



The Importance of National Waste Inventories

The radioactive waste and spent fuel inventory is one of the most important elements in developing a national radioactive waste management strategy and program.

The nature and the quantity of the waste recorded in the National inventory affects the design and selection method of waste and spent fuel management facility.

The National inventory is a major tool to provide visibility to the operators, authorities and decision makers and to feed decision making process. Therefore, it bears both technical and strategic nature and function.

Inventory is primarily based on a National classification for radioactive waste, radioactive substances and spent fuel:

- Classification of Radioactive Waste, IAEA GSG-1 ([Classification of Radioactive Waste | IAEA](#))
- Criteria and assessment methods are defined to discriminate between eg HLW, ILW-LL, ILW-SL... in coherence with existing or foreseen management facilities



The Data Collected in Inventories

Inventory data may cover a variety of information :

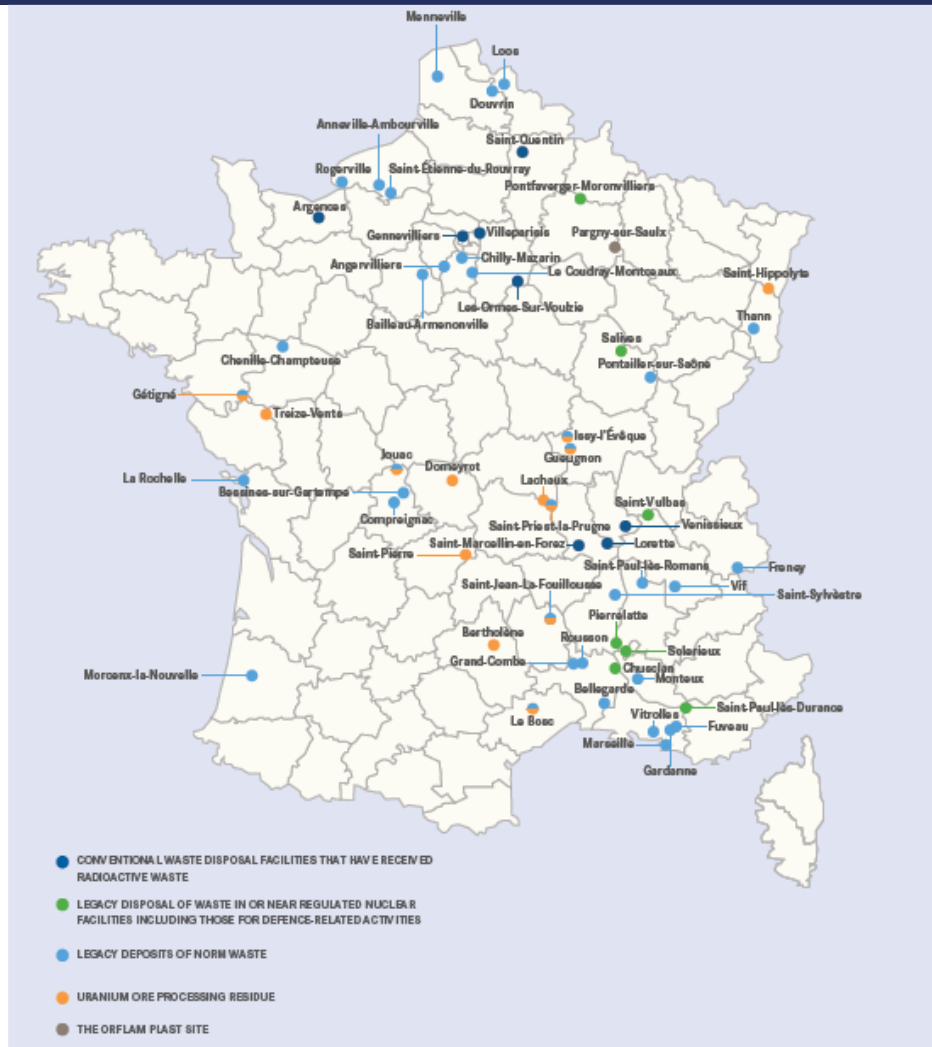
- Radioactive waste amounts (volumes/masses/number of drums) under various waste classes
 - Spent fuel is generally inventoried separately
- Radioactive waste streams/origins in a facility or per type of facility
 - Effluent treatment, dismantling operations...
- Radioactive production by sectors
 - Medical, research, electricity production, defense...
- Radioactive waste locations and/or owner
 - Easy for industrial entities, complicated for historical waste and small users (individual, academics...)
- The type and nature of the waste form
 - liquid, solid, type of waste package, dimensions of the package, dose rate approximate, radiological content...
- Radioactive waste status and/or foreseen management step
 - Conditioned or not, interim storage, disposal / Volume as disposed
- Radioactive waste existing & production projections
 - Production scenario may be developed and explicated to produce "forecast" inventories (extension of operation time of NPP, construction of new facilities, change of National strategy...)
- The variations of amounts in time and the trends of production
- Radioactive substances that are not classified as waste, but may, in the future be reclassified as waste...

