

The Radioactive Waste Management in France



CONTENT

INTRODUCTION.....p 3

GOVERNANCE OF RADIOACTIVE WASTE

WASTE MANAGEMENT AGENCY.....

ANDRA.....

RESEARCH.....

CEA.....

INSTN.....

SAFETY REGULATOR AND TSO.....

Nuclear safety in France.....

IRSN.....

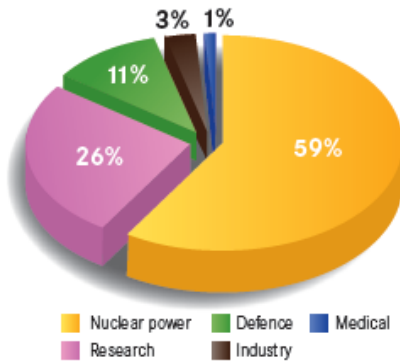
INDUSTRY.....

EDF.....

AREVA.....

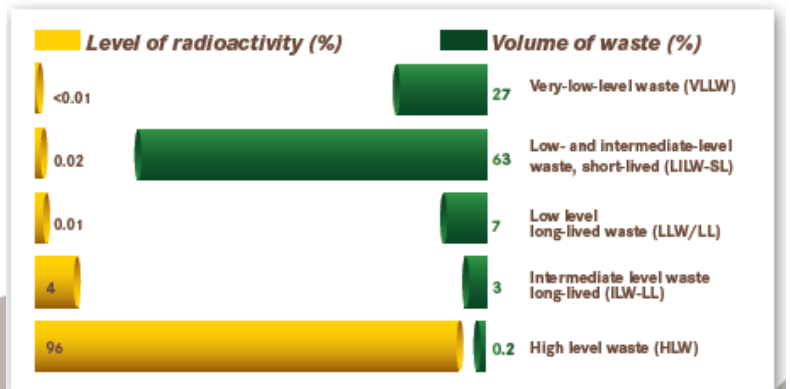
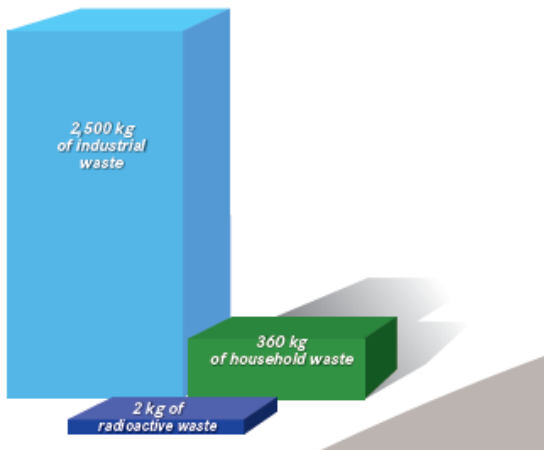
THE RADIOACTIVE WASTE IN FRANCE

Origin of existing radioactive waste by sector
Source: 2012 edition of the *French National Inventory*.



2012 edition of the *French National Inventory of Radioactive Materials and Waste* identifies about **1,320,000 m³ of radioactive waste produced up to the end of 2010.**

Quantity of waste produced in France per member of the population every year



INTRODUCTION

Pour les primo-accédant à l'électronucléaire comme pour les pays plus avancés, la question de la gouvernance en matière de gestion des déchets nucléaires est posée de façon cruciale, relayée à la fois par la communauté européenne et les instances internationales. Par ailleurs, elle fait l'objet de travaux constants au sein des organisations de l'AIEA et OCDE.

Depuis plusieurs dizaines d'années, la France a mis en place une politique de gestion responsable des déchets produits par les activités qui utilisent la radioactivité. C'est ainsi que, dès le début des années 1990, le Parlement a voté la création de l'Agence nationale pour la gestion des déchets radioactifs (Andra), établissement public indépendant des producteurs de déchets radioactifs, et l'a chargée de trouver et de concevoir des solutions de gestion sûres pour l'ensemble des déchets radioactifs français.

THE GOVERNANCE OF RADIOACTIVE WASTE IN FRANCE

The French governing system

The radioactive waste governing system in France built over the years, is based on three basic complementary tools:

- a dedicated body of legislation and regulations,
- a National Radioactive Materials and Waste Management Plan (PNGMDR, 'the National Plan'), periodically updated by a working group that includes waste producers, political and administrative representatives and associations, the National Radioactive Waste Management Agency (ANDRA), and
- a dedicated agency for radioactive waste management, with special powers vested in it by law.

