

Nuclear Free Local Authorities **RADIOACTIVE WASTE POLICY**

Briefing No. 36 – Dounreay discharge authorisations

Prepared for NFLA member authorities, December 2012
Application by Dounreay Site Restoration Limited
for Authorisation to Dispose of Radioactive Wastes

1. Introduction

This is an overview of the submissions made by the Nuclear Free Local Authorities (NFLA) and NFLA member Shetland Islands Council (SIC) to the Scottish Environmental Protection Agency (SEPA) to a new application by Dounreay Site Restoration Ltd for environmental authorisations to dispose of radioactive wastes into the marine environment. The submissions were sent in to SEPA in early December and the consultation is now closed. This briefing summarises the two submissions. The NFLA submission was developed by the NFLA Scotland Policy Advisor Pete Roche and the NFLA also commented on SIC's more detailed response, developed for it by Chris Bunyan. The NFLA thanks Harriet Bolt from SIC for allowing it to include a copy of its submission in this NFLA Radioactive Waste Briefing.

2. NFLA Submission

The current Dounreay discharge authorisations were granted to the United Kingdom Atomic Energy Authority (UKAEA) in 1999 before it was announced in 2001 that no more fuel reprocessing would be undertaken at Dounreay. The applied for overall gaseous discharge limits are (with the exception of tritium) lower than those contained in the current authorisation and the applied for overall discharge limits are mostly lower than those contained in the current authorisation, with the exception of tritium and Caesium-137. A limit for Americium-241 has also been applied for.

It is welcome that the proposed authorisation will better reflect current activities at Dounreay, rather than be based on authorisations issued when reprocessing was expected to continue.

However, NFLA Scotland is particularly concerned that the applied for authorisations, although they are mostly lower than existing authorisations, disguise plans to increase actual discharges from the site. It is perhaps more useful to compare the average discharge over the past five years with the new expected annual discharge.

Liquid Discharges (MBq or million Becquerels)	Average actual discharge 2007-2011 inclusive	Expected annual discharges
Alpha	228.4	2,430.0
Tritium	97,200	51,900,000
Sodium-22	68,100 in 2007; Zero for past two years	6,610
Strontium-90	34,460	166,000

Gaseous Discharges (MBq or million Becquerels)	Average actual discharge 2007-2011 inclusive	Expected annual discharges
Tritium	303,000	51,900,000
Krypton-85	2.15	576,000,000
Iodine-129	84.28	1,000

For example, discharges of Krypton-85 into the atmosphere were 2.14 million Bq/yr in 2011. But although the authorised limit applied for has gone down, the predicted annual discharge is expected to be 576 million million Bq/yr (576 trillion Bq/yr) – a dramatic increase by any measure.

All of the radionuclides tabulated above indicate proposals for some dramatic increases in discharges, apart from possibly liquid sodium-22. These cannot be described as an “overall trend in reducing discharges”. (See Paper 2 page iii)

It is claimed that: “*Best Practicable Means (BPM) is considered and applied to all operations to minimise the creation and disposal of radioactive waste.*” We would like to examine the veracity of this claim in more detail. Radioactivity should be concentrated and contained, rather than diluted and dispersed into the environment. Decommissioning should not be used as an excuse to increase discharges into the environment. In Document 13 discharges into the environment are justified with phrase: “*There are minimal health and safety implications and environmental consequences from direct discharge and it would involve a grossly disproportionate cost to treat.*” These claims require further scrutiny. Where possible the treatment methods proposed should be compared with possible alternative methods. Keeping authorised discharge levels low could have the effect of driving innovation in the methods used for decommissioning.

SEPA is also proposing to radically reduce local beach monitoring, including at Sandside. In our view it appears to be much too early to properly assess the effect of the seabed particle recovery work to reduce monitoring from monthly to quarterly at this time.

3. Shetland Islands Council submission

Shetland Islands Council wishes to support the submission from Nuclear Free Local Authorities and to make the following comments and recommendations regarding the above application.

