

NWP/REP/122 - LLW Problematic Waste Summary FY 2015/16

Problematic radioactive waste, in the nuclear industry, is any waste which has no defined waste treatment and disposal route available. Wastes become problematic by virtue of their physical, chemical and/or radiological properties. Problematic radioactive wastes are present across the nuclear industry and pose challenges to a significant range of waste producers in the UK.

This paper provides a high level summary of the findings from the FY2015/16 update of the Lower Activity Waste (LAW) problematic waste inventory and, in particular, focuses on describing the proportions of waste in the inventory in terms of:

1. Radiological classification.
2. The physical/chemical types of problematic waste.
3. The reason for the waste to be classified as problematic.

1. Radiological Waste Classification

The problematic waste inventory clearly identifies Low Level Waste (LLW) and Intermediate Level Waste (ILW). From Figure 1 below these can be seen to amount to 29% and 5% of wastes respectively when considering the number of waste entries in the inventory. The remaining 66% of waste is not currently defined by radiological classification owing to limited availability of characterisation data.

LLW, which will be looked at in detail in the rest of this summary, amounted to about 13,736 m³ of waste. There is an additional volume of waste which, due to a lack of better data, cannot be assessed in more detail. It is also possible that some of this unaccounted for volume could be classified as Very Low Level Waste (VLLW).