Inventory data may exclude information, if explicitly specified :

- Liquid and gaseous wastes authorized for discharge (closely monitored and can only be released if they meet strict conditions and limitations)
- NORM, Very low level waste or very short lived-waste from small user sites (hospitals, research laboratories...)
- Radioactive materials which are not subject to nuclear safeguards (Defense purpose)...



Examples of Inventory Presentations



[Localisation des déchets | Andra Inventaire](#)



Inventory Uncertainties

The Inventory is based on the best available information on wastes and materials at a specific point in time.

Uncertainties may arise from the level of knowledge of the waste :

- legacy waste
- waste produced a long time ago
- Future waste to be produced in a long time
- Specific waste streams (waste waiting to be retrieved and characterized, special waste and mixed waste, waste produced from clean-up operations...)
- For other wastes, we do not have accurate estimates of volumes, as the waste is forecast to arise a long way into the future.

Waste inventories are usually based on owner's declarations. Where there are uncertainties, the owner may use the best available information to make reasonable estimates. They may use data from waste samples, surveys and historical evidence to support their assumptions.

The quality of the owners' declarations and of the process of establishing the National inventory may be controlled by the Safety Authority.



Use of National Inventory

The National inventory supports a wide range of planning activities. It helps to develop safe and efficient ways to manage radioactive wastes and materials.

The inventory provides baseline information to :

- Develop appropriate policies for managing radioactive wastes and materials
- Prioritize waste and material management activities on site and at the National level
- Develop technologies for managing radioactive wastes and materials
- Plan safe storage and disposal facilities
 - Delays in the availability of facilities used for managing the waste stream may impair the fuel cycle and block some operations
- Plan transports
- Inform research and development tasks
- Help stakeholders to understand what wastes and materials we need to manage

The National waste inventory is a strategic tool for planning and programing:

- It should not be mistaken with the waste information systems needed to meet WAC eg. in disposal facilities
 - The data of the inventory are coherent but not necessary sufficient to provide acceptance of the individual waste in the interim storage facilities or disposal facilities
- It should not be mistaken with the tools used for safeguarding materials or to meet other international obligations eg. transports



The Process of National Inventory Collection and Production

The production of the National inventory it is a heavy and complex task. Clear regulations help to define the common vocabulary, the responsibilities and the process of production and verification of the National inventory.

The task of standardizing, compiling the data, producing the compilation, publishing, communicating and organizing the follow-up is usually the responsibility of one actor eg. the National waste management agency.

The National inventory serves multiple purpose. It may come in several distinct level of details :

- Short version for the public and press releases (proof of transparency)
- Synthetic for decision makers and stakeholders involvement exercises
- Detailed for operators use and authorities control
- Open data inventories are provided in some countries (Slide 3 - France...)

Because waste production and characterization is a dynamic process, it is important that the inventory collection and production is a periodic exercise :

- Publication every 3-5 years
- Information, trends and up-dates at mid-term is considered good practice
- Action plans may be defined to improve the quality or completeness of certain data on all or part of the waste.



To Go Further

[Andra-MAJ Essssentielss 2021-21_02Fev ENsdpdf \[preview\] 0.pdf](#)

[UK Radioactive Waste Inventory \(UKRWI\) \(nda.gov.uk\)](#)

[Nuclear Energy Agency \(NEA\) - National Inventories and Management Strategies for Spent Nuclear Fuel and Radioactive Waste \(oecd-nea.org\)](#)

[Status and Trends in Spent Fuel and Radioactive Waste Management | IAEA](#)