Response to:
Consultation on the management of overseas origin nuclear fuels held in the UK
(03 March 2014)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/285882/overseas_fuels_consultation.pdf

Stop Hinkley – May 2014

> *“if anybody, including BNFL were given a choice about whether to start building a large oxide reprocessing plant now, the answer would almost certainly be in the negative. THORP may be a marvel of modern engineering, but it is a marvel designed in a period of unreserved optimism about nuclear power that has now passed”* [1]

Author: Dr Rachel E J Western, BA (Oxon) PhD MRSC[1]

Dr Western worked for fifteen years as a Nuclear Researcher for Friends of the Earth, and for five years as a Consultant to ‘Nirex’, the Nuclear Industry Radioactive Waste Executive. She was also a member of Nuclear Waste Advisory Associates

Note
This response takes an historical perspective set in the context of the proposal to build two additional nuclear reactors at Hinkley in Somerset. The fact that ‘virtual reprocessing’ – or ‘not reprocessing’ is proposed is to be welcomed. Unfortunately the decision to not reprocess should

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[1] Member of the Royal Society of Chemistry

have been taken much earlier. At the Planning Stage it was quite clear that THORP was not needed. The same is true for the proposed Hinkley C Power Station.

The Consultation

The DECC consultation sets out proposals which would allow the NDA to manage by means of interim storage and disposal any small quantities of overseas origin oxide fuels that are either not economic to reprocess or cannot be reprocessed in THORP before it closes in 2018. This approach would permit the NDA to close out the remaining overseas contracts in a cost-effective and timely way, providing more certainty over the future plans for THORP and for the future decommissioning of the Dounreay licensed site. [2]

Primary Conclusion

There remain 300 tonnes of overseas spent fuel due to be reprocessed at THORP. [3] In addition there may be UK AGR fuel to be reprocessed. The primary conclusion of this response is that the option of not reprocessing 30 tonnes of fuel should be extended to cover the remaining 300 tonnes, and also the AGR fuel, in order to avoid the disadvantages of reprocessing, and to enable the NDA to focus on clean-up of the legacy wastes on the Sellafield site. Furthermore, recent research by the NDA indicates that Magnox reprocessing should also be halted.

This would serve to:

- Reduce waste volumes at a time when waste management is in crisis
- Reduce carcinogenic discharges
- Halt the escalation in the plutonium stockpile
- Enable radical refocussing on Sellafield clean-up

No wastes or plutonium should be returned to their Country of origin

What is Reprocessing

Reprocessing is the separation of plutonium in the other nuclear wastes held in used nuclear fuel. The plutonium produced in a nuclear reactor is locked inside the uranium rod and mixed with intensely radioactive fission products. The fission products are isotopes of elements ranging in atomic number from 30 (zinc) to 66 (dysprosium).[4] Most of them are radioactive and their half-lives range from less than a second to thousands of years. [5]

Sellafield is a military site set up immediately Post War to provide plutonium for nuclear bombs. [6] [7] The plutonium is obtained by chemically separating it from waste nuclear fuel

[2] Consultation Document, page 5
[3] Consultation Document, page 9
[4] W.P. Bebbington. The Reprocessing of Nuclear Fuels. *Scientific American*. 1976, **235**, 30-41, page 30
[5] Bebbinton (1976) page 30
[6]Margaret Gowing and Lorna Arnold – "*Independence and Deterrence – Britain and Atomic Energy, (1945-1952) – Volume I Policy Making*" pp 166-8, p144

rods, and the process used for the separation is known as '*solvent extraction*' [8]] When using this technique it is essential that the solid rods of radioactive waste are converted to liquid.[9] As a result the radioactive wastes left over from the plutonium extraction are liquid. Because they are intensely radioactive they are known as '*Liquid High Level Waste*' (or Liquid HLW) [10] [11]

Sellafield continues to separate plutonium from other nuclear wastes even though [12] the military requirement has been met. [13]