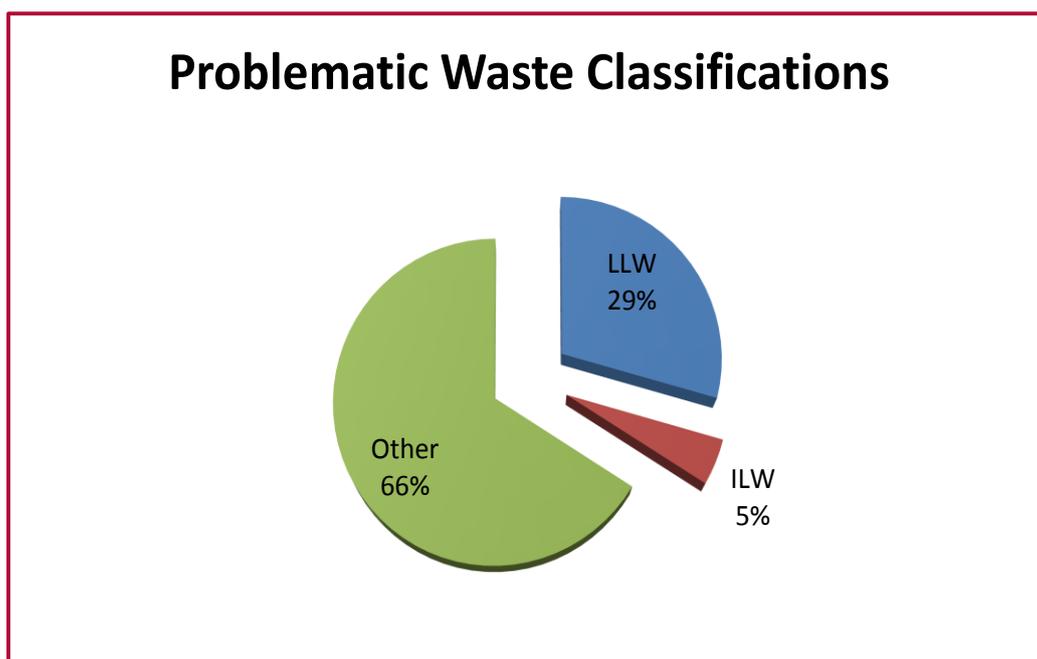


Fig. 1 Radiological Waste Classification

2. LLW Physical/Chemical Waste Groups

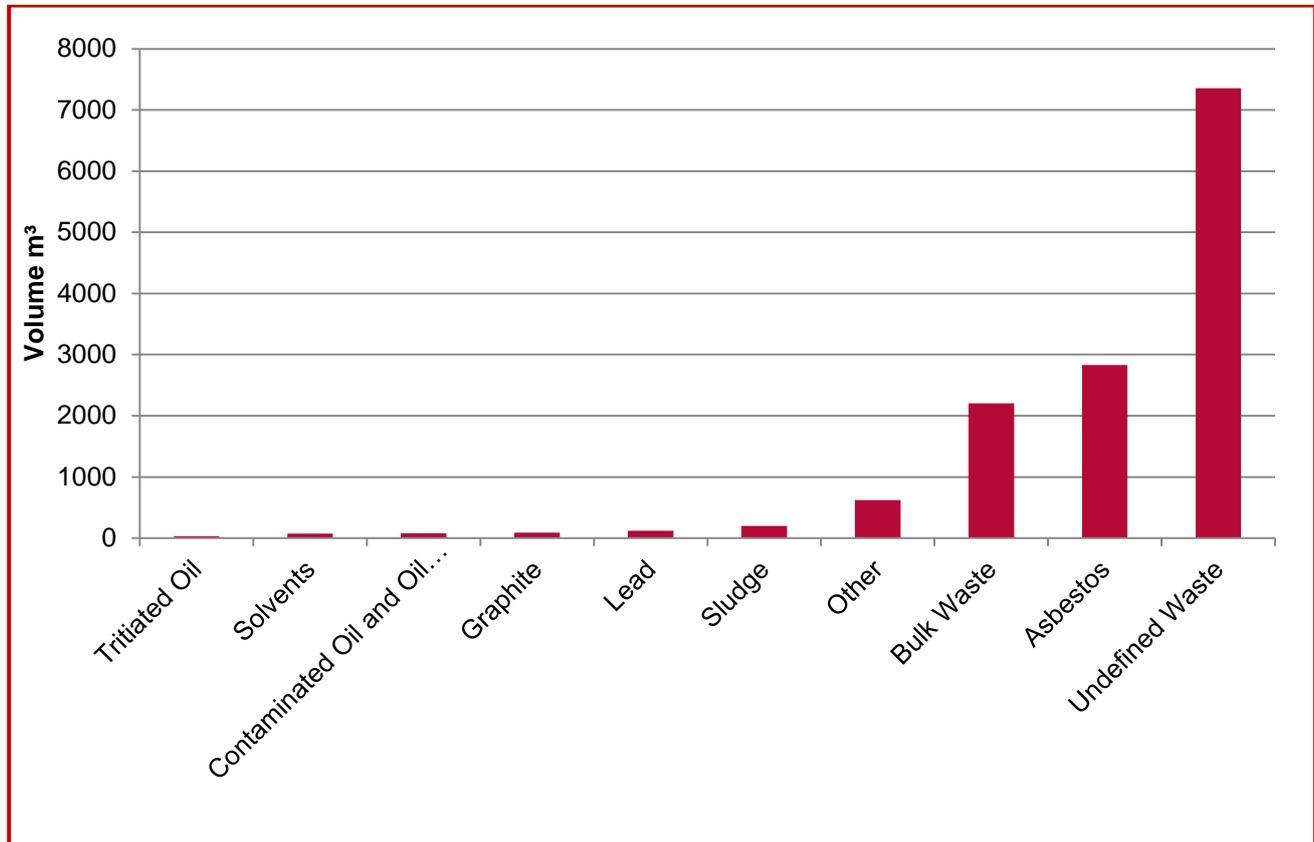


Fig. 2 Physical/Chemical LLW Waste Groups

The top problematic LLW waste groups by volume can be seen in Figure 2 above. This should be used for guidance as it only considers wastes with specified volumes and therefore carries a certain degree of uncertainty.

The data in the inventory suggests that, for problematic LLW:

- About 54% of the waste by volume (7,356 m³) is made up of undefined waste; this is waste for which insufficient characterisation has been undertaken or for which there is insufficient information available to formally include in another group.
- 21% of the waste by volume (2,831 m³) is made up of asbestos waste; further information on asbestos wastes is available in the LAW asbestos and asbestos contaminated waste Gate B study available via www.llwrsite.com.
- 16% of the waste by volume (2,202 m³) consists of bulk waste which refers to large volumes of excavation, construction, and demolition wastes (e.g. contaminated soils, concrete, rubble, and other granular material). The Soils, Concrete, Rubble and Granular Materials (SCRAG) BAT study provides further information on managing bulk waste.

- The remaining 9% of waste by volume is made up of different waste streams including: sludge, lead, graphite, oils and solvents.

This in turn implies that, by dealing with the 3 biggest waste streams, the problematic waste inventory volumes for LLW defined in the FY15/16 inventory could be significantly reduced.

3. Reason for Problematic Status

The main reasons identified for the problematic status of waste were:

1. Not meeting the disposal facility's Waste Acceptance Criteria (WAC).
2. Not having a disposal route currently available.
3. Insufficient characterisation to enable disposal of the waste.

Limited information is available regarding the reason for the problematic status of the different waste entries. Waste that does not meet the WAC or does not have a disposal route available due to its physical, chemical, or biological properties needs to be assessed in greater detail to identify the root cause of the problematic status and to find a solution. On the other hand, the majority of waste entries with a specified reason for the problematic status require further characterisation to understand if the waste truly is without a treatment or disposal route.

4. Conclusion

In conclusion, the study found that problematic low level waste constitutes about 29% of the entries in the overall Problematic Waste Inventory. With regards to LLW, about 90% of the waste by volume is formed of undefined wastes (54%), asbestos (21%) and bulk wastes (16%) and tackling these waste streams would lead to a significant reduction in overall volume.

It was also evident that by doing further work to more accurately determine volumes and identify the root causes of the problematic status of the different entries, the inventory could be utilised more efficiently to target specific waste groups and reduce the overall volume of problematic waste.