

Nuclear Free Local Authorities **briefing**



Date: 22nd July 2010

No.77

Subject: OSPAR and radioactive discharges – will discharges increase from Sellafield over the next decade?

i. NFLA / KIMO co-operation and purpose of this briefing

This briefing has arisen due to the co-operative agreement between the Nuclear Free Local Authorities (NFLA) and the Local Authorities Marine Pollution Organisation KIMO International. As part of this agreement the NFLA produces relevant research on radioactive discharges into the marine environment and assists KIMO staff at meetings of the OSPAR Commission's Radioactive Substances Committee (RSC).

The OSPAR Convention is the current legal instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic. Work under the Convention is managed by the OSPAR Commission, made up of representatives of the Governments of 15 Contracting Parties and the European Commission, representing the European Community (1).

KIMO International is an accredited NGO to the OSPAR Commission and is permitted to submit reports to its committee. This briefing outlines the report it provided to the meeting of the OSPAR RSC meeting of 12th – 15th July held in Stockholm, Sweden. KIMO and NFLA staff worked closely on preparation for the report and the meeting. The report outlines concerns both organisations have that radioactive discharges into the Irish Sea and North East Atlantic may increase, rather than decrease over the next decade.

The next important meeting of the OSPAR Commission will be an Inter-governmental Ministerial Meeting, Bergen, Norway at the end on 21st – 25th September. KIMO and NFLA are discussing developing further policy papers and lobbying the Irish, UK and Norwegian governments.

**ii. Paper to the OSPAR RSC, Stockholm, 12th – 15th July 2010
Submitted by KIMO International in association with NFLA UK and Republic of Ireland**

1. Background

- 1.1 OSPAR's strategic objective is to prevent pollution of the maritime area from ionising radiation through progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim of concentrations in the environment near background values for naturally occurring radioactive substances and close to zero for

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- 1.2 OSPAR will ensure that by the year 2020 discharges, emissions and losses of radioactive substances are reduced to levels where the additional concentrations in the marine environment above historic levels, resulting from such discharges, emissions and losses, are close to zero.
- 1.3 When making assessments and adopting programmes and measures in relation to radioactive substances, including waste, the Contracting Parties should take account of technical feasibility and OSPAR will develop programmes and measures which ensure the application of BAT/BEP including, where appropriate, *clean technology*. [Emphasis added]
- 1.4 The general indication that there is a reduction in average marine concentrations of the selected radionuclides associated with the nuclear industry is, therefore to be welcomed (See RSC 10/2/Info.1-E), although the remobilisation of radionuclides from Irish Sea sediments as a result of past discharges is a particular concern.
- 1.5 However, the general downward trend in emissions from the Sellafield nuclear facility in the United Kingdom may have had more to do with technical problems than specific measures designed to reduce radioactive discharges. Efforts to resolve these technical problems are continuing, so levels of discharges could increase again. And discussions about the management of future spent fuel arisings are continuing in the UK, with the option of extending reprocessing still firmly on the table.
- 1.6 The UK Government is also continuing with ‘facilitative actions’ designed to promote the construction of new nuclear reactors. Up to ten sites around the UK’s coasts may soon be designated for new nuclear construction with resultant emissions to the environment of the North-east Atlantic.

2. Evaluation of UK plans – reprocessing.

- 2.1 The discovery that a quantity of highly radioactive liquor had leaked onto the Feed Clarification Cell floor in April 2005¹, led to Thorp being shutdown for nearly two years. More recently the limited evaporator capacity available for treating reprocessing effluents from oxide fuels, has placed heavy restrictions on Thorp throughputs.² Thorp was closed for seven months during 2009.³ The current restriction on Thorp throughput means that the date for completion of the reprocessing programme and the assumed closure of Thorp has been pushed beyond 2011. It is now likely to be at least 2016/17 – probably closer to 2020 - before it has completed its commercial contracts.
- 2.2 The older of the two - the Magnox Reprocessing Plant - reprocesses spent fuel from Britain’s first generation Magnox reactors, only two of which remain operational. The plant had been scheduled to close at the end of 2012 as part of the UK’s strategy to meet its OSPAR commitments but now isn’t expected to close until 2016 due to poor plant performance.
- 2.3 So both the Magnox Reprocessing Plant and THORP have been operating at a fairly low level for at least five years. THORP is currently operating but only at a low throughput. In the financial year 2009/10 it is expected to reprocess around 200 tonnes of spent fuel and around 300 in 2010/11 compared with the design throughput of 700 tonnes per year. It will not be able to raise throughput until a new evaporator opens around 2013/14. The Magnox reprocessing plant will probably remain open until around 2016/17. As a consequence, although discharges

¹ See Nuclear Installations Inspectorate report at: <http://www.hse.gov.uk/nuclear/thorp.htm>

² Wearing Thin: Sellafield’s High Level Waste (HLW) evaporators in trouble again. Cumbrians Opposed to a Radioactive Environment (CORE) Briefing 06/09. 23rd October 2009
<http://www.corecumbria.co.uk/newsapp/briefings/briefsmain.asp?StrNewsID=268>

³ Thorp to close for Seven Months, CORE Press Release 3rd June 2009
<http://www.corecumbria.co.uk/newsapp/pressreleases/pressmain.asp?StrNewsID=261>

are low at the moment, they are likely to peak again between 2013 and 2016. Remembering there is likely to be a lag of around 5 years after reprocessing ends before discharges are reduced, the UK cannot possibly meet its commitments to achieve close to zero concentrations by 2020.

