

Radioactive waste management: are ethics involved?

Second European Workshop on the Ethical Dimensions
of the RP System

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Introduction



Corinne Lepage à Joinville.....

«Sur le plan éthique le projet de Bure est terrifiant»

Invitée par le Cedra 52 à l'occasion de la sortie de son livre, "L'Etat nucléaire", Corinne Lepage a livré sa vision du projet Cigéo. Pour elle, le lobby nucléaire a tout fait pour que seule la solution de Bure et du stockage en profondeur soit possible.

"In ethical terms, the Bure project is terrifying"

This was the headline of the *Journal de la Haute-Marne* on 22 January 2015, quoting Corinne Lepage, Minister for the Environment from 1995 to 1997, and European Deputy from 2009 to 2014, speaking at a conference on the Cigéo Project.

"In ethical terms, the Bure project is terrifying"

No ...

Radioactive waste is terrifying!



- Very high radioactivity levels
Vitrified waste package: ~100 Sieverts / hour
- High-level waste

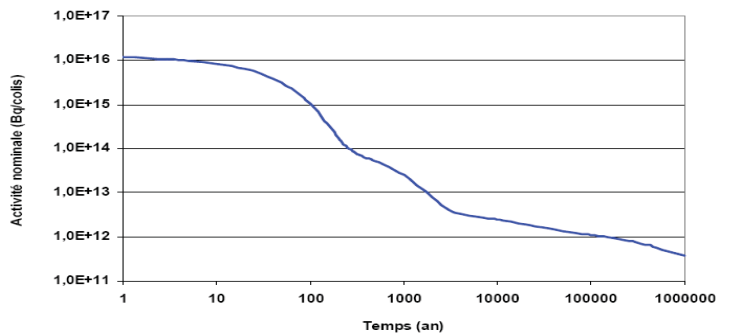
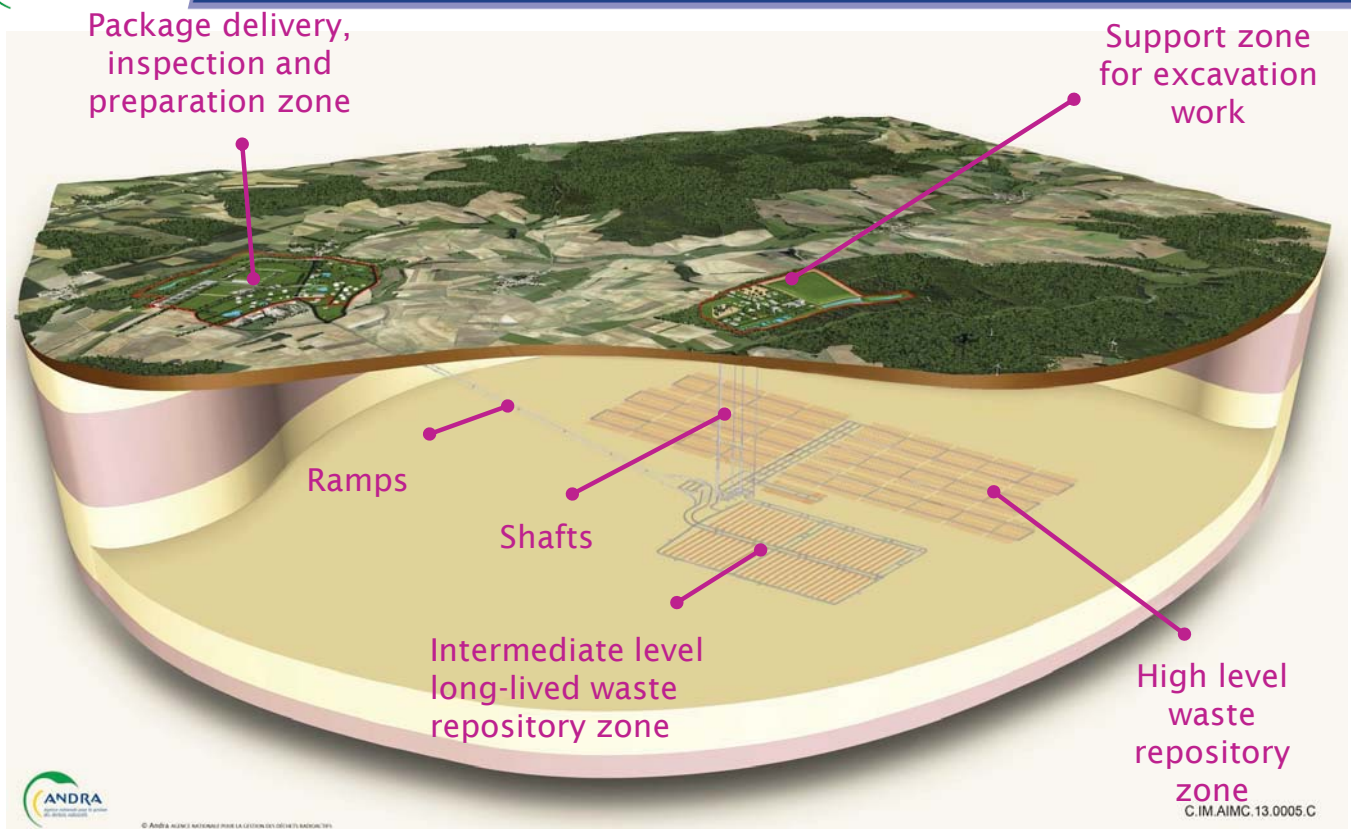


