

**Comments on AWE’s application to increase its gaseous volatile beta discharge limit to 100 MBq**

The environment agency consultation on AWE’s application to raise its volatile beta limit can be found [here](https://consult.environment-agency.gov.uk/psc/rg7-4pr-awe-plc/). The application documents can be downloaded at the bottom of the page. The following points will be made in the response that NIS makes to the consultation. You are welcome to also use them in your consultation response.

1. Government policy on radioactive releases to the environment, outlined in the document 'UK Strategy for Radioactive Discharges' is to achieve “progressive and substantial reductions on radioactive discharges” and “progressive reductions in human exposures to ionising radiation...as a result of planned reductions in discharges”. The unnecessary introduction of radioactivity into the environment is considered “undesirable” by government, “even at levels where the doses to both human and non-human species are low and, on the basis of current knowledge, are unlikely to cause harm.”[[1]](#footnote-2) Although written principally to establish policy on radioactive discharges to the marine environment, this strategy document also relates to[[2]](#footnote-3) and refers to radioactive emissions to the atmosphere as well as discharges to the aqueous environment. The proposal to increase volatile beta discharges from AWE is contrary to national policy to reduce radioactive discharges as outlined in the strategy.
2. Statutory guidance to the Environment Agency on the implementation of the Strategy specifically states that, “[i]n relation to its radioactive discharge functions, the Environment Agency should base its regulatory decisions on applying the environmental principles set out in the 2009 UK Strategy”. One of the principles specifically cited is “the preferred use of ‘concentrate and contain’ in the management of radioactive waste over ‘dilute and disperse’”.[[3]](#footnote-4)
3. Given that the proposed application from AWE seeks to increase volatile beta emissions for the purposes of dilution and dispersion, Nuclear Information Service (NIS) concludes that the Environment Agency would not be able to consent to this application without breaching government policy and statutory guidance.
4. NIS supports the UK having a nuclear forensics capacity for use in counter-proliferation. However, AWE’s application has not at all made the case that the increased discharge limit is necessary for that capacity to be maintained:  
   * The programme of work that results in the discharges are exercises where the UK and states test the same samples in order to compare the results and calibrate their testing processes. AWE wishes to increase their gaseous discharges of volatile beta emitters in order to follow the same programme of testing as the other states and to accommodate an increase in the radioactivity of the samples, which results in a greater discharge of volatile beta emitters.
   * AWE’s application does not offer any evidence to show that running these exercises at the proposed frequency or using the more radioactive samples is necessary for maintaining their nuclear forensics capacity. The application specifically says that the specifics of the testing programme have been treated by AWE as non-optional, that AWE does not have control over the radioactivity of the samples used, and that “key allies define the programme”. The obvious conclusion is that the frequency of testing and the nature of the samples used is determined by criteria other than what is needed to maintain a nuclear forensics capacity in the UK.
   * AWE do not appear to have given any consideration of whether the nuclear forensics capacity could be maintained with a reduced programme of calibration work so as to stay within the discharge limits set by their permit.
   * It is a fundamental principle of the International Atomic Energy Agency Basic Safety Standards[[4]](#footnote-5) that activities that give rise to radiation risks need to be justified in terms of their overall benefit. AWE have failed to consider whether the societal benefit of maintaining a nuclear forensic capacity could be gained by an alternative programme of work, so they have manifestly failed to justify the proposed increase in the volatile beta discharges.
   * NIS believes that this failure on its own is sufficient grounds for this application to be rejected.
5. AWE state in their application that it would be “grossly disproportionate” to retrofit abatement technologies to their existing building. No evidence is given for this unsubstantiated assertion and the suggestion seems to have been rejected out of hand.
   * The environment agency guidance on Best Available Techniques (BAT) states that “[i]f your technique won’t provide equivalent environmental protection, but you want to make a case that it’s justified on cost benefit grounds, you’ll need to provide a justification in the operating techniques section of the form and through your risk assessment and cost benefit analysis.”[[5]](#footnote-6)
   * AWE are proposing not to use available abatement technologies but have not justified this with a cost benefit analysis. NIS believes this omission alone is also sufficient to warrant rejection of the application.
