
Experience from Centralized Waste management

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 - Location of the French NPPs and shared facilities (enrichment, fuel production, processing plant, interim storage, waste treatment - incineration, compaction- and disposal facilities)
- Other countries overview
- Arguments for and against a centralized solution

General background in France

- **The nuclear energy in France**
 - ➔ 59 commercial nuclear reactors providing 83% of the electricity
 - ➔ A national utility EDF under a private status since July 2004
 - ➔ A front and back End Fuel Cycle Industry
- **The radioactive waste generators:**
 - ➔ 3 main “high level & long lived waste” generators : EDF, AREVA and CEA, as well representing 92% of the total radioactive waste produced.
 - ➔ Over 1 100 small generators : hospitals, universities and laboratories, industry.



Facilities in France with LL & VLL waste

Reprocessing Plants

Waste Disposal Facilities

Nuclear Power Plants

Fuel Fabrication Plants

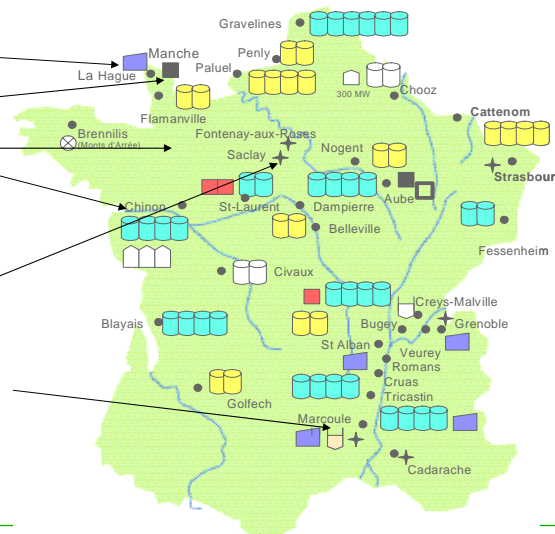
Enrichment plants

Nuclear Research Facilities

Health Research Facilities

Incineration and smelting plants

Defense Facilities



Situation in other countries (1/2)

- Belgium: centralized storage and future disposal (Mol Dessel for LILW)
- Spain: political decision for a centralized interim storage facility
- Finland: 2 SF interim storages at NPPs, 2 disposal facilities at NPPs for LILW (Olkiluoto and Loviisa) and centralized disposal for HLW (Onkalo project)
- Hungary: national LILW repository (Puspokszilagy and next, Bataapati) and project for HLW disposal
- Japan: different type of disposal depending on the origin of the waste; centralized disposal studied for HLW

Situation in other countries (2/2)

- Czech Republic: centralized SF storage in Dukovany and 3 different repositories for LLW depending on the origin and ownership of waste (Richard, Bratrstvi and Dukovany), project for a HLW disposal
- Sweden: CLAB for centralized SF storage, SFR for centralized LILW disposal and centralized project for SF disposal
- Switzerland: centralized facilities (Zwylag and disposal projects)
- UK: Drig and Dounray LILW disposal; centralized facility for LL waste to be developed (storage and disposal)
- USA: Yucca Mountain disposal project for SF

Arguments for centralized installations

Advantage

- Investment cost shared
- Operation cost shared
- Harmonized and consistent solutions organized through standard specifications
- Simple application and authorization
- Simple environment monitoring
- Single site to decommission
- Ease of experience share
- Effort simplified for the overall organization, including the regulator
- Single financial management and control system

Drawback

- Necessity for transfers and transport, and related cost
- Risk due to transport
- Necessity of a dedicated organization to define specifications and to control operation
- Risk of common error

Conclusions

- Various reasons for a given solution:
 - Size of the country (ease for centralized solutions in small countries: Belgium, Switzerland)
 - Ownership and responsibility depending on the type of waste (Czech Republic, Japan)
 - Common attitude for SF and HLW disposal: unique site for the existing waste and for the committed inventory. Reason to be found in the overall cost, studies, application and licensing, building and operation
- Clear advantage for centralized operations, but specific drawbacks and risks to be managed