Environment Agency

nuclear sector plan

2007 Environmental Performance Report Summary

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The Environment Agency. Out there, making your environment a better place.

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Foreword

The nuclear sector was one of the first for which the Environment Agency published a sector plan. This is a collaborative effort between the Environment Agency and the sector. In recognition of our joint effort, where 'we' is used in this document it applies to the Environment Agency and the industry collectively. Logos of organisations participating in this initiative are given below.

This is the second annual report on the environmental performance of the nuclear sector. It highlights where the industry has performed well and identifies areas for improvement.

Major changes are underway in the nuclear industry. To support these, the Environment Agency believes that the industry, NDA and Government need to make more strategic plans to establish and maintain a sustainable infrastructure for the UK's nuclear industry.

Government and the Nuclear Decommissioning Authority (NDA) are mapping out an approach to dispose of higher activity radioactive waste in a geological facility. The NDA is reorganising the civil nuclear industry and seeking to drive innovative approaches to site decommissioning and clean up. Meanwhile, the Environment Agency and the Health and Safety Executive (HSE) are assessing new designs of nuclear power reactors that may be constructed in the UK. But there are still gaps and questions remaining and a need for an overview of the whole of the industry 's infrastructure needs both now and in the future.

Recognising these changes, we are reviewing the scope and objectives of the nuclear sector plan. We plan to publish a revised version in early 2009. This will build on the successes of the plan to date, and look ahead to forthcoming challenges.

Tricia Henton / Environment Agency

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Summary

We have reported on the environmental performance of the nuclear sector in the **Nuclear Sector Plan, 2007 Environmental Performance Report**, available on our website. It is the second annual report and measures environmental performance against the objectives and performance indicators set out in the **Nuclear Sector Plan**. Here we provide a summary of the Environmental Performance Report.

The Environment Agency and the nuclear industry jointly developed the sector plan, which covers statutory responsibilities and voluntary activities the industry has agreed to carry out. The Environment Agency is very pleased that the industry is supporting the sector plan and has agreed to use it to monitor and report on the environmental impact of its activities.

Overall, the environmental performance of the sector was again good during 2007, with improvements against previous performance in a number of areas. Of course, we will need to monitor performance over a number of years to identify trends. Here, we highlight how the sector performed against its eight main environmental objectives.

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Use of natural resources continues to fall

➜ The nuclear sector used 14.6 million cubic metres of water in 2007, that's six per cent less than in 2006. It used 24,794 TJ (6.89TWh) of energy in 2007, eight per cent less than the previous year.

Progress in waste packaging continues

➜ One quarter of the intermediate level radioactive waste (ILW) currently 'in stock' at nuclear sites has been conditioned and packaged. Making real progress on packaging ILW is a major long-term challenge for the nuclear industry. In some cases, the Environment Agency has agreed with operators that final packaging can be delayed, although safe and secure storage arrangements will need to be agreed with all nuclear industry regulators. Almost 70 per cent of the non-radioactive waste produced by the nuclear sector in 2007 was recycled. Integrated waste strategies were in place at 80 per cent of nuclear sites.

Fall in discharges to air and water, partly linked to reduced reprocessing at Sellafield

➜ The industry is making good progress towards meeting the UK radioactive discharge strategy targets. Total radioactive discharges to water have been significantly lower than usual since 2005. However, this is largely because less fuel was reprocessed at Sellafield.

Overall radioactive discharges to air have decreased steadily since 2000, apart from a slight increase in 2006 associated with increased output at some Magnox power stations.

Radiation doses to 'critical groups' of adults and children living around nuclear sites remained well below the public dose limit of 1 mSv a year.

Contribution to reducing greenhouse gases

➜ The nuclear sector releases a relatively small amount of greenhouse gases into the environment. In 2007, the eight nuclear power stations in England and Wales generated 12 per cent of the UK's electricity (if the output from Scottish nuclear power stations is included, the total nuclear contribution was 16 per cent) and the nuclear sector released greenhouse gases equivalent to 0.55 million tonnes of carbon dioxide. In comparison, producing this amount of electricity using fossil fuels would release about 30 million tonnes of carbon dioxide emissions.

Image 3 courtesy of Springfields Fuels Ltd.

Working to restore sites and develop biodiversity action plans

➜ Nuclear operators reported that 73 per cent of nuclear sites have some areas of land affected by radioactive or non-radioactive contamination. All of these sites had some arrangements in place to investigate and, if necessary, to manage the contamination. Biodiversity action plans (BAPs) are a voluntary initiative being taken forward under this sector plan. 70 per cent of sites had implemented BAPs by the end of 2007.

Links between the industry and stakeholders working well

➜ All nuclear sites hold some form of regular liaison meeting with local stakeholders. 75 per cent of operators published their own environmental report in 2007.

Recognising the importance of product stewardship

➜ There are some examples of good practice in the nuclear sector of operators managing the health, safety and environmental impact of their products, and of their purchased good and services. The Environment Agency and the industry will promote good practice more widely and will look at this further when we review the sector plan.

No serious incidents or breaches of permits, but three enforcement actions

➜ There were fewer lower category pollution incidents but more lower category breaches of permit recorded in the sector in 2007. The Environment Agency took enforcement action on three occasions against two companies this year.

Nuclear performs well against other sectors

The environmental performance of the nuclear sector was good in relation to other industry sectors in a number of key areas. The Environment Agency's 'Spotlight on Business' report provided favourable comparisons on waste recycling (most non-radioactive waste produced in the nuclear sector is reused or recycled) and on serious breaches of permits and pollution incidents (there were none in the nuclear sector). Also, the sector is using fewer resources, greenhouse gas emissions are small and discharges of pollutants to the environment are generally falling.

