



HERCA Working group on
Research and Industrial Sources and
Practices

-
Analysis of the 2018-questionnaire on
HASS/sealed sources

October 2020

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- Title:** **Analysis of the 2018-questionnaire on HASS/sealed sources**
- Subtitle:** Update and further analysis of the 2018 questionnaire on this subject
- Summary:** This document aims to collect the different data provided by HERCA members through the 2018 analysis on the management of the inventory and traceability of High-Activity Sealed Sources (HASS).
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HERCA Information Paper

Analysis of the 2018-questionnaire on HASS/sealed sources

1. Introduction

The application of High-Activity Sealed Sources (HASS) has raised increasing concerns throughout the world. The use of these radioactive sources, incidents and unauthorized access to these sources could cause significant risks to people and the society. Many countries have already strengthened regulatory requirements, by implementing the requirements concerning HASS and other sealed sources of the 2013/59/EURATOM-directive or IAEA GSR Part 3. In implementing these requirements countries have:

- established a system to enable them to be adequately informed of any transfer of HASS and where necessary individual transfers of sealed sources;
- ensured that, for practices involving HASS, adequate provisions have been made for the safe management of sources when they become disused sources;
- ensured that that the records of HASS include the required information and that the undertaking provides the competent authority with an electronic or written copy of all or part of these records upon request;
- ensured that the competent authority keeps records of any undertaking authorized to perform practices with HASS, and of the HASS held.

HERCA WG RISP has noticed some differences between countries regarding the inventory of HASS and other sealed sources. There seems to be a wide range of inventories, differing also in the range of information held.

2. Purpose of the questionnaire

The purpose of the questionnaire, as performed in 2018, was to gather information from each participating country on the inventory of HASS and other sealed sources. The questionnaire sought to gather information on the following:

- Inventory of HASS and other sealed sources
- Information included in the inventory
- Management of and access to the inventory
- Information on sources and practices

WG RISP has decided to provide a summary of the results of the 2018-questionnaire. This information could be useful as background information for further discussions.

3. Respondent types

The questionnaire was sent to national authorities and organizations responsible for the licensing, registration and notification of practices involving ionizing radiation in 25 European countries. Answers were received from national authorities of 17 countries.

4. Results of the 2018-questionnaire

4.1 Inventory of HASS and other sealed sources

All respondents have established a system to enable them to be adequately informed of any transfer of HASS, and stated to have a national inventory of HASS. For the inventory: 11 respondents indicated that the inventory includes information on all sealed sources (IAEA categories 1 to 5), 2 respondents indicated that the inventory includes information on HASS and IAEA category 4 sources and 4 respondents indicated that the inventory only includes information on HASS.

National authorities receive the information, to be stored in the inventory, in different ways:

- 6 respondents indicated they receive paper forms for input into the system (by an administrator)
- 6 respondents indicated they receive electronic forms for input into the system (by an administrator)
- 2 respondents indicated the direct input into the system by an authorized organization (licence holder or registrant).
- 2 respondents indicated the indirect input into the system by an authorized organization (licence holder or registrant) after regulatory checks (by an administrator).

4.2 Information included in the inventory

All respondents indicated that their national authority keeps records of undertakings authorized to perform practices with HASS and of the HASS held. All records on an individual HAS-source include the radionuclide involved, the activity at the time of manufacture (if this activity is not known: the activity at the time of the first placing on the market at the time the undertaking acquired the source), and the type of source. The inventory usually holds most of the information as mentioned on the 'standard record sheet for HASS' (Annex XIV of the 2013/59/EURATOM-directive), see table 1. Some of the respondents indicated that the inventory also includes additional information on the source: arrangements for safe management and control of a disused source, financial provisions made for the safe management of a source when it becomes disused, photographs or other kind of information (*see table 2*).

All respondents indicated that the records are being kept up to date by the national authorities, taking into account the transfers of the sources and other factors.

| Information: | Yes | Yes, but only for HASS | No |
|--|-----|------------------------|----|
| Identification number of the source | 11 | 6 | 0 |
| Identification of the authorized undertaking | 13 | 4 | 0 |
| Location of the source (if stored at another location of the authorized undertaking) | 12 | 4 | 1 |
| Date of start of recording of the source | 7 | 7 | 3 |
| Identification of the authorization (license or registry number) | 12 | 4 | 1 |
| Date of operational controls | 6 | 5 | 6 |
| Characteristics of the source (e.g. nuclide and activity on reference date) | 13 | 4 | 0 |
| Information on the receipt of the source | 8 | 5 | 4 |
| Information on the transfer of the source | 11 | 5 | 1 |

Table 1: Number of respondents having information in the inventory (standard record sheet)

| Additional information: | Yes | Yes, but only for HASS | No |
|---|-----|------------------------|----|
| Arrangements for safe management and control of a disused source | 7 | 3 | 7 |
| Provisions made for the safe management of a source when it becomes disused | 2 | 5 | 10 |
| Photographs of the sealed source | 0 | 4 | 13 |
| Photographs of the source container | 1 | 5 | 11 |
| Photographs of the transport packaging | 0 | 3 | 14 |
| Any other information | 6 | 2 | 9 |