Early History

Britain's first involvement with nuclear power was military, secretive and unsanctioned by Parliament. [14] The Sellafield site in Cumbria began life in 1939 as a factory manufacturing explosives.[15] In 1947 work began on two 'piles' – early nuclear reactors – to produce plutonium for nuclear weapons. Associated with them were a network of other buildings including a plant to separate out the plutonium from the waste nuclear fuel removed from the piles. [16] The first chemical separation plant for plutonium (- a reprocessing plant -) was called B204 and it operated from 1952 to 1964.[17] In October 1952 Britain exploded its first nuclear bomb. [18]

The Magnox Programme

In February 1955 the Government produced a White Paper entitled 'A Programme of Nuclear Power' outlining plans for the construction of 12 nuclear power stations over the next ten years; and the second plutonium separation plant at Sellafield 'B205' started up in 1964 to

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(A volume commissioned by the United Kingdom Atomic Energy Authority – as part of the Historical Account of the UK Nuclear Weapon Project)

[7] Alwyn McKay – "*The Making of the Atomic Age*" pp 124-125 – NB – this reference points out that '**Windscale**' was the original name for the '**Sellafield**' site

[8] The technique used is 'Plutonium Uranium Refining by Extraction' – or 'Purex' - see Gmelein Handbook – Transuranium Chem (x30) AI II p209

[9] This is achieved by dissolving the rods in acid.- see Gmelein Handbook – Transuranium Chem (x30) AI II p209

[10] F R Farmer "*The Problem of liquid and gaseous effluent disposal at Windscale*" J.Brit Nucl.Energy Conf. Jan 1957 pp 26 – 39 – esp see p28 'Direct effluent from the chemical plant' - first para

[11] Nuclear Installations Inspectorate – March 2009 Newsletter (pp15 – 16) http://www.hse.gov.uk/nuclear/nn45.pdf

[12] Nuclear Installations Inspectorate – March 2009 Newsletter - pp14 + p16 (NB – within the nuclear industry the plutonium separation technique is known as 'reprocessing') http://www.hse.gov.uk/nuclear/nn45.pdf

[13] "*The United Kingdom's Defence Nuclear Weapons Programme - A Summary Report by The Ministry of Defence on the Role of Historical Accounting for Fissile Material in the Nuclear Disarmament Process, and on Plutonium for the United Kingdom's Defence Nuclear Programme*" http://www.mod.uk/NR/rdonlyres/C4840896-90AD-4A8C-BF8D-C2625C7C1DD8/0/historical_accounting.pdf)

[14] O'Riordan et al (1988) p240

[15] Aubrey (1993) p3

[16] Aubrey (1993) p3

[17] Conroy (1978) p1

[18] Conroy (1978) p1

extract plutonium from this programme of nuclear power reactors, as well as the specifically Military reactors. These reactors are known as Magnox. [19]

The Magnox Programme and Cost

In 1950, the long term objective was to produce electricity from nuclear reactors at a cost that was similar to that from coal. [20] In the White Paper it is recognised that the electricity from the Magnox Stations would be far more expensive than from coal fired stations. However a ‘plutonium credit’ was ascribed to the putative value of the plutonium that these reactors would produce,[21] and with this sleight of hand the costs of nuclear electricity balanced the cost of electricity from coal. However, from 1956 when the plutonium credit was reduced by 75%, it was quite clear that the Magnox reactors would be grossly uneconomic.[22]

The Magnox Programme and Plutonium for Weapons Use

The production of plutonium was a primary purpose of the civil Magnox programme, and was used to justify the high costs. The explicit purpose of this was the development of the ‘fast breeder reactor’. [23] However there was also a military link which was kept secret from the public.

By the late 1950s the civil Magnox programme had created a surplus of plutonium. At the same time America had produced a surplus of military uranium. [24] The result was the 1958 Mutual Defence Treaty which encouraged the transfer of materials for the preparation and implementation of military plans. [25] Finally in 1986 Lord Marshall of the CEGB interviewed on Thames Television that plutonium from the early civil reactors had gone into the US Defence stockpile. [26] This admission was based on exhaustive evidence by CND at the Sizewell Inquiry based on an interview by David Lowry of Lord Hinton, former Chairman of the CEGB. [27]

The ‘Fast Breeder Reactor’

Apart from the Military rationale for extracting plutonium from the waste fuel that is removed from a reactor, the other reason given was that it could be used in a so-called ‘Fast Breeder Reactor’ - FBR. The word fast comes from a technical term derived from nuclear physics, but the term breeder comes from the notion that after the reactor had run for a while it would manufacture more plutonium that it was actually loaded with. It was a very attractive notion – like putting wood on a fire that burnt to produce more wood.

