC is a liquid waste product of Magnox reprocessing. It is currently stored for about 2 years, to allow decay of short-lived radionuclides, before being treated in the Enhanced Actinide Removal Plant (EARP). EARP removes radionuclides such as plutonium and americium, but does not remove the technetium-99, which is consequently discharged to sea.
- The Agency's decision of 2001 was given effect by the issue of a Notice of Variation to the site's discharge authorisation and contained the following improvement and information requirements:
 - To require BNFL to submit a detailed implementation programme (to be agreed with the Agency) for the re-routing of future MAC arisings to the Highly Active Liquor Evaporation and Storage Plant (B215) for subsequent vitrification, within two months of the effective date of the Variation Notice. The programme shall be targeted towards achieving the re-routing by 31 March 2003.
 - To require BNFL to carry out the tasks and stages detailed in the implementation programme, up to the commencement of re-routing, by the dates set in that programme.
 - To require BNFL, subject to HSE permission, to begin re-routing by the date set in the programme.
 - To require BNFL to carry out the first phase of its research and development programme for the use of TPP in EARP for the precipitation and removal of technetium-99.
 - With respect to the discharge limit the Agency decided that it should remain at the existing 90 TBq y^{-1} and be reduced to 10 TBq y^{-1} by around 2006. The limit would be kept under review and, as the uncertainties associated with the abatement techniques are reduced, interim reductions in the limit could be possible.