Dedicated body of French legislation

Waste is managed within the framework of a dedicated body of legislation and regulations based on two basic laws and their implementing provisions.

- The law of 13 June 2006 on transparency and safety in the nuclear sector, which established the Nuclear Safety Authority as an independent administrative authority and granted it powers to control the safety of basic nuclear installations and which governs radioactive waste management facilities. This law also contains provisions governing information for the public on nuclear safety.

- The law of 28 June 2006 on a programme for the sustainable management of radioactive materials and waste, which defines national policy for the sustainable management of radioactive materials and waste. This law sets out the sustainable management of radioactive materials and waste and funding for it. The law introduces into the legislative framework new provisions, which concern in particular the drafting of the National Radioactive Materials and Waste Management Plan, which allow for a more precise definition of the remit of ANDRA and for the assessment by operators of basic nuclear installations of the cost of managing spent fuel and radioactive waste and provisions and assets to cover such costs.

The PNGMDR or National Plan

The National Plan is a strategic tool for managing radioactive materials and waste and is designed to review existing methods for managing radioactive materials and waste, identify anticipated requirements for storage or disposal facilities and stipulate the capacities and storage periods needed for these facilities.

The National Plan also sets out the objectives for radioactive waste for which a definitive management method has yet to be defined. The National Plan also organizes the implementation of research and studies into radioactive materials and waste management, by setting dates for the implementation of new management channels, the creation of new facilities or the modification of existing facilities.

Andra, the French radioactive waste management agency

Today, nearly 90% of French radioactive waste has an operational management channel. For several years, Andra has been piloting studies and research in order to design innovative industrial solutions for the 10% of waste for which there is currently no definitive management channel. For all this waste, commissioning operational, safe and economically optimized long-term management channels will be a major challenge for Andra over coming years.

ANDRA'S sites

The Manche disposal facility (CSM)



France's first disposal facility, with a 15-hectare footprint, took in 527,225 m³ of low- and intermediate-level radioactive waste between 1969 and 1994. It is currently in the monitoring phase, which will last at least 300 years.

Key figures for Andra's disposal facilities in the Aube on 31/12/2012

- > **269,611 waste packages** disposed of in the Cires facility since 2003, i.e. **277,448 m³**, corresponding to 35% of the facility's official total disposal capacity.
- > **332,361 waste packages** disposed of in the Aube facilities since 1992, i.e. **267,496 m³**, corresponding to 26.7% of the facility's official total disposal capacity.

The Aube disposal facilities

- > The industrial facility for grouping, storage and disposal (Cires)



The 45-hectare Cires facility has been taking in and disposing of very-low-level waste since 2003. It has also dealt with the collection and storage of non-nuclear-power waste since the autumn of 2012.

It has received authorisation for 650,000 m³, and is used for disposal of very-low-level waste.

In the building used for collection, non-nuclear-power waste is delivered, labelled and, if applicable, repackaged, before being put into storage or a disposal facility.

The storage building takes in packages of non-nuclear-power waste (certain radioactive lightning rod tips, some radium-containing items used in healthcare, etc.) until a dedicated disposal facility is set up.

- > The Aube disposal facility (CSA)



This facility, with a 95-hectare footprint and a capacity of 1,000,000 m³, is dedicated to low- and intermediate-level, short-lived waste. It has been in operation since 1992. It took over from the Manche disposal facility, thus benefiting from 25 years of experience.

The Meuse/Haute-Marne facility (CMMH)

> The Underground Research Laboratory



Set up in 2000, the Underground Research Laboratory, at a depth of 490 metres, is a unique research laboratory studying reversible deep disposal for high-level (HLW) and intermediate-level long-lived (ILW-LL) waste. Its underground drifts are being used to study *in situ* a 160-million-year-old layer of clay.

The French 2006 act has given Andra responsibility for designing and setting up a deep geological repository for this type of waste. If it is licensed, It will be called Cigéo and will be located near the laboratory.

Key figures for the Underground Research Laboratory

Over **1.2 kilometres of experimental drifts**.

Over **40 experiments** set up in the underground drifts
Cooperation agreements with over **10 research bodies** and **universities**.

Contacts with over **70 academic laboratories**.

> The Technological Exhibition Centre



The Technological Exhibition Centre presents Cigéo, the project for a geological repository for long-lived high- and intermediate-level waste, through a display of models and the industrial robots and prototypes produced by Andra to test and validate the technological concepts involved in this type of disposal: concrete package container, handling system, etc.