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[19] Aubrey (1993) p4, see also Conroy (1978) p1
[20] Roberts (1999) p90
[21] 1955 White Paper (1955) pp 4-5
[22] Davies (1988) p67
[23] Davies (1988) p70
[24] Uranium – 235 has the capability to split open and cause a nuclear explosion. However, most uranium that comes out of the ground contains another type – uranium-238 which does not have this capacity, Natural uranium contains just 0.7% uranium-235, if this is ‘enriched’ to a much higher percentage the uranium can be used to make a nuclear weapon.
[25] O’Riordan (1988) p240
[26] O’Riordan (1988) p247
[27] O’Riordan (1988) p243

In 1955, it was announced that the very first electric power generation by atomic energy had taken place using a breeder reactor in the United States, and Britain announced a FBR project to be started up at Dounreay on the tip of Scotland. [28] However, these reactors had technical problems. [29] Between 1955 and 1984 the UK spent £2,400 million on the FBR project, [30] and in 1984 the Chairman of the Atomic Energy Authority (AEA) announced that a further 25-30 years more work was needed, together with an additional £3,600 million, before the FBR could reach commercial status. [31]

<u>The Historical Context of the Contracts to Reprocess Overseas Fuel</u>

In November 1963, the first UK plutonium separation (reprocessing) plant was run down [32] and reprocessing in the second plant began in 1964. [33] Before operation of the second plant had even begun, the need for reprocessing appeared doubtful. Supposedly, the plutonium that was separated was to be used in fast breeder reactors and the uranium was also to be reused. However, the economics of recovery and reused were tenuous. By 1962, there was already a plutonium surplus. [34] The Chairman of the Windscale Local Liaison Committee commented:

> "*everyone hoped that plutonium would eventually be used as a nuclear fuel*" [35]

In 1963, it was reported to the Windscale Local Liaison Committee that work was being undertaken to produce fuel elements spiked with plutonium in order to "*find an outlet*" for plutonium. [36]

Within a year of the run-down of the first separation plant, the UKAEA were planning to restart it for the reprocessing of 'oxide' fuel. The fuel used in the military reactors and in the nuclear power station built in the first nuclear power programme used uranium metal as a fuel. However, the nuclear power stations in the second programme and also many of the overseas nuclear reactors used uranium oxide rather than uranium metal as the fuel. This fuel type introduces complications to reprocessing as the fuel rods require elaborate mechanical treatment and the fuel contains more radioactivity.

It was proposed to provide equipment in which all known types of oxide fuel could be cut into small pieces and dissolved in nitric acid. [37] The acid solution of dissolved spent fuel was to be sent through one cycle of solvent extraction within the old plant before it was sent to the

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[28] Roberts (1999) p91
[29] Roberts (1999) p91
[30] Roberts (1999) p94
[31] Roberts (1999) p94
[32] Windscale LLC (1963), Internal Document. United Kingdom Atomic Energy Authority, Production Group. *Minutes of the Eleventh Meeting of the Windscale Local Liaison Committee held at Windscale Works*. 7 November 1963. page 3
[33] B. Bailey, The Long History of Magnox Reprocessing. In *British Reprocessing, Special Nuclear Engineering International Publication*. October 1990 11-14, page 12
[34] Windscale LLC (1962) – Internal Document. United Kingdom Atomic Energy Authority, Production Group. Minutes of the Tenth Meeting of the Windscale Local Liaison Committee held at Windscale. 8 November 1962, page 4
[35] Windscale LLC (1962) page 4
[36] Windscale LLC (1963) page 4
[37] T. Tuohy, (1964) Internal Document. *Reprocessing Plant for Oxide Fuels*. Note by T. Tuohy for the Atomic Energy Executive, AEX(64) 101. 9 November 1964

second solvent extraction plant which had just been built.[38] In August 1969 the commissioning of the converted plant, known as the 'Head End' plant was completed. [39]

