

ECONOMIC COMMISSION FOR EUROPE

Group of Experts on Monitoring of Radioactively Contaminated Scrap Metal
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Agenda Item 4

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Title: BELGIAN EXPERIENCE WITH RESPECT TO MONITORING OF RADIOACTIVE MATERIAL IN SCRAP METAL AND PUBLIC WASTE

1. Regulatory aspects

According to the data available by the Belgian Federal Agency for Nuclear Control (FANC), **49** companies of the scrap recycling sector (major scrap yards, steel factories, foundries) and **8** companies of the waste treatment sector (incinerators and public waste landfill) in Belgium are currently monitoring the radioactivity of their incoming shipments. Most of these facilities are equipped with one (or several) portal monitors; some of them with grapple-mounted detectors.

FANC issued in 2005 « *directives for the use of a portal monitor for radioactive substances in the non nuclear sector* » and also a « *technical annex* » to these directives. They describe the various steps that the operator has to follow when an alarm of the portal monitor is triggered; they describe the radioprotection measures that the staff must take and also the information that the operator has to provide to the FANC. These directives allow the operators themselves to intervene up to a certain radioactivity level. Beyond that level, a radioprotection expert must be called. For shipments with naturally occurring radioactive materials (NORM) (for which the distribution of radioactivity is generally homogeneous over the whole shipment), the directives define an action level (~ three times the natural background) below which no intervention of the operator is necessary. This action level makes the management of these detections much easier for the operators.

These directives are available on the website of the FANC¹. They have been written in consultation with the various stakeholders: professional federations and regional administrations.

The EU directive 2003/122/Euratom has been transposed in Belgian law by the Royal Decree of May 23, 2006. Part of this Decree addresses the issue of orphan sources.

As scrap recycling and waste management facilities do not fall under the nuclear sector, it is not only the FANC (federal administration) but also regional administrations that are involved in the regulatory process. Up to now monitoring of radioactivity is only compulsory for some categories of public waste landfills. For the other categories of facilities, the monitoring is done on a voluntary basis. The FANC and the regional administrations are working in collaboration in order to establish a more extended list of facilities for which the monitoring of radioactivity could be made compulsory. In order to do so, a careful study of the flows of scrap and waste is being made in order to identify the nodal points in the scrap recycling network where monitoring would be the most appropriate. The goal is to keep a balance between the need to monitor as much scrap flow as possible without imposing heavy regulations to small facilities.

2. Incident statistics

¹ http://www.fanc.fgov.be/fr/portiques_detection.htm

In the waste treatment sector, a majority of the detected sources are of medical origin (coming either from the hospitals themselves or from domestic waste) or are industrial waste with NORM materials, such as refractory bricks, waste from the phosphate industry, etc. If one **excludes** these two categories, the following numbers of detection has been reported to the FANC over the period **2004-2005** :

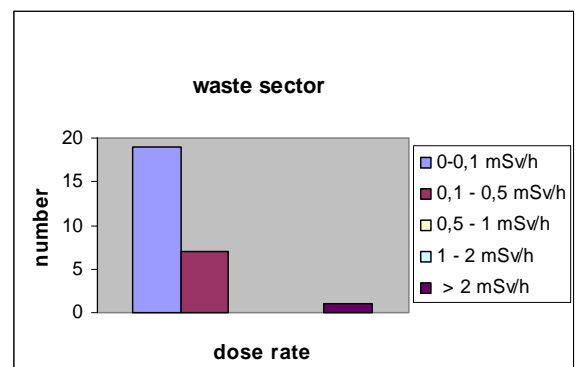
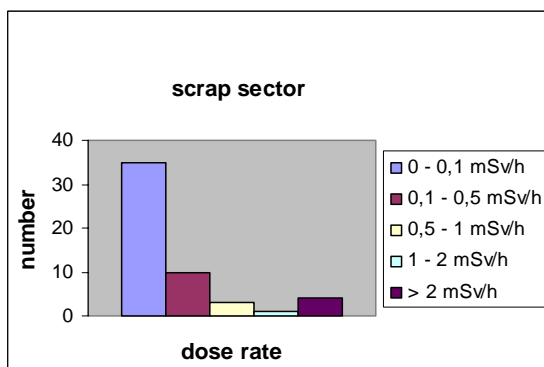
- **27** radioactive sources in the waste management sector
- **53** radioactive sources in the scrap recycling sector

These figures are below reality because currently not all operators report to the Agency the detection of a source.

By category of sources, the figures are the following :

- Sealed sources : 5
- Lightning rods : 7
- Radioluminous products : 21
- Contaminated scrap : 20
- Pharmaceutical products (thoriumnitrate, uranylacetate): 11
- Thoriated lenses: 3
- Radioactive minerals: 1
- Others: 2

The charts below show the distribution of the detected sources as a function of their dose rate in contact:



Concerning the waste of medical origin, a systematic follow-up is done by the FANC when the hospital of origin has been identified. This follow-up aims at reinforcing the waste management procedures inside the hospitals.

3. Financial aspects

- The average cost of a portal monitor is about **50,000 Eur**.
- The average maintenance cost is about **1000 Eur/y**.
- The average cost of treatment of a radioactive source is about **2500 – 3000 Eur/source**.

On basis of the data transmitted to the FANC by the operators of waste treatment facilities, one can expect to detect about 10 radioactive sources for 250,000 tons of waste. The costs of treatment of radioactive sources amounts thus to some **0,10 – 0,12 Eur / ton**.

Up to now, the whole costs are supported by the individual operators.

The issue of financing is a recurrent issue in the consultations between the FANC and the operators. The operators don't wish to assume the costs of treatment of radioactive sources for

which they are not responsible. The operators consider it as a violation of the “polluter-pay” principle. Unfortunately this principle is not easily applicable in this context as the origin of the radioactive sources which have been detected can not be identified in most cases. The absence of a structural solution to the issue of financing is a major obstacle to the collaboration between the operators and the authorities.

Following the transposition of the European directive on orphan sources, discussions with the national organism for radioactive waste management (ONDRAF³) are ongoing to establish a fund which could cover the costs of treatment of some categories of orphan sources.

ONDRAF is preparing a proposal for a regulatory framework according to which the costs of orphan sources could be covered by a new insolvency fund which is still to be created. It is however still premature to give more detailed information.

FANC also asked the concerned professional federations to make concrete proposals with respect to financing (for example, the creation of a solidarity fund between the operators).

4. Training

In order to answer the demand of training and information of the operators, FANC organised two training sessions in February and March 2006. The programme of these sessions was the following :

- i. Basic notions of radioactivity (*dose and dose rate, relation between dose and risk,...*) and basic principles of radioprotection.
- ii. Radioactive sources detected in waste and scrap.
- iii. Radioactivity measurement instruments (*dose rate and contamination monitor, scintillator,...*) : how to use them ?
- iv. Directives of FANC for the use of a portal monitor
- v. Radiological risk in case of detection

These training workshops gathered 88 participants.

5. Communication

A workgroup on communication aspects has been set up. This group gathers representatives of the operators and of the authorities. Its goal is to define a common communication strategy over the issue of radioactivity in the concerned facilities; the targets of this communication strategy are among others the neighbouring inhabitants and the staff of the facilities. A list of FAQs has been proposed and general information on the issue has been put on the FANC website.

³ Organisme National des Déchets Radioactifs et des matières Fissiles enrichies