Areas for improvement

Although the overall environmental performance of the nuclear sector was good in 2007, and shows some improvements compared to 2006, there are certain areas where there needs to be greater focus to improve performance further, in particular:

- making better use of resources at some sites, particularly those that can improve infrastructure and management systems;
- progressing packaging and conditioning of intermediate level radioactive waste in a form suitable for disposal, or for safe and secure storage;
- sharing best practice on recycling conventional waste within the nuclear sector and learning from other sectors;
- continuing to make good progress in reducing significant discharges, working towards meeting all of the UK strategy targets for radioactive discharges to water;
- making progress in improving waste management and using the 'waste hierarchy', as set out in 'integrated waste strategies' (IWS) for individual sites. A national waste strategy should be developed that builds on this work;
- the Environment Agency will look to improve the robustness and transparency of how it employs its regulatory resources.

Moving forward

We are now reviewing the nuclear sector plan to build on the successes of the current version, and to look ahead to the challenges that face an industry undergoing major change.

Feedback

We would welcome your views on the content or format of the report. If you have any queries or wish to make any comments, please contact David Bennett – **david.bennett@environment-agency.gov.uk.**

Table – Changes in environmental performance, 2007 compared to previous year

To provide an overview, the main changes in performance in 2007 compared with 2006 are summarised below. Where a significant event has influenced the change in performance, comment is made. More detail is provided in the main body of the report.

Key:

- Performance is better than last year
- Performance is worse than last year
- No change in performance compared to last year, or change is trivial, or due to changed basis for reporting
- Comparison either not possible or not meaningful

Indicator	Overall change	Comments
Objective 1: reduce consumption of natural resources		
1.1 Water use	6 per cent less water used	
1.2 Energy use	8 per cent less energy used	
Objective 2: minimise and manage solid wastes		
2.1 ILW packaging	8 per cent more waste packaged by volume, but increased stocks mean that the proportion of waste packaged only increased from 24 per cent to 25 per cent	Harwell and Winfrith completed packaging of some waste for the first time in 2007. Sellafield, Trawsfynydd and Windscale continued to make progress
2.2 Reuse/recycling of non-radioactive waste	Proportion of waste recycled increased from 66 per cent to 69 per cent	More inert waste was recycled, but less non-hazardous and hazardous waste was recycled
Objective 3: reduce discharges to air and water		
3.2 Liquid alpha discharges	50 per cent less activity discharged	Mainly due to reduced discharges from Springfields and Sellafield
3.3 Liquid beta/gamma discharges	42 per cent less activity discharged	Mainly due to reduced discharges from Springfields since the uranium ore processing operations were shut down in 2006
3.4 Liquid tritium discharges	24 per cent less activity discharged	Mainly due to reduced discharges from Sellafield, which are partly because less fuel was reprocessed
3.5 Liquid Tc-99 discharges from reprocessing	12 per cent less activity discharged	
3.6a Gaseous alpha discharges	51 per cent more activity discharged	Due to fluctuations in emissions from stored radium waste at GE Healthcare's Grove Centre
3.6b Gaseous beta/ gamma discharges	47 per cent less activity discharged	Mainly due to reduced discharges from Sellafield, but also to Dungeness A and Sizewell A shutting down
3.6c Gaseous tritium discharges	12 per cent less activity discharged	Mainly due to reduced discharges from Sellafield
3.7 Critical group doses	Doses due to liquid discharges were very similar to 2006. Doses due to gaseous discharges reduced	Highest doses due to liquid discharges are dominated by past discharges from Sellafield. Fall in doses from gaseous discharges was due to closure of Sizewell A and Dungeness A power stations

Indicator	Overall change	Comments
3.8 Nitrate/nitrite discharges	29 per cent less discharged	Discharges from Springfields and Sellafield both fell
Objective 4: reduce greenhouse gas emissions		
4.1 Greenhouse gas emissions	5 per cent more CO_2 emitted	
Objective 5: develop site restoration and biodiversity plans		
5.1 Part 2A contaminated land	One nuclear site is formally 'determined' as contaminated	Aldermaston is taking voluntary action to clean up an area contaminated by chemical solvents.
5.2 Contaminated land management arrangements	All sites affected by radioactive or chemical contamination have some management arrangements in place	
5.3 Biodiversity action plans (BAPs)	70 per cent of sites have implemented BAPs	BAPs are not appropriate for most of the other sites
Objective 6: improve transparency, understanding and involvement		
6.1 Local stakeholder meetings	All sites hold some form of regular stakeholder meeting	
6.2 Environmental reporting	Fewer operators published environmental reports, down from 83 per cent to 75 per cent	Reporting under the nuclear sector plan has improved overall reporting One defence site which produced a report in 2006 did not do so in 2007
Objective 7: promote product stewardship		
7.1 & 7.2 Indicators being developed		
Objective 8: work to risk-based regulatory and environmental management systems		
8.1 Multi-media authorisations	10 new authorisations issued	
8.2 Pollution incidents	No serious incidents, and fewer lower category incidents recorded	
8.3 Breaches of permits	No serious breaches, but more lower category breaches recorded	

Indicator	Overall change	Comments
8.4 Enforcement actions	3 enforcement notices were issued to 2 companies in 2007	
8.5 PPC permits	11 new permits or variations issued. Average time to determine permits was ~15 months.	No PPC permits were issued last year
8.6 RSA93 authorisations	21 new RSA authorisations or variations issued. Average determination time was –11 months	More authorisations issued, but average time to determine authorisations was longer

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