Although it was already quite apparent as early as 1964 that there was no compelling economic argument for the immediate reprocessing of UK fuel, the prospect of obtaining foreign reprocessing contracts introduced an additional set of considerations. It was felt that it was important to establishing the Atomic Energy Authority in the oxide fuel reprocessing business [40] and that facilities for oxide reprocessing should be provided as early as was possible. [41] It was concluded that:

> "*An oxide fuel reprocessing plant built to operate prior to 1972 can only be justified on the basis of obtaining sufficient overseas reprocessing business to make it a sound economic proposition.*" [42]

However, it was argued that oxide reprocessing capacity:

> "*should be provided as soon as possible to give the Authority early entry into the European market, which is of high potential profitability.*" [43]

In September 1968 it was reported that the overseas order book for overseas oxide reprocessing had begun to fill and that there was the prospect for a substantial order for fuel reprocessing in the period 1972/77. [44] It was considered that if this order was obtained a third plant 'THORP' might be required for 1976. [45]

On 26 September 1973, oxide reprocessing was abandoned when radioactive gas escaped into the working area of the Head End plant and contaminated the workers. Clean-out of the plant during shut-down had failed to remove intensely radioactive solids [46] from the process vessels.[47] The heat generated from these solids produced temperatures up to hundreds of degrees centigrade. [48] During recharge of the plant acidified solvent came into contact with the radioactive solids and reacted to produce a chemically explosive mixture. [49,50,51]

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[38] Tuohy (1964) Appendix I, page 2
[3939] Hudson (1990), P. Hudson, Developing Technology to Reprocess Oxide Fuel. In *British Reprocessing, Special Nuclear Engineering International Publication*. October 1990, 17-20, page 19
[40] Tuohy (1964) page 1
[41] Tuohy (1964) page 4
[42] Tuohy (1964) page 1
[43] Tuohy (1964) page 1
[44] Tatlock (1968) Internal Document. J. Tatlock, *The Assessment of Future Reprocessing Requirements; A Reconsideration of the Programme of Study*. Presented to the Production Group Technical Committee. PGTC(68)P.13, 9 September 1968, page 2
[45] Tatlock (1968) page 4
[46] Cmnd. 5703 (1974) Nuclear Installations Inspectorate. *Report by the Chief Inspector of Nuclear Installations on the Incident in Building B204 at the Windscale Works of British Nuclear Fuels Limited on 26 September 1973*. ISBN 0 10 157030 9. London: HMSO 1974, page 6
[47] Windscale LLC (1974) Internal Document, British Nuclear Fuels Limited. *Minutes of the Twenty-Third Meeting of the Windscale Local Liaison Committee held at Windscale and Calder Works*. 22 November 1974. page 2
[48] Cmnd. 5703 (1974) page 8
[49] Cmnd. 5703 (1974) page 8

Radioactive gas was released into the working area and all 35 men working in the building became contaminated. [52]

Despite this accident BNFL still proposed to build large oxide reprocessing facilities. [53]

The Windscale Inquiry

Late in 1974 BNFL first announced their plans to build THORP. The plans attracted little public attention until a year later when on 21st October 1975 the Mirror newspaper ran a story that BNFL planned to make Britain the 'world's nuclear dustbin'. The public response was immediate and vociferous. [54] The decision on whether to hold a Planning Inquiry was left to the then Labour Environment Secretary Peter Shore, who was torn between the pressures to earn foreign currency and the concerns of Cabinet colleagues like Tony Benn, who had called for a national debate about nuclear power. [55] However, on 10 October 1976 a concrete storage silo at Windscale (Sellafield) was found to have a serious leak which had been kept secret for twelve days. Soon after this it was announced that there would be an Inquiry into the decision to build THORP. [56]

There have been a number of books written about the Windscale Inquiry. [57]

Plutonium and the Windscale Inquiry

In 1971, the Nobel Prizewinner Glenn Seaborg compared the value of plutonium to the value of gold, [58] and the recovery of plutonium was seen at the time of the Windscale Inquiry in 1977 as one of the main attractions of reprocessing. [59] At the Windscale Inquiry much of the debate was over the timing of reprocessing. THORP's critics argued that the decision to construct the plant could be postponed for five or ten years without jeopardising generating plants that hinged on plutonium stocks. Justice Parker, the Inspector rejected the case for delay by accepting BNFL's contention that THORP would be necessary to guarantee plutonium supplies beyond the eighth fast reactor envisaged. [60]