Table 2: Number of respondents having additional information in the inventory

4.3 Management of and access to the inventory

Table 3 indicates the time frame required to send information on an individual source from the undertaking to the national authority, in different situations. Usually, the information of a source needs to be sent to the national authority as soon as possible. This will enable a national authority to be timely and adequately informed of any transfer of HASS and, where necessary, individual transfers of sealed sources.

| Time frame for sending information to the national authority: | asap | < 1 month | < 5 months | < 12 months |
|---|------|-----------|------------|-------------|
| At the establishment of a record of the sealed source | 12 | 4 | 0 | 1 |
| If the situation indicated on the standard record sheet has changed | 14 | 3 | 0 | 0 |
| Upon the closure of a record of a specific source when the organization no longer holds the source | 14 | 3 | 0 | 0 |
| Upon the closure of the records of all sealed sources when the organization no longer holds any sealed source | 14 | 2 | 1 | 0 |
| Any other situation | 13 | 3 | 0 | 1 |

Table 3: Number of respondents applying a time frame for sending information on a source to the national authority

Considering quality assurance of the data in the national inventories: 7 respondents indicated provisions for quality assurance of data in their inventory are in place, 5 respondents indicated that

there are no provisions for quality assurance in place and 6 respondents indicated not to be sure about the quality assurance of the data.

Figure 1 indicates the organizations responsible for the management of the inventory and its maintenance and quality assurance (left pie-chart), and the possibility for interested parties (other than the party responsible for the management of the inventory) to acquire information on the inventory (right pie-chart). For the majority of respondents the responsibility for the management of the inventory lies within the regulatory body or radiation protection authority. Most of the responding countries have a system in place allowing, more or less, restricted access to the inventory.

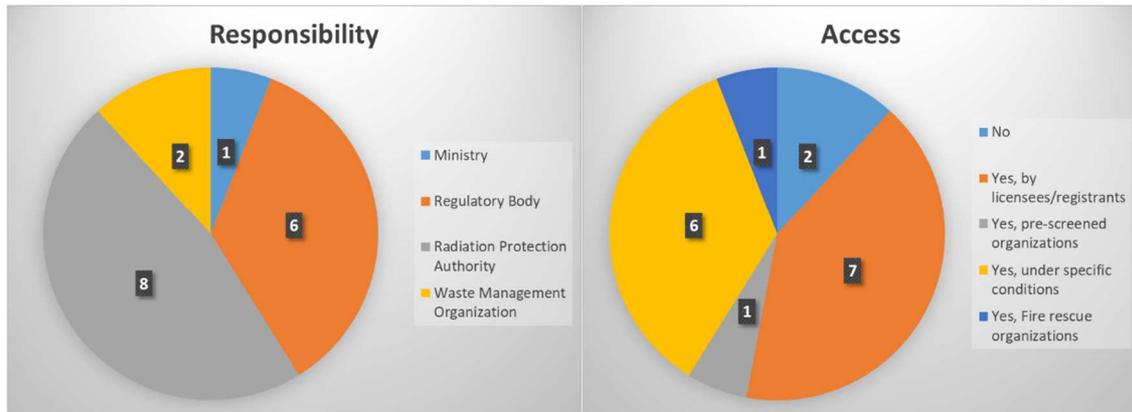


Figure 1: Number of respondents having organizations responsible for the management of the inventory and access to the inventory

4.4 Information on sources and practices

Figure 2 indicates the average number of sources registered into the national inventories. The x-axis of the graph indicates the average number of sources for each IAEA-category of sources. As expected, the average total number of IAEA-category 4 and 5 sources exceed the average total number of HASS (category 1 to 3 sources).

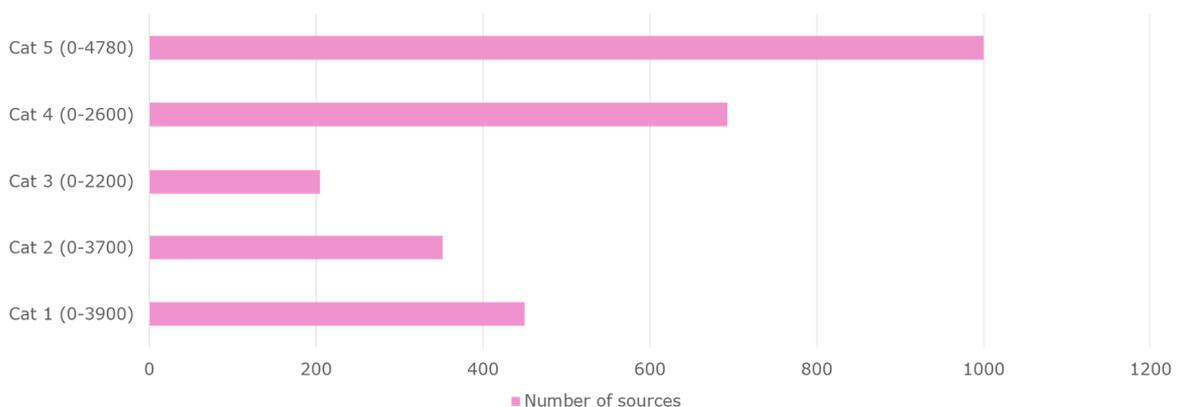


Figure 2: Average number of sources registered into the national inventories

Figure 3 indicates for which type of practices the sources are being used in the responding countries, as specified by IAEA-category. As expected, most HASS are being used in irradiators, industrial gamma radiography, fixed industrial gauges and well logging.

