

Briefing Note – Antimony-125 releases to air at Sellafield site Update September 2009

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 (Sb-125) is a radioactive substance of short radioactive half-life that has a very small impact on people and the environment. Sb-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 Sb-125 that can be released to air in any 12 month period.

Recently, the amount of Sb-125 being released to air from Magnox reprocessing operations at Sellafield site has increased, to the extent that continued operation is now causing the site limit for this substance to be exceeded.

This has been anticipated and we have been working with Sellafield Ltd to progress an application to increase the authorised limit.

The current position with Sb-125 releases to air

The increase in Sb-125 emissions is a feature of the type of spent Magnox fuel that is now being received by SL, as the two remaining operating Magnox power stations (Oldbury and Wylfa) approach the end of operation.

SL took the decision at the end of April to suspend its Magnox reprocessing operations, to prevent the limit from being breached. However, we believed that continued suspension of reprocessing was not the best option for the environment, as this would cause its own impacts due to prolonged storage of fuel in storage ponds, and consequently increased discharges to sea. Also, delays or suspensions to reprocessing present a risk of there being spent Magnox fuel left over in wet storage when the existing reprocessing facility is expected to come to the end of its operational life in 2017. Currently there is no proven alternative technology for dealing with left over fuel of this sort.

Consequently, in June we advised SL that we agreed with its decision to resume reprocessing operations as the best practicable environmental option (BPEO) but in the knowledge that a breach of the site limit for Sb-125 to air was then likely - even with SL doing all it can (i.e. the best practicable means) to reduce its emissions. Operations resumed that month, and the existing limit of 6900MBq per year (on a rolling 12-month basis) has now just been exceeded. SL's prediction is that the exceedance will continue into 2010.

The regulatory position

Limits in the certificate of authorisation are not 'safety levels', but are set at low levels to make sure that releases are no more than is needed to allow normal operation of a facility, and to ensure 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.

On occasions it is necessary to review and revise 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 Sb-125 releases to air. This is just one of 15 limits on releases of radionuclides to the air from Sellafield site. 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 from discharges at the increased limit would be 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), even for people in the most exposed groups. None of the other radionuclides for which limits are in place have increased, and no changes to these other limits are being considered.

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), in line with the UK's obligations under Euratom Article 37. This will not be received before April 2010.

The Environment Agency's response

We consider that continued reprocessing, rather than delaying or suspending reprocessing, is the Best Practicable Environmental Option currently available for dealing with spent Magnox fuel.

As expected, continued reprocessing of Magnox fuel at Sellafield site has now led to a breach of the Sb-125 limit to air. However we are satisfied that this will not cause any harm to members of the public or the environment. The impact of this increase in Sb-125 to air is outweighed by the significant reduction in impact resulting from reductions in overall radioactive discharges to the environment from Sellafield site over recent years.

We will continue to process SL's application for an increase in the limit to Sb-125 to air as quickly as possible. This will involve public consultation, and we aim to have our final decision on any new limit in place in time for an opinion from the EC.

We are now reviewing the breach of the Sb-125 limit in line with our enforcement and prosecution policy, to reach a decision on what regulatory action we need to take, given the circumstances. This includes reviewing whether the operator is continuing to employ Best Practicable Means to minimise its effluent discharges.

Getting in touch with us

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