Figure 4.3.1 Evolution temporelle de l'inventaire radiologique nominal du colis type C1

The Cigéo project objective: to confine radioactivity for as long as necessary



Cigeo is designed to house waste with radioactivity levels and half-lives that prevent its safe, long-term disposal in surface facilities or in near-surface disposal facilities.



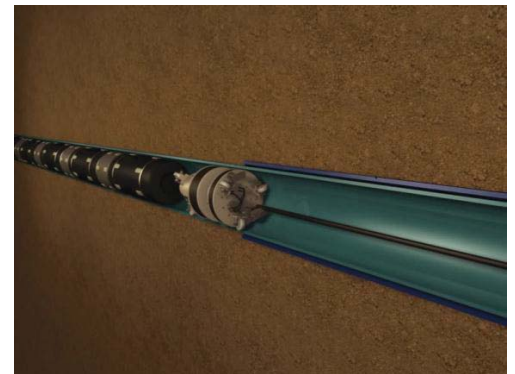
The Cigéo principles:

- ❑ **Avoid or limit the burden on future generations: disposal**

The long-term protection of the general public and the environment must not be dependent on institutionalized monitoring and inspections

- ❑ **Move waste away from biosphere: 500 metres underground**

- ❑ **Confine radioactivity on a geological time-scale: in a clay layer that has been stable for more than 140 million years**



A framework for actions in proportion to what is at stake

- ◆ Issue referred to Parliament in 1991
- ◆ Two laws have ensued, in 1991 and 2006, plus at least two others (reversibility and final closure)

Ethics are at the heart of the legislative framework

- ◆ "in order to avert or limit the burden that will be borne by future generations, research will be undertaken and the necessary means for the definitive securing of radioactive waste shall be implemented" article 2, Act of 28 June 2006

Andra was created with the sole purpose of fulfilling a protection remit

- ◆ Public agency
- ◆ Independent from the waste generators
- ◆ No drive for financial or technical profitability
- ◆ One single focus: protecting the environment and future generations in the most robust manner possible

Reducing risks by ensuring radioactive waste is stored safely

- ◆ Some of the waste already exists, and as such the problem is not purely academic
- ◆ We know that leaving waste in near-surface facilities would incur risks for future generations, who would one day inevitably come into contact with this waste.

Don't gamble with the future

- ◆ We must have confidence in the future, but what if future generations do not discover better solutions?
- ◆ But can we be sure that the future generations will have the technical and financial means to sustain the storage facilities?

Take on our responsibilities right now

- ◆ Whatever our opinion of nuclear power, the waste is there...
- ◆ Application of the precautionary principle means it is our duty to take action to counter these risks

The precautionary principle requires action to be taken: proposing, and then implementing, the best possible solution of which we have knowledge.