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[50] Windscale LLC (1974) page 2
[51] Cmnd. 6618 (1976) Royal Commission on Environmental Pollution, Sixth Report, Nuclear Power and the Environment, Cmnd. 6618, London: HMSO, September 1976, page 59
[52] Cmnd. 5703 (1974) pages 2,8,10
[53] Franklin (1974) Internal Document N. L. Franklin. *Extension of Windscale Oxide Reprocessing Facilities*. Presented by N. L. Franklin to the British Nuclear Fuels Limited Board of Directors. BNFL/B/74/38. 26 June 1974, page 5
[54] Conroy (1978) p5
[55] Aubrey (1993) pp 5-6
[56] Aubrey (1993) p6
[57] See for example: Wynne (1982), Breach (1978), Morris (1977), Conroy (1978), TCPA (1978)
[58] Aubrey (1993) p11
[59] Aubrey (1993) p10
[60] Walker (1999) pp 18 - 19

The Construction of THORP

Mr Justice Parker accepted BNFL's case and recommended that THORP should be built and in May 1978 the construction received Parliamentary approval. [61] On 27 March 1994, the operation of the 'THORP' plutonium separation plant began when active commissioning of the 'head end section' started with the first shearing of fuel from the Heysham nuclear power station.[62] However, four days later on the 31st March 1994 – the Dounreay Fast Breeder programme which was meant to use the plutonium from THORP was shut down [63]

'MOX'

There is an alternative to using plutonium in a Fast Breeder Reactor – it is known as 'MOX'. MOX stands for 'Mixed Oxide' fuel and is a mixture of plutonium and uranium fuel that can be used in an ordinary reactor, rather than a specially build FBR.

A few weeks after THORP was started up construction work began in April 1994 on the 'Sellafield MOX Plant', or SMP. [64] SMP was a plant designed to fabricate mixed oxide fuel rods. However, with the projected annual throughput of 120te HM ... SMP actually manufactured 13.8te HM of MOX fuel during its operating life. The aggregate net total loss for the full plant lifecycle was around £2.2BN. [65]

In addition to the problems associated with the manufacture of MOX fuel, MOX fuel use is also problematic. It increases the amount of plutonium [66] and increases the radiotoxicity of the waste [67].

Plutonium Transport

In September 1977 it was revealed for the first time that the United States had exploded a device using plutonium from an ordinary reactor – rather than specifically 'weapons grade' plutonium from a specially designated nuclear reactor. [68] This fact has extremely serious implications for reprocessing – in particular the risks associated with the transfer of

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[61] Aubrey (1993) p7

[62] http://www.defra.gov.uk/rwmac/reports/reprocess/13.htm - This document reports the 'Radioactive Waste Management Committee's 1999-2000 review of the waste implications of reprocessing.

[63] http://www.nea.fr/html/general/profiles/uk.html

[64] Irish Court Case (10th June 2003) [Netherlands] www.pca-cpa.org/showfile.asp?fil_id=82
page 42 – see para [lines 11-17]

[65] International Panel on Fissile Materials - IPFM Blog
By Pavel Podvig on June 20, 2013 3:01 AM
http://fissilematerials.org/blog/2013/06/lessons_learned_from_sell.html

[66] Elayi A G (1990) "Plutonium and reactor Transmutation", *Radioactive Waste Management and the Nuclear Fuel Cycle*, Vol14(4), p279

[67] Elayi A G and Schapira J P, *Long-Term Radiotoxicity in the Framework of the ICRP-48, of High Level Wastes and Spent Fuels Produced by Light Water Reactors; Impact of Burn-Up Extension and of the Use of Mixed Oxide Fuels*. INPO-DRE, 87-07, Fig 6, also p15. See also Elayi A G (1990) p277 and p 279

[68] Morris (1977) p56

plutonium back to its country of origin. [69] The plutonium stocks produced by overseas reprocessing should not be returned