Discharges

Shetland Islands Council welcomes the principle that the proposed authorisation will more realistically reflect the current activities at Dounreay, rather than be based on historic activities. However, the Consultation Document in Section 6 refers to the moderate and significant uncertainties in the estimates for future discharges, depending on whether the activities are ongoing processes or new processes.

Shetland Islands Council recommends that the authorisations should include provision for a review of the discharges, particularly for new processes, once more accurate estimates are available.

Of particular concern to the Council are the predicted increases in actual discharges compared to levels in recent years as illustrated in these tables:

Gaseous Wastes

Radionuclide	Highest previous year	New annual discharge
Alpha	1.34E-02 in 2011	3.73E+06
Beta	2.02E-01 in 2008	7.34E+08
Tritium	4.82E+02 in 2009	5.19E+13
Krypton-85	5.24E-03 in 2008	5.76E+14

Liquid Wastes

Radionuclide	Highest previous year	New annual discharge
Alpha	2.58E-01 in 2009	2.43E+09
Beta	6.05E-01 in 2009	1.48E+12
Strontium-90	4.57E+01 in 2007	1.66E+11
Caesium-137	8.05E+00 in 2008	6.51E+11
Sodium-22	1.19E-02 in 2009	6.61E+09
Tritium	7.68E+01 in 2011	5.13EE+13

These are highly significant increases in actual discharges compared to recent annual discharges.

Shetland Islands Council notes that the significant increases referred to above in liquid and gaseous discharges are due to decommissioning activities. These increases are likely to peak between 2013 and 2015. The Council is concerned that the chosen management options, for example to remove material off-site, such as the DFR breeder fuel, might require treatment that results in greater discharges than would be the case for other available options, such as management on-site. Where the consultation documentation does refer briefly to possible options, these are generally dismissed as too expensive. There is little evidence of adopting a policy of contain and reduce.

Many innovative techniques are being used to decommission the Dounreay nuclear site, yet when considering discharges there seems to be no attempt to reduce them rather than simply accept what the operators consider the easiest and cheapest options. Greatly increased actual discharges appear to have been accepted without question.

There has to be a suspicion that such a large increase in discharges of wastes are to be permitted because of pressure from the Government and the Nuclear Decommissioning Authority to decommission the site as quickly and cheaply as possible. The repeated reduction in the timescale for decommissioning Dounreay - recently reduced by a further 15 years to 2023 - has to be putting pressure on the operators. Shetland Islands Council concern is that this will result in higher than necessary discharges. Equally one must consider whether commercial pressures mean the owners of Dounreay Site Restoration Limited are trying to maximise their profit at the expense of the environment.

The consultation document contains little detailed information on which stakeholders can realistically compare the various waste management options.

Shetland Islands Council requires more information, for example BPEO or BPM studies, on the options available for activities that result in the discharges referred to in this submission before a proper consideration of the SEPA proposals can be undertaken.

Shetland Islands Council is concerned about the very large increases in actual discharges of liquid and gaseous emissions of tritium and the gaseous discharges of krypton-85.

The 2008 KiKK report in Germany raised serious concerns regarding increased cancers around nuclear reactors and in particular possible links to the discharges of tritium and krypton-85. These concerns have been widely supported, for example by Dr Ian Fairlie, a respected consultant on radiation in the environment, (Increased Leukaemias near nuclear power Station, <http://www.ianfairlie.org/wp-content/uploads/2011/11/KiKK+tritium-for-website2.ppt>.)

There are widespread concerns and an increasing body of evidence regarding hazardous properties of tritium and krypton-85 releases and the possible health effects. For example, recent reports have been published by radiation safety agencies in the UK (AGIR, 2008), Canada (CNSC, 2010a; 2010b) and France, where the French Nuclear Safety Authority has published a comprehensive White Paper on tritium (ASN, 2010) and the French Institute de Radioprotection and Nuclear Safety has published six major reports on tritium (IRSN, 2010a; 2010b; 2010c; 2010d; 2010e; 2010f).