This solution is geological disposal, a solution that requires no further human intervention to stay safe after closure

- ◆ More than 20 years research and studies
- ◆ A choice stemming from the study of several options and assessments from independent authorities (ASN, IRSN, CNE), with all options guided by the precautionary principle
- ◆ Broad international consensus

=> How and when?

The wait-and-see option is not ethical

- ◆ Take action today to avoid knowingly burdening future generations with this problem
- ◆ We have the knowledge related to the waste that we have generated

Imperative of prudence from the short- to very long-term

- ◆ Take progressive actions: progressive development of the repository, continued R&D, very-long-term monitoring and observation, memory (record-keeping) of the repository
- ◆ Retrievability of disposed packages...providing freedom of choice for generations to come

This is the sole purpose of the principle of reversibility required by law

Cigeo is designed to be closed: the waste packages will be placed there with no intention, in theory, to remove them. But Cigéo is also designed to be flexible and would be constructed so our choices are not imposed on future generations, thus respecting their freedom..

A careful, open and progressive approach to the repository

- ◆ Ensure future design changes are possible since tomorrow's engineers are likely to find better solutions
- ◆ Close in stages, without having to act in haste
- ◆ Ensure package retrieval is inherent to design
- ◆ Decisions assessed within framework of democratic monitoring process that is open to the general public, particularly stakeholders from the host region of the project

Democracy

A project resulting from a long democratic decision-making process, conducted by Parliament. A report has recently been produced on this process by HCTISN, an interdisciplinary working group.

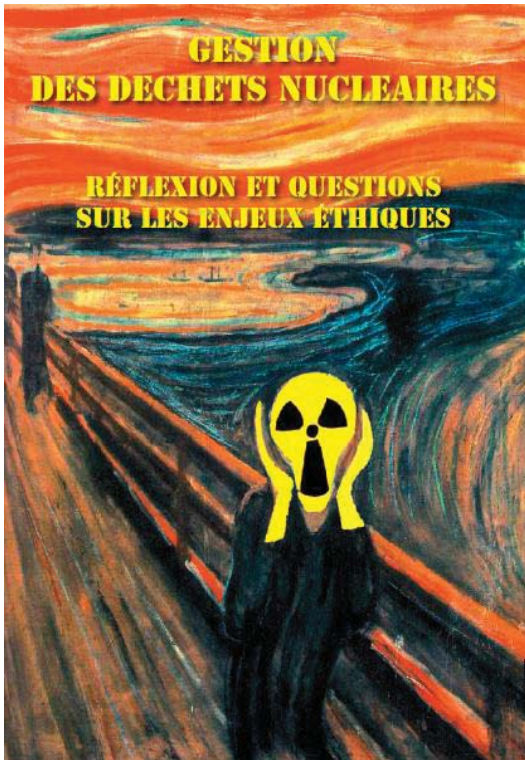
Information

The parliamentarians are anxious that the democratic process be expressed through increased information and enhanced transparency. In addition to the two public debates on this subject, several measures have been taken in this regard:

- Act of 13 June 2006 related to nuclear safety and transparency
- For radioactive waste management:
 - French national Radioactive Materials and Waste Management Plan (PNGMDR) set up, coordinated by an interdisciplinary working group
 - Creation of Local Information and Oversight Committees (CLIS)
 - The 'Information' remit has been assigned to Andra

Funding

- ◆ A principle of provisions to ensure resources are available when needed.
- ◆ Support regional communities that agree to host a disposal facility. Any talk of "buying a conscience" is unacceptable; since this is a serious accusation aimed at elected representatives and voters alike. It is entirely natural that Cigéo, a public industrial project, will contribute to the development of its host region, particularly by helping revitalize its industrial fabric.



As this recent publication from a working group in the Catholic church showed, the issue of the future of radioactive waste cannot be resolved simply by setting different approaches or positions against one another...

Instead, there must be room for everyone's opinions to be expressed and debated...

In this sector more than any other, dialogue and debate will pave the way to a compromise solution that is acceptable to all stakeholders.