Figure 4 indicates which radionuclides are being used for the variety of practices within the responding countries. Commonly used radionuclides are: Am-241, Co-60, Cs-137 and Ir-192. These vary from IAEA category 1 to 5.

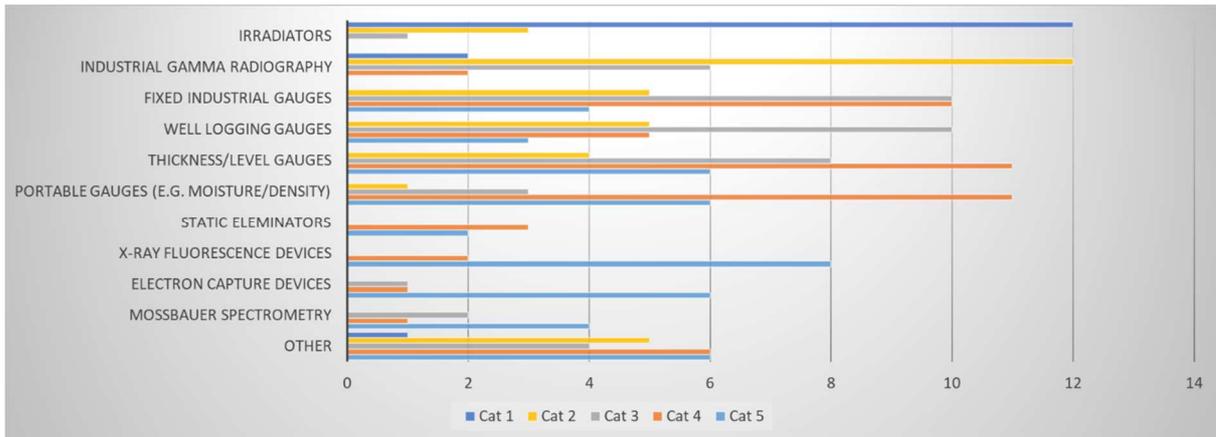


Figure 3: Number of responding countries using sources for indicated practices

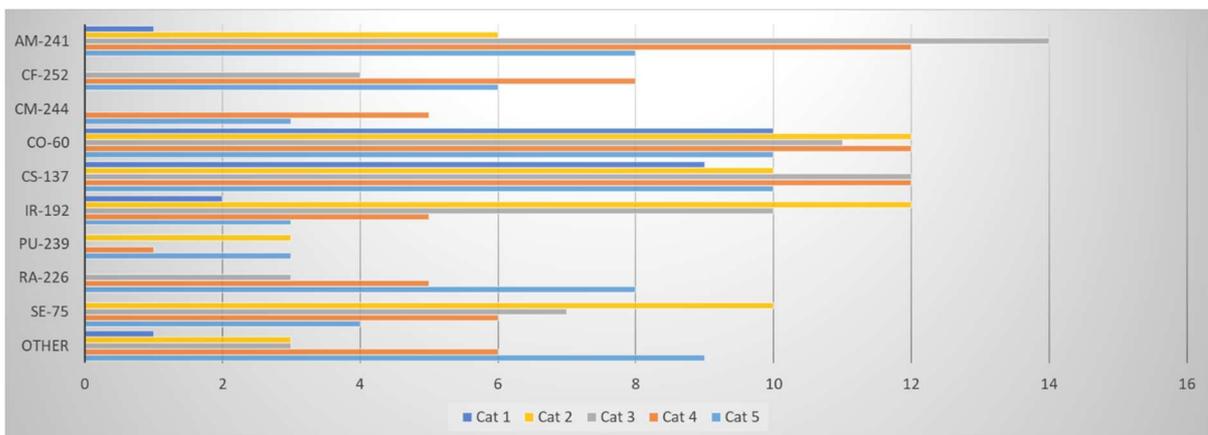


Figure 4: Number of responding countries using different radionuclides for their practices

5. Conclusions

- All responding countries have established a system to enable them to be adequately informed of any transfer of a source. For the majority of the countries this system includes information on HASS and other sealed sources. The responsibility for the management of the inventory is mostly assigned to the national authorities.
- All responding countries have ensured that the records of HASS include the required information and that the undertaking provides the competent authority with an electronic or written copy of all or part of these records upon request. Some responding countries require some additional information on a source.
- All responding countries have ensured that the competent authority keeps records of any undertaking authorized to perform practices with HASS, and of the HASS held.