6. Both the BAT study and the assessment of the radioactive dose that the public would receive if the discharge limit were raised are internal AWE documents. It seems that both of these documents have been made available to the Environment Agency, but they do not appear to have been made public and only summaries are given in the supporting documents for AWE’s application. It is not possible to assess the various assumptions and judgements that are made in these two key documents without seeing them. NIS believes that the lack of opportunity to test these assumptions and judgements as part of the consultation process should prevent the application from being approved in its current form.
7. A particular concern is the lack of any information about how the modelling used to calculate the dose assessment simulates dispersal of the discharged volatile beta emitters from the site and the rate at which they are assumed to enter the food chain.
8. It is not clear whether the modelling assumes a steady dispersal of radionuclides over the time period covered by the limit. It is clear that the intended activity involves a small number of relatively large discharges, rather than a steady output. On a chart in AWE’s supporting documents, there is a discharge of over 2MBq, almost half of the current limit, from one single incident. Depending on the dose modelling assumptions, a small number of larger discharges could have a significant effect on the estimated dose to a vulnerable member of the public, particularly if they occurred in quick succession.
9. According to AWE’s figures, even in the worst case scenario they would only expect to release 64 MBq of volatile beta emitters a year, but they are requesting an increase to 100 MBq a year for ‘flexibility’. If the Environment Agency does allow AWE to increase their volatile beta limit, it should be increased to the ‘worst case’ scenario level, not arbitrarily set it at 56% above what AWE’s calculations say is necessary. If AWE have confidence in their figures then 64MBq a year should be sufficient for their needs. If not, serious questions should be raised about the supporting documents AWE has provided for this application. AWE have provided no justification for this extra ‘headroom’, and it should not be granted.
10. AWE’s supporting documents say that if they used the sample preparation methodology which would produce 64MBq a year, a release of this size “would only occur every three years”. If the application is approved a 3 year limit should also be set for the cumulative 3-year total discharge level anticipated in AWE’s ‘worst case’ scenario alongside a maximum annual discharge level of 64 Mbq.
11. AWE’s supporting documents say there is no proven technique for monitoring emissions of volatile beta emissions. This is because there are no known measuring techniques for some of the isotopes involved and it is not possible to infer their quantities from the isotopes which can be measured. Instead AWE proposes not to monitor emissions, but instead to calculate estimated emissions based on their sample analysis. This is far from satisfactory, and whether or not an increase in the limit is granted, AWE should be required to monitor emissions for those isotopes where it is possible to take measurements, and use those measurements to verify their calculations.
12. It is implied that when AWE build a new Science, Engineering and Technology facility they will consider fitting abatement technology to that building. This is planned to be done in around five years. If the application to raise the limit is granted, the increased level should be time-limited to five years and AWE should be required to fit abatement technology to the new building.
13. In conclusion, AWE have failed to properly investigate ways in which their desired programme of work could be varied so as to fulfil its purpose without breaching the volatile beta discharge limits in its permit. They have dismissed the possibility of using retrofitting abatement technology, apparently without carrying out a full cost & benefit analysis. They have not made the dose assessment or the detail of their BAT study public, meaning that it is impossible to properly scrutinise the claims in their application. The principle of increasing radioactive discharge limits runs counter to government policy and statutory guidance. As such, NIS believes there are multiple reasons for rejecting the application and hopes this will be the course the Environment Agency will take.

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1. Welsh Assembly Government, Department of the Environment, Scottish Government, and Department of Energy and Climate Change (2009): 'UK Strategy for Radioactive Discharges', July 2009. Paragraph 4, pages vi-vii. [↑](#footnote-ref-2)
2. Welsh Assembly Government, Department of the Environment, Scottish Government, and Department of Energy and Climate Change (2009): 'UK Strategy for Radioactive Discharges', July 2009. Paragraph 1, page vi. [↑](#footnote-ref-3)
3. Department of Energy and Climate Change and Welsh Assembly Government (2009): 'Statutory Guidance to the Environment Agency concerning the regulation of radioactive discharges into the environment'. Paragraph 11, page 9. [↑](#footnote-ref-4)
4. https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1578\_web-57265295.pdf [↑](#footnote-ref-5)
5. https://www.gov.uk/guidance/best-available-techniques-environmental-permits [↑](#footnote-ref-6)