While recognising the need to decommission the site safely, the concerns referred to above must be recognised. SEPA accepts the tritium and krypton-85 discharges are necessary because it says there are no abatement measures whose costs can be justified given the potential detriment to the public. Shetland Islands Council believes the issue of tritium and krypton-85 discharges warrants greater consideration by SEPA given the recent concerns raised in highly regarded scientific studies.

In addition to the information requested earlier in this submission, Shetland Islands Council asks SEPA to clarify whether proposals to remove any nuclear material off-site will result in additional discharges compared to management on-site and, if so, to provide further information.

Shetland Islands Council also requests that additional monitoring for krypton-85 and tritium be conducted and the results published in the relevant Radioactivity in Food and the Environment (RIFE) report.

Transfers of wastes off-site

The Council is concerned about the proposed seven transfers of wastes off-site and the scant information provided in the authorisation papers.

In the past the treatment and management of at least some of these wastes, for example solvents, has been the subject of a full consultation with stakeholders. Now, however, the proposed movements are presented with virtually no information and no suggestion there has been a BEPO or even a credible options study, inadequate though these papers have been in the past.

Transfers of combustible waste or surface contaminated metal is proposed to Tradebe Fawley Ltd in Southampton; AEA Technology plc; Studsvik UK Ltd in Cumbria; Studsvik Nuclear AB in Sweden; Siempelkamp Nukleartechnik in Germany; Energy Solutions in the USA; the Low Level Waste Repository in Cumbria; and an unspecified number of licensed facilities for low level wastes in addition to the new low level waste facility at Dounreay.

There are no details of the total volume of the wastes, only annual volume figures, some of which are very small. There are also no details of the total activity of the waste, just "anticipated annual" figures. No details are given of the number of transports or of the transport method, no financial or environmental information is provided, and there is no information on any other options considered and the reasons for their rejection.

The new low level waste facility currently under construction at Dounreay was necessary after the Scottish Ministers supported arguments made by Shetland Islands Council and others that low level wastes should be managed on-site and rejected an application to transfer wastes to the site at Drigg. The Council is therefore particularly concerned to see the use of the facility being proposed again.

Shetland Islands Council is concerned that one reason for DSRL asking to use Drigg is that it might want to transfer wastes before the new LLW facility at Dounreay is fully commissioned. If this was the case it would be quite unacceptable.

Further information should be provided on the nature of the wastes proposed for transfer to Drigg and an explanation as to why the wastes cannot be managed at Dounreay.

Unless there are exceptional environmental or safety reasons, Shetland Islands Council is opposed to transferring wastes from Dounreay for treatment. The Council believes legacy wastes should be treated and maintained at Dounreay, so avoiding unnecessary transports, environmental discharges from facilities in other communities and the possibility of resulting secondary wastes remaining in these off-site facilities. The Council understand there is a possibility of any secondary wastes at the Energy Solution's plant in Oak Ridge, for example, not being returned to the UK but remaining in the USA.

Shetland Islands Council believes none of these off-site transfers should be authorised until full details have been made available to stakeholders and a consultation regarding the possible options has been held.

There are also proposed returns of wastes to overseas customers. In line with the principles referred to above the Council believes that overseas customer wastes should not be returned but should be managed safely at Dounreay.

Beach monitoring

While Shetland Islands Council recognises the work in recent summers to recover the particles from the seabed regarded as 'significant' it is uncomfortable with SEPA's proposal to so radically reduce local beach monitoring, particularly at Sandside. The Council accepts the proposals to reduce monitoring at most other sites, apart from the Dounreay foreshore itself, although this should be kept under review. Any change in seabed distribution of particles or monitoring results should trigger a review.

Regarding Sandside, Shetland Islands Council feels it is too early to assess properly the effect of the seabed work on the occurrence of particles being found there. While accepting that recently a longer period of regular monitoring has been possible at Sandside the Council believes the recommendation to reduce monitoring to quarterly is premature.

Shetland Islands Council recommends a precautionary approach be adopted and to continue the current monthly monitoring programme, at least for a further year, and to then conduct a review of the programme at Sandside.

Shetland Islands Council would ask SEPA to provide its detailed responses to the specific issues raised in this submission. Finally, Shetland Islands Council has no objection to its submission being made public.