Waste Management

It has been argued that despite the fact that the plutonium separated by plutonium has become a liability, reprocessing (plutonium separation) is still needed as a waste management technique for the waste fuel removed from nuclear reactors. However, as far back as 1976, President Ford announced that the US would no longer consider reprocessing as a 'necessary and inevitable step in the nuclear fuel cycle'. [70] The question is not so straight-forward for the 'Magnox' fuel used in the older reactors in the UK. This fuel uses a magnesium / aluminium alloy which is subject to corrosion under wet conditions. Unfortunately the majority of Magnox stations discharged the fuel into cooling ponds. In 1963 the possibility of using corrosion resistant cladding was considered – but the idea was dismissed. [71] If the fuel is not reprocessed it can be dry stored. [72] In 2012 the NDA considered that this could be possible – even for previously wet fuel:

> *"The possibility of drying and containerising wetted fuel is currently under development. The work is at a stage where the option is considered technically feasible, further detailed design would be required if it were decided to implement this option.*
>
> *For dry fuel that remains in the reactor, preliminary studies have shown that it can be safely stored in-reactor for decades with negligible degradation as confirmed by experience with storage of several hundred tonnes of fuel in air cooled dry stores at Wylfa. Thus in the event of acute failure, dry fuel in reactors would be held on-site in-reactor until the appropriate conditioning and disposal facilities are in place."* [73]

The volume of Magnox waste is actually increased 100-fold by reprocessing. [74] This is extremely problematic as waste management is internationally in crisis. In the UK the disposal programme is experiencing severe problems due to the reluctance of communities to host a disposal site – quite apart from the scientific problems[75] . Internationally the whole notion of disposal has been thrown into question by the recent leak [76,77] at the WIPP disposal site in the United States.

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69 Aubrey (1993) pp 43-51
70 Conroy (1978) p2
71 Culler, F. L. 'Present and Future Role of Reprocessing in the Fuel Cycle, Aqueous Reprocessing Chemistry for Irradiated Fuels, Brussels, 1963 Symposium, pp 427 – 464. See pp 444-445
72 Aubrey (1993) pp 62-67
73 NDA Magnox Operating Programme 2012, (MOP 9), p11
http://www.nda.gov.uk/documents/upload/The-Magnox-Operating-Programme-MOP9.pdf
74 Davies (1988) p71
75 NWAA Issues Register – Commentary, March 2010
http://www.nuclearwasteadvisory.co.uk/wp-content/uploads/2011/06/NWAA-ISSUES-REGISTER-COMMENTARY.pdf
76 Zuckerman, L - Kitty Litter Eyed as Possible Culprit in Radiation Leak, Scientific American,

Discharges

Sellafield routinely discharges voluminous quantities of radioactivity into the environment.[78,79] The Convention for the Protection of the Marine Environment of the North East Atlantic – the 'OSPAR' Convention entered into force March 1998. The Sintra statement of 1998 sets the objective of reducing radioactive discharges, by the year 2020, to a level where the additional concentrations resulting from the said discharges are close to zero.[80]

The NRPB have reported that just one exposure to a radioactive atom is enough to initiate cancer. [81]

Incident at THORP

THORP has not run smoothly. For example, nine years ago there was a report of a serious leak. The Health and Safety Executive reported:

> *"On 20 April 2005 British Nuclear Group Sellafield Limited (BNGSL) discovered a leak from a pipe that supplied highly radioactive liquor to an accountancy tank in a part of the Thermal Oxide Reprocessing Plant (THORP) at Sellafield, known as the 'feed clarification cell'. The incident was categorised by BNGSL as '3' on the International Nuclear Event Scale.*
>
> *In total, approximately 83 000 litres of dissolver product liquor, containing approximately 22 000 kilograms of nuclear fuel (mostly uranium incorporating around 160 kilograms of plutonium), had leaked onto the floor of the cell. That leak had begun prior to 28 August 2004 and had remained undiscovered until 20 April 2005."* [82]

May 13, 2014
http://www.scientificamerican.com/article/kitty-litter-eyed-as-possible-culprit-in-radiation-leak/

