

Waste Classification Schemes

Country: SWITZERLAND

Reporting Year: 2008

Waste Class Matrix: **IAEA Def.**

This country does use the IAEA Scheme: Yes

Description:

The Agency's standard matrix

| Waste Class Name | Distribution % | | |
|------------------|----------------|---------|-------|
| | LILW-SL | LILW-LL | HLW |
| LILW-SL | 100.0 | 0.0 | 0.0 |
| LILW-LL | 0.0 | 100.0 | 0.0 |
| HLW | 0.0 | 0.0 | 100.0 |

Comment **# 7198: Matrix use**

The IAEA standard waste classification system is not applied within official reports on radwaste in Switzerland. In the context of NEWMDB, it is, however, adopted as default to meet basic technical requirements for the definition of reporting groups within the database (i.e. need for waste matrix allocation) in case of reporting groups without any associated classification system (e.g. because there is no official reporting at all).

Waste Class Matrix: **Nagra**

Description:

Classification scheme adopted by Nagra for provisional waste allocation to planned SMA and HAA/LMA repositories within Swiss disposal programme in 1985-2002 [kept in NEWMDB up to decisions on site/concept of new SMA repository]. Precise classification rules have not yet been established; the basic criterion is that the system of repositories and allocated wastes can be demonstrated to comply with the national overall long-term safety targets stated in HSK-R-21 (November 1993).

| Waste Class Name | Distribution % | | |
|------------------|----------------|---------|-------|
| | LILW-SL | LILW-LL | HLW |
| SMA | 97.0 | 3.0 | 0.0 |
| LMA | 0.0 | 100.0 | 0.0 |
| HAA | 0.0 | 0.0 | 100.0 |

Comment **# 345: Waste class SMA**

SMA (low-level and short-lived intermediate level waste) shall be disposed of in a geologic repository, EL-SMA. This stream covers all LILW-SL (suitable for near-surface disposal) and might, from a technical point of view, also include part of LILW-LL (wastes passing IAEA limit on specific alpha activity in LILW-SL). The volume of this LILW-LL fraction can be expected to be up to a few percent of the total SMA volume; the distribution factors given represent a rough estimate.

Comment **# 346: Waste class LMA**

LMA (long-lived intermediate-level waste) refers to the fraction of LILW-LL which are not to be disposed of in an EL-SMA.

Comment **# 347: Waste class HAA**

HAA (high-level waste) denote canisters with vitrified HLW from reprocessing spent Swiss fuel in France and Great Britain, being returned to Switzerland.

Comment **# 360: Waste class BE**

Not included. IAEA has explicitly excluded BE (spent fuel) from reporting in NEWMDB.

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Waste Class Matrix: **NEA-SD**

Description:

Classification scheme used by IAEA to report on Swiss waste disposed of by OECD/NEA sea dumping campaigns in the Atlantic Ocean between 1969 and 1982 (IAEA-TECDOC-1105 [August 1999], Annex A.11).

| Waste Class Name | Distribution % | | |
|------------------|----------------|---------|-----|
| | LILW-SL | LILW-LL | HLW |
| MD | 100.0 | 0.0 | 0.0 |
| MDLC | 85.0 | 15.0 | 0.0 |

Comment **# 361: Waste class MD**

MD (200-l metal drums), nominal volume 0.21 m³, include solidified (generally: cemented) waste. They are assumed to be LILW-SL.

Comment **# 362: Waste class MDLC**

MDLC (metal drums lined with concrete) represent 200-l drums with cemented waste, grouted into a concrete container (nominal volume 0.98 m³) before shipment. Overpacking purposes are shielding (gamma emitters) and enhanced safety (alpha emitters, including Ra-226). Volume distribution over LILW-SL and LILW-LL is estimated on the basis of the alpha activities processed (AGNEB-165 [28.04.1983], table 1), the numbers of dumped MDLC (IAEA-TECDOC-1105 [1999], Annex A.11), and the assumption of a 60% use of the IAEA limits on specific activities for Ra-226 and other alpha emitters (AGNEB-165 [28.04.1983], p.4).

