

## Briefing Note – Antimony-125 releases to air at Sellafield site

### Background

The Sellafield site in Cumbria is operated by Sellafield Ltd (SL). A variety of activities in support of the UK nuclear industry are carried out at this site, including spent nuclear fuel reprocessing, and nuclear waste processing and storage.

Operations at the site involving radioactive waste disposals are regulated by the Environment Agency (EA) under a certificate of authorisation. This certificate contains limitations and conditions with which the operator must comply, including limits on the types of and amounts of radioactive waste that can be released to air, to water and to land.

Antimony-125 ( $^{125}\text{Sb}$ ) is a radioactive substance of short radioactive half-life with a very small impact on people and the environment. Antimony-125 is one of a range of substances that can be released as a result of spent fuel reprocessing activities. The authorisation currently contains a limit on the amount of  $^{125}\text{Sb}$  that can be released to air in any 12 month period.

Authorised limits are not 'safety levels' but are set at levels to make sure that releases are no more than is needed to allow normal operation of a facility and that any radiation exposure that results is well below legal limits; discharging at or around the limit does not mean that the radiation exposure of the public would exceed the legal radiation dose limit.

### The current position with $^{125}\text{Sb}$ releases to air

Recently, the amount of  $^{125}\text{Sb}$  being released to air from Magnox reprocessing operations at Sellafield site has increased, to the extent that continued operation would be likely to result in the site limit for this substance being exceeded. The increase in emissions appears to be a feature of the type of spent Magnox fuel that is now being received at Sellafield.

SL took the decision at the end of April to suspend its Magnox reprocessing operations, to prevent this limit from being breached.

Reprocessing represents the Best Practicable Environmental Option currently available for the management of used, or spent, Magnox nuclear fuel. The radiation dose to the public from the radioactive discharges to air and sea from Sellafield is well below legal limits. We consider that the impact associated with the liquid discharges that would arise from the prolonged underwater storage of spent fuel in ponds would outweigh any benefit associated with stopping operations and the  $^{125}\text{Sb}$  releases to air.

The suspension of reprocessing would have other impacts; the longer that spent Magnox fuel is stored rather than reprocessed, the greater is the risk that the current Magnox Operating Programme (MOP) will not be met. This programme has been developed to ensure that all Magnox fuel will be reprocessed by 2016. Any significant extension to this has potential

consequences in terms of the potential for spent fuel being left over, and unable to be reprocessed, when the Sellafield Magnox reprocessing facility reaches the expected end of its operating life at the end of 2017.

## The regulatory position

Limits on releases within SL's authorisation are set by the EA at very low levels. On occasions it is necessary to review and revise these limits (up and down), for instance to reflect changes in operating practice. EA routinely considers requests from site operators for revisions to discharge limits, but we will only grant such requests where the need for change is clearly justified, and crucially where the proposed change would not result in harm to human health or to the environment.

SL has applied to us to increase its limit for  $^{125}\text{Sb}$  releases to air. The implications of increasing the limit have been assessed, and we are satisfied that any impact would be very small; the estimated increased radiation dose to a member of the public from discharges at the increased limit is only a tiny fraction of the dose that the public receives every year from 'natural background' sources of radiation (i.e. over 2,000 times less).

However, we are unable to make the necessary change to SL's certificate of authorisation until an opinion on the change has been received from the European Commission (EC) under Article 37 of the Euratom Treaty. This opinion is unlikely to be provided before April 2010.

## The Environment Agency's response

We consider that resumption of reprocessing is the Best Practicable Environmental Option. A decision by SL to resume the reprocessing of spent fuel is almost certain to lead to a breach of the  $^{125}\text{Sb}$  limit to air, however we are satisfied that this would not cause any harm to members of the public or the environment.

We will continue to process SL's application for an increase in the limit to  $^{125}\text{Sb}$  to air as quickly as possible, which will involve public consultation, so that our final decision on any new limit is in place in time for an opinion from the EC.

Any breach to the  $^{125}\text{Sb}$  limit that does arise prior to an increase being approved, will be considered in line with our enforcement and prosecution policy, but also taking into account that restarting reprocessing is the best option for the environment overall.

## Getting in touch with us

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