[77] Nuclear Waste Leak Traced To --- Kitty Litter - 10 May 2014
http://www.forbes.com/sites/jamesconca/2014/05/10/nuclear-waste-leak-traced-to-kitty-litter/2/

[78] Davies (1988) p71, See also Aubrey (1993) pp 22-32

[79] Sellafield Limited, Discharges and Monitoring in the United Kingdom
Annual Report 2011 http://www.sellafieldsites.com/wp-content/uploads/2012/08/Sellafield_Report_2011_800K1.pdf, page 16

[80] Chantal Jarlier-Clément,The Ospar Convention and its Implementation: Radioactive Substances,
by https://www.oecd-nea.org/law/nlb/nlb-67/021_026.pdf, page 5

[81] Risk of Radiation-Induced Cancer at Low Doses and Low Dose Rates for Radiation Protection Purposes - NRPB (1995) (National Radiological Protection Board) Added/updated: 29 August 2008, Volume 6 , No. 1, ISBN 0-85951-386-6
http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1195733754925?p=1219908766891

[82] Report of the investigation into the leak of dissolver product liquor at the Thermal Oxide Reprocessing Plant (THORP), Sellafield, notified to HSE on 20 April 2005, Published by the Health and Safety Executive February 2007, page 4
http://www.onr.org.uk/Thorpreport.pdf

The Sellafield Clean-up Programme

The Sellafield clean-up programme is not faring well. The Rt Hon Margaret Hodge MP, Chair of the Committee of Public Accounts, said in February 2014:

> "*An enormous legacy of nuclear waste has been allowed to build up on the Sellafield site. Over decades, successive governments have failed to get to grips with this critical problem, to the point where the total lifetime cost of decommissioning the site has now reached £67.5 billion, and there's no indication of when that cost will stop rising.*
>
> …
>
> *It is unclear how long it will take to deal with hazardous radioactive waste at Sellafield or how much it will cost the taxpayer. Of the 14 current major projects, 12 were behind schedule in the last year and five of those were over budget. Furthermore, now that Cumbria County Council has ruled out West Cumbria as the site of the proposed geological disposal facility, a solution to the problem of long-term storage of the waste is as far away as ever.*
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> …
>
> *Public money to the tune of £1.6 billion is being spent at Sellafield each year.*
>
> …
>
> *Over several decades, successive governments have been guilty of failing to tackle issues on the site, allowing an enormous nuclear legacy to build up. Deadlines for cleaning up Sellafield have been missed, while total lifetime costs for decommissioning the site continue to rise each year and now stand at £67.5 billion. It is essential that the Authority brings a real sense of urgency to its oversight of Sellafield so that the timetable for reducing risks does not slip further and costs do not continue to escalate year on year.*" [83]

This Consultation signals that reprocessing at THORP can be ended, and the 2012 NDA Magnox document shows that the same is true for the older fuel currently reprocessed at the site. Britain has accumulated the biggest stockpile of civil plutonium in the world. What was once a valued asset is now viewed as a costly liability and a target for terrorists. [84] It is time to draw reprocessing to a close and concentrate on making safe the dangerous nuclear legacy at the Sellafield site.

Are there any possible consequences of this proposal which the Government might not have anticipated?

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[83] http://www.parliament.uk/business/committees/committees-a-z/commons-select/public-accounts-committee/news/nuclear-decommissioning-authority-managing-risk-at-sellafield/

[84] http://www.bbc.co.uk/news/uk-21505271 24 February 2013

An important consequence of the proposal is that it sets a precedent that can be extended to the remainder of the 300 tonnes of overseas fuel and any AGR fuel that remains to be reprocessed. These may be put into interim storage in the same way. Reprocessing is uneconomic and it is also irresponsible to be adding to the stockpiles of HLW when we are no longer contractually obliged to do so. Recent research from the NDA indicates that Magnox reprocessing may also be halted. The message of this Consultation is that reprocessing at Sellafield should end.

Are there any significant factors that we may have overlooked or under / over estimated that would influence our decision on the NDA's proposal?

A significant factor that has been overlooked are the problems affecting the clean-up programme at the Sellafield site. The termination of reprocessing would allow more focus to be given to this.

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