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Waste Class Matrix: **KEV 2004**

Description: Generic, disposal-oriented waste classification scheme as defined in Article 51 of the Swiss Nuclear Energy Ordinance (KEV) dated 2004-12-10.

| Waste Class Name | Distribution % | | |
|------------------|----------------|---------|-------|
| | LILW-SL | LILW-LL | HLW |
| SMA | 99.7 | 0.3 | 0.0 |
| ATA | 0.0 | 100.0 | 0.0 |
| HAA | 0.0 | 0.0 | 100.0 |
| SMA ybc | 99.2 | 0.8 | 0.0 |
| ATA ybc | 0.0 | 100.0 | 0.0 |

Comment **# 18054: Class Definitions**

a) HAA (acronym for "hochaktive Abfälle"): spent fuel elements (when assigned as waste) and vitrified high-level liquid waste from reprocessing of spent fuel.

b) ATA ("alphatoxische Abfälle"): radioactive waste not classified as HAA, with total alpha activity above 20 kBq per g of conditioned waste.

c) SMA ("schwach- und mittelaktive Abfälle"): radioactive waste not classified as HAA or ATA.

As the criterion for discrimination between ATA and SMA is strictly applicable to conditioned waste (i.e. waste packages ready for storage) only, two additional classes "ATA ybc" and "SMA ybc" are introduced for a tentative ranking of waste "yet to be conditioned".

Comment **# 18055: Volume Conversion to IAEA Classification System**

Volume data for waste classes to be reported have been tentatively split into volumes for HLW, LILW-SL and LILW-LL, resulting in the factors (percentage values) outlined above as matrix elements, based on the technical criteria defined in IAEA Safety Guide 111-G-1.1 (1994), Table II.

The following methods were applied:

(a) assessment from the Swiss database system on radioactive materials (ISRAM) referring to package nuclide inventories at key date [standard for conditioned waste] - using the criterion >4000 Bq alpha/g of package to separate LILW-LL from LILW-SL -, or

(b) best estimate [backup for conditioned waste, standard for waste yet to be conditioned].

Except for reporting class "HAA", the conversion factors must be considered as non-static, just reflecting an assessment related to a key date.

Comment **# 18056: Change of Waste Class System (2008)**

The Waste Class System "KEV 2004" supersedes the classification pattern used in the Waste Class Matrix "HSK" up to 2007. The new system shall harmonize reporting on Swiss radioactive waste at IAEA level (Joint Convention Report, NEWMDB).

Definition of «unprocessed waste» and «processed waste»:

This country uses the following definitions:

| | as-generated waste | processed for handling | processed for storage | processed for disposal |
|--------------------|--------------------|------------------------|-----------------------|------------------------|
| Unprocessed means: | x | x | | |
| Processed means: | | | x | x |

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Comment **# 12140: Definitions for Unprocessed and Processed Waste**

In reporting on Swiss radioactive waste, information is quite commonly, e.g. in the case of the Joint Convention Report, discriminated by a waste processing status qualifier, "conditioned" or "yet to be conditioned".

The status "conditioned" refers to waste which has been formally accepted by the pertinent authority as meeting the following general principle: "Radioactive waste shall be conditioned in such a way that the resulting waste forms, together with the packaging elements permanently tied to them, can be submitted to the waste management stages of transport, storage and disposal, without any further intrusive action, overpackaging measures remaining admissible".

The complementary status "yet to be conditioned" logically applies to all waste not fully complying with this principle.

In order to carry the reference information unambiguously forward to NEWMDB, the national terms "conditioned" and "yet to be conditioned" have been simply equalled to NEWMDB terms "processed" and "unprocessed", respectively. Hence, data given for "processed waste" in NEWMDB in fact relate to waste considered as being ready for storage and, intentionally, suitable for disposal.