

THE ACCEPTANCE, BEFORE TRANSPORT, OF THE WASTE RADIOACTIVE PACKAGES AT THE DISPOSAL FACILITIES OF ANDRA

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ABSTRACT

ANDRA - National Agency for the Management of Radioactive Wastes - is responsible for, among other missions, the long term management of disposal facilities, in France.

In 1992, two disposal facilities are operational:

- Le Centre de Stockage de la Manche, located near the reprocessing plant of La Hague, which has been in operation since 1969, will be full in 1994,
- Le Centre de Stockage de l'Aube, which recently opened, will be in operation for about 40 years.

The largest waste generators are E.D.F. (the Power National Company), C.E.A. (Atomic Energy Commission), and COGEMA.

The Agency has set procedures with the waste generators and with the carriers in order to be sure that all the packages conveyed to the disposal centers are in accordance with the technical prescriptions and with the specifications elaborated by ANDRA. In addition, these procedures guarantee that the safety rules for the storage, and the regulation applicable to the transport of dangerous goods will be respected.

These procedures are:

- on the one hand, a package acceptance procedure done automatically by computer.
- on the other hand, a qualification procedure, for carriers which include essentially the training of the drivers, the equipment of the vehicles, and the instructions which have to be applied during transportation.

PROCEDURE FOR PACKAGE ACCEPTANCE

This procedure is applied up and down the transport operation, by computer (most of the waste generators are connected directly to ANDRA through software designed specifically for this purpose).

It is broken down into four steps.

Acceptance of Individual Package

In order, for a package, to be accepted by ANDRA, the waste generator gives it a specific number when it is made. This number corresponds to a file on the computer network which is created for the package, and contains the following information:

- its designation
 - origin (ex: process waste produced by the operation of industrial facilities)
 - identification number
 - volume
 - weight
- its composition
 - waste nature (ex: plastics, cotton, filters...)
 - embedding (ex: concrete, bitumen...)
- its radiological characteristics
 - spectrum, date
 - total activity
 - activity of each isotope
 - dose rate

ANDRA's computer checks that all these data are in accordance with the specifications, and if this is the case, ANDRA accepts the package.

Validation of the Shipment

When the waste generator has enough of the same type of package, to organize a shipment, he sends the list of packages included in the shipment to ANDRA.

ANDRA's computer then verifies that every package designated on this list has been previously accepted, and if so, validates the shipment.

Confirmation of the Shipment

When the packages have been loaded on to the vehicle, the waste generator confirms to ANDRA that he is ready to proceed to the shipment.

The information related to the carriage is transmitted at the same time by the central computer, located at the headquarters of ANDRA, to the disposal center (both of the disposal centers are connected with this computer). That is to say:

- the reference of the shipment,
- the waste generator,
- the packages: quantity and numbers,
- the characteristics of each package: weight, nature of waste, origin, spectrum, activity.

Furthermore, the transport documents, where all this information appears, are given to the driver.

Each package bears a double identification:

- a clear identification (numerical),
- a bar code label.

Control of the Packages Upon Arrival

Upon arrival at the disposal facility, each package is subjected to three checks:

- a physical check, in order to verify that the package has not been damaged during the transport,
- radiological check (dose rate, contamination), in accordance with the regulations for the safe transport of radioactive material,
- an identification check (by reading the bar code with a laser system), to make sure that no mistake occurred during the loading.

The storage of a package will not be authorized if any of these three checks reveals an anomaly.

This individualized and computerized tracking of the waste packages guarantees maximum safety, because:

- it allows ANDRA to verify, before storage, that each package respects the radioactive limits authorized for long life radioisotopes,
- it permits ANDRA to make different statistics about the level of radioactive stored (whole radioactivity, for each waste generator, for each disposal structure etc...).

QUALIFICATION PROCEDURE FOR CARRIERS

In order to get the highest level of safety in road transports, ANDRA established a qualification procedure for carriers. Only the carriers qualified by ANDRA are allowed to carry the wastes to the disposal centers.

When a carrier proposes its collaboration, ANDRA supplies him with a file reminding it of the applicable regulations and as well ANDRA's own requirements, in particular:

- driving personnel (training - in France a special license is required for driving vehicles loaded with radioactive material -, medical and radiological surveillance),
- vehicles (general condition, maintenance),
- specific equipment (stowing, protection, intervention),
- transport conditions (instructions for loading and unloading, accompanying documents, itineraries),
- special instructions in case of a road accident.

An audit is then carried out by an approved organization in the presence of ANDRA. If the carrier satisfies the obligations specified in the qualification file, he receives a certificate *valid for one year*.

ANDRA reviews each carrier prior to renewal of the certificate. Unscheduled verifications take place during the year.

Moreover, according to new regulations published by the International Atomic Energy Agency concerning the transport of radioactive material, quality assurance programs have been established by the carriers for transport operation. To assist them, ANDRA has drafted a quality assurance standard based on the ISO norm 9002, and on the French regulations for the transport of dangerous goods.

What are, in detail, these requirements that must be complied with?

Drivers' Training

This one week training, is provided by the specialists of the French Atomic Energy Commission. It has been obligatory since 1979. The main subjects covered include:

- Basic knowledge about radioactivity. The different radiations.
- The regulations about the transport of radioactive material. The different types of packagings.
- The obligations of the loader concerning the preparation of the packages (dose rates, contamination levels, labelling, transport declaration).
- The obligations of the carrier (equipment of the vehicles, stowing rules, instructions in case of an accident).

At the end of this training, an examination is carried out. If successful, a four years license is delivered to the driver. When this license expires, he must take follow another training course.

Vehicle's Characteristics

According to the qualification procedure, the vehicles which have to transport radioactive waste have to be equipped, firstly, in accordance with the general conditions required for all transport of dangerous goods, and, secondly, in accordance with specific conditions necessary for the transport of radioactive material. The former are:

- uncontaminable platform,
- protective barrier between the cabin and the packages (lead screen),
- stowing schemes, specific to each kind of package transported,
- two special fire-extinguishers (powder) - one for the engine and another for the carriage,
- an emergency signals which include, mainly, lamps, chains and stakes for demarking a safety area in case of the loss of packages, and panels ("Emergency - Radioactive" and "Accident - Don't approach").

Instructions for Transport

The driver must have the following documents with him during the transport :

- Instructions for loading and unloading (addresses, phone numbers of the loader and the consignee).
- Instructions for completing the accompanying documents.
- Instructions concerning *itineraries* and stops.
- Instructions in case of an accident (concerning the signalization of the vehicle and also the notification procedure).

Quality Assurance

According to the regulations for transport of radioactive material published in 1985 by I.A.E.A.: "Quality assurance programs shall be established for transport operations to ensure compliance with the relevant provisions of these regulations".

So, ANDRA set up a specific document for the carriers which defines the requirements in this field.

The different items of this "standard" are :

1. Generalities
2. Definitions
3. Scope of application
4. Reference documents
5. Legislative and regulatory responsibilities
6. Quality system requirements
 - Management responsibilities
 - Quality system
 - Contract review
 - Mastering of the documents
 - Purchasing
 - Control of the transport's preparation

- Verifications, maintenance, checks
- Treatment of anomalies
- Incidents - Accidents
- Transport documents
- Handling - Storage of transports vehicles
- Internal quality - control audits

In 1993, all the carriers qualified by ANDRA have a quality system in operation.

Beyond that, ANDRA plays an important part in safety by maintaining a permanent staff, on duty night and day. This staff knows the loading details of every vehicle and is able to give any necessary information about possibility and conditions of an intervention in the case of an incident or accident (every year, about 80 000 packages of low level wastes are carried in France).