

European nuclear waste to Siberia?

EURATOM research into waste management options and final repositories

Nuclear waste transport and storage is the biggest obstacle for the nuclear industry. This has been acknowledged by the nuclear lobby and thus nuclear waste management and finding a “solution” has become an important issue in research and policy in the European Union. This fact sheet offers an overview over the waste research financed by the EU. Of specific interest is the SAPIERR project, which looks into the possibilities of joint repositories for several countries. The IAEA is proposing a very similar plan, the MNA (Multinational Approach), which would monopolize the whole fuel cycle. However, a substantial part of it is the international storage. One fact is common to both the IAEA and the European plans: Only Russia offers to host an international Nuclear Fuel Cycle Center in Siberia.

Overview over Euratom research funding:

EU research budget in million Euro:

	<i>FP5 (1998-2002)</i>	<i>FP6 (2002-2006)</i>	<i>FP7 (proposal) (2007-2011)</i>
EC	13700	16270	48810
Euratom	1260	1230	3103
Fusion	788	750	2167
Fission	191	190	395
Joint Research Center	281	290	540
compared to:			
Energy	1042	890	2950

Research in nuclear **fission** supports two directions:

- solutions for **final disposal** of radioactive waste and decommissioning as many plants reach the end of their lifetime. The obviously favoured solution is the deep geological repository, although no prove exists, that this is ever as safe as needed.
- development of new designs of **nuclear fuel cycle** and power plants

The EU¹ had 90 million Euro to spend 2002 – 2006 on waste management research. However, the research focuses on technical feasibility of the deep geological repository, and the idea of **transmutation**. Under the pretext to reduce the amount of high level waste the EU finances research into transmutation which aims to develop new fuel cycles and new reactors. Euratom puts a lot of money in this research, which is probably only the beginning.

The budget for research on partitioning and transmutation is grown during the last years:

1994 - 1998: 5,8 million Euro

1998 - 2000: 28,0 million Euro

2002 - 2006: 30,0 million Euro

¹

<http://europa.eu.int/comm/research/energy>

SAPIERR (SSA) pilot initiative for European regional repositories

The Specific support action SAPIERR is a small project, but of specific interest because of its objective: to convince European states to cooperate in the construction of an international HLW repository or at least in regional nuclear waste dumps. The first SAPIERR workshop was a PR event for an international repository for nuclear fuel.

Meanwhile the network has investigated the amount and type of nuclear waste in the participating countries and the legal conditions for regional or an international repository.

The waste management strategies of some participants include the search and construction of a final repository for HLW on their territory (some after reprocessing of spent fuel, some without), another part of SAPIERR members does not think that spent fuel will be waste. Others think that the ancient Soviet spent fuel management regime will have a continuation. Hungary and Slovakia for example have sent back their fuel elements from their VVER reactors to Russia. In the original agreements no obligation to take back HLW from reprocessing was included.

It is not surprising that the IAEA had invited Mr. McCombie (director of ARIUS and lead partner in the SAPIERR network) to assist as an expert to the group which elaborated the report on multilateral approaches MNA to the nuclear fuel cycle

EC contribution to research projects commissioned in FP 6 nuclear energy program - key action: management of radioactive waste

(status April 2004)

Project	description	million Euro
NF-PRO (IP)	modelling of key processes in the near field of DGR s	8
COWAM 2 (STRP)	governance of nuclear WM and disposal in Europe	1,2
SAPIERR (SSA)	pilot initiative for European regional repositories	0,2
ESDRED (IP)	engineering & demonstration of repositories design	7,3
EUROPART (IP)	partitioning of actinides in HLW from SF reprocessing	6,0
RED-IMPACT	impact of p&t on final nuclear waste disposal	2,0
ACTINET-6 (NE)	network for actinide sciences	6,3

IP: Integrated Project, **STRP:** Specific Targeted Research Project

SSA: Specific Support Action, **NE:** Network of Excellence

NF-PRO (IP) Understanding and physical and numerical modelling of key processes in the near-field, and their coupling, for different host rocks and repository strategies

COWAM-2 (STRP) improving the governance of geological waste disposal

The objective of this project is to understand social process and to find out ways to achieve acceptance for the waste management plans especially for Deep Geological Repository (DGR) as a final solution of nuclear waste problem. COWAM is a project to find ways about how to convince NGOs and municipalities to accept DGR for nuclear waste.

ESDRED (IP) Engineering & demonstration of repositories design – Development and testing of disposal concepts and technologies in underground Research Laboratories

EUROPART (IP)² Partitioning of actinides and fission products from high-level nuclear waste for their transmutation or conditioning in stable matrices

RED-IMPACT (STRP) impact of Partitioning & Transmutation on final nuclear waste disposal

Transmutation is a new concept (working with accelerators) but the partitioning step necessary to enable the transmutation is very similar to the old chemical reprocessing process - notorious for its high radioactive emissions. At present transmutation is a theoretical possibility but is far from realization.

Literature:

<http://dbs.cordis.lu> (September 2005)

<http://europa.eu.int/comm/research/energy> (September 2005)

[IAEA 2005]: Multilateral Approaches to the Nuclear Fuel Cycle

<http://www.sapierr.net/>

Factsheet: IAEA NUCLEAR WASTE POLICIES AT A TURNING POINT - International nuclear waste dump in Siberia? www.nuclear-waste-watch.org