- 2.4 The UK Nuclear Decommissioning Authority (NDA) has now produced a new paper⁴ which discusses options for the management and ultimate disposition of spent oxide fuel, including both overseas spent oxide fuel, for which the NDA has commercial contracts to reprocess, and spent oxide fuel from the AGR power stations owned and operated by British Energy (BE).
- 2.5 The NDA is now carrying out a 'lifecycle assessment' to decide whether spent oxide fuel should be declared a waste; reprocessed or stored for a while before a final decision is made. The options being considered include reprocessing all AGR spent fuel – not just the fuel currently contracted for reprocessing. Since the lifetime of the AGR power stations may extend beyond the predicted lifetime of Thorp, this would require either major refurbishment of Thorp and associated plant, new contracts with overseas reprocessing facilities or the building a new reprocessing plant. Another option is to reprocess as much of the oxide fuels as possible by operating Thorp for as long as practicable.
- 2.6 The document does say that as part of the options evaluation environmental factors will be analysed including potential impacts on UK radioactive discharge strategy.
- 2.7 It should also be noted that the UK Government currently has no defined policy regarding future use of reprocessed uranium and plutonium. However it is planning to launch a public consultation in the autumn on proposals for plutonium management. The outcome of this is, according to the NDA, key to decisions "*on whether to pursue an aggressive reprocessing strategy, or adopt a long term storage-only approach and, if so, whether the fuel should be retrievable once 'disposed'.*"

3. Evaluation of UK Plans - New Nuclear Reactors

- 3.1 In July 2009 the UK Government published its revised Radioactive Discharges Strategy.⁵ The earlier 2002 strategy was written in the context of a declining UK nuclear industry, but the new strategy allows for expansion. The revised strategy cannot, therefore, deliver the UK's commitments to OSPAR.
- 3.2 In November 2009 the UK Government launched a consultation on its Proposed Regulatory Justification decisions on new nuclear power station designs (AP1000s and EPRs).⁶
- 3.3 On liquid and gaseous discharges of radioactive waste paragraph 4.123 – 4.126 (of Volume 2 on AP1000s and Volume 3 on EPRs) attempt to reconcile the fact that the UK is committed to a progressive reduction of radioactive discharges into the marine environment with the construction of new reactors. Paragraph 4.126 states that:

"The Secretary of State acknowledges that new nuclear power stations will continue to make liquid and gaseous discharges which will require continued regulation and is satisfied that there is an effective regulatory regime in place to ensure that such discharges will remain within limits agreed with the regulators."
- 3.4 Unfortunately the UK's 2009 Radioactive Discharges Strategy fails to quantify the potential discharges from new reactors. It boldly states:

⁴ Topic Strategy: Oxide Fuel, NDA March 2010 (Doc No. SMS/TS/C2/G0/001)

<http://www.nda.gov.uk/documents/upload/Draft-Oxide-Fuel-Topic-Strategy-gate-0.pdf>

⁵ UK Strategy for Radioactive Discharges, DECC, July 2009

http://www.decc.gov.uk/Media/viewfile.ashx?FilePath=What%20we%20do\UK%20energy%20supply\Energy%20mix\Nuclear\radioactivity\1_20090722135916_e_@@_dischargesstrategy.pdf&filetype=4

⁶ http://www.decc.gov.uk/en/content/cms/consultations/reg_just_cons/reg_just_cons.aspx

“Based on what energy companies have said, it is possible a programme of new nuclear build could exceed current generating capacity during the timeframe covered by this Strategy. On the basis of the low levels of discharges from current LLWRs in the UK and abroad, such a programme, on a purely illustrative basis, would not prevent the UK from achieving the objective of the OSPAR RSS.”

It is impossible to see how a programme of new reactor construction can meet the objective of *“progressive and substantial reductions of discharges ...with the ultimate aim of concentrations in the environment ...close to zero for artificial radioactive substances”*.

4. Action requested from the OSPAR RSC

RSC is invited take note of the information provided above and to request the UK:

- a) to provide to RSC a detailed break-down and justification for predicted increases in discharges of radioactive substances as a consequence of existing reprocessing programmes and a failure to implement Best Available Techniques for spent fuel management;
- b) to assure the RSC that it will not extend the life of the Thorp plant or plan the construction of a new reprocessing plant;
- c) to justify the construction of new nuclear facilities involving increases in releases of radioactive substances, and explain how this meets its OSPAR commitments.

5. Outcome from the RSC meeting

The meeting noted the report and the requested actions. The NFLA will develop a further policy paper in co-operation with KIMO International and submit it to the Republic of Ireland and Norway Governments to seek for its common concerns over radioactive discharges to be raised at the OSPAR Ministerial Meeting in Bergen in September.