

Chemicals management in batteries

Introduction

In December 2020, the European Commission presented the legislative proposal for modernising the current batteries legislation (Directive 2006/66/EU). Management of chemicals is covered by Art. 6, which includes a process to regulate hazardous substances used in batteries, duplicating the existing and well-established REACH restriction process set out in Annex XVII of Regulation (EC) No 1907/2006.

This paper makes some suggestions to achieve an appropriate and coherent risk management of metals in batteries. It also calls for a regulatory coherence, to provide industry with a more predictable regulatory framework, essential for securing long-term investments in the competitive and sustainable EU battery value chain.

Metals in batteries

Our industries promote the safe use of metals in batteries. Each battery chemistry available today on the European market is based on a combination of metals, for example:

- Lead-based (automotive/industrial) – Lead, antimony, tin, copper, aluminium, calcium, silver;
- Lithium-based (industrial/portable/automotive/light means of transport/EV) – Lithium, nickel, cobalt, manganese, aluminium, copper, silicon;
- Nickel-based (industrial) – Nickel, rare earths, cadmium;
- Sodium-based (industrial/EV) – Sodium, nickel.

These metals are used because their physical and chemical properties are critical to the functionality, safety and performance of battery systems. Substituting (i.e. replacing) the materials is currently not technically nor economically feasible.

Battery constituents need to have intrinsic reactive properties to deliver the desired battery redox chemistry, energy generation and storage performance. Although many of the substances used in batteries have hazardous properties, they do not pose a risk to human health or the environment when the batteries are manufactured, used and recycled properly. Batteries are sealed units, designed to prevent substances from being released during normal and foreseeable use, while manufacturing and recycling operations are conducted by permitted facilities operating under strictly controlled conditions required under existing EU workplace and environmental legislation to ensure workers' and environmental protection.

Chemicals management in batteries

Substances used in the manufacturing or present in batteries are regulated under existing provisions present in the REACH Regulation, occupational safety and health (OSH) legislation and/or sector-specific environmental legislation, such as the Industrial Emissions Directive and its related Best Available Techniques Associated Emission Limit values (BAT-AELs). Moreover, facilities that collect and recycle batteries at the end of life are also regulated under the same existing suite of regulations and are required to operate using Best Available Techniques for pollution abatement and to meet strict site permit conditions described by local authorities.

Art. 6 of the draft Battery Regulation proposes the establishment of a new, parallel process to regulate (restrict) hazardous substances where there is an unacceptable risk to human health or the environment, arising from the use of a substance in the manufacture of batteries, or from a substance present in the batteries when they are placed on the market or during their subsequent life cycle stages, including the waste phase.

This proposed process mimics the existing and well-established restriction process set out in Annex XVII of REACH Regulation (EC) No 1907/2006. It is said that the reason for this parallel procedure is the fact that REACH does not cover the waste phase.

REACH and waste

Whereas the REACH Regulation highlights that *“Waste as defined in Directive 2006/12/EC of the European Parliament and of the Council (2) is not a substance, mixture or article within the meaning of Article 3 of this Regulation”*, and as such, wastes do not need to be registered under EU REACH, risks associated with waste and end-of life **are** considered in substance registration dossiers or in REACH Authorisation or Restriction procedures.

The ANNEX to this paper highlights examples of where the waste phase is discussed in the REACH Regulation Titles and moreover has already been the aspect of a substance’s life cycle evaluation that resulted in REACH Annex XVII listing.

It is therefore our conclusion that REACH, including Annex XVII, already considers risks associated with exposure to substances in the waste phase. As such, Article 6 of the Battery Regulation proposal could be amended to refer directly to horizontal legislation in the form of REACH Annex XVII rather than to create a parallel and possibly duplicated and inconsistent process to address the same issue.

Our recommendations

The procedure for managing hazardous substances under the proposed Battery Regulation shall ensure that double regulation is avoided via the following:

1) Art. 6 is amended to refer to the already existing REACH, OSH and IED processes and therefore benefits from existing horizontal legislation rather than to create additional product specific requirements.

- **In this regard we support the Belgium non-paper that proposes that Article 6 be amended to read “If the Commission or a Member State consider that there is an unacceptable risk to human health or the environment, arising from the use of a substance in the manufacture of batteries, or from the presence of a substance in the batteries when they are placed on the market [repurposed, remanufactured, reused], or during their subsequent life cycle stages, including the waste phase, that is not adequately controlled and needs to be addressed on a Union-wide basis, Annex XVII to**

Regulation (EC) No 1907/2006 shall be amended by adopting new restrictions, or amending current restrictions in Annex XVII of Regulation (EC) No 1907/2006, pursuant to the procedure set out in Title VIII of Regulation (EC) No 1907/2006”.

- **In addition, we would suggest to include the process described in article 6 (Belgium proposal) in the prioritisation mechanism referred to in the EU Commission’s Restrictions Roadmap (adopted in CARACAL in November 2021) to ensure the most relevant risks would be tackled first, considering also available resources and level playing field.**

2) If there is still ambiguity as to whether REACH Titles cover the waste phase this could be clarified in the ongoing REACH revision rather than by creating a parallel and possibly duplicated and inconsistent process in product and waste legislation.

Annex I - An Analysis of REACH and Waste

1) Waste-stage is covered by aspects of REACH, in particular the Chemical Safety Report (CSR):

- REACH Annex I (“General provisions for assessing substances and preparing Chemical Safety Reports”)
 - Para 0.3 and section 5 intro both stipulate: “The assessment shall consider *all stages of the life-cycle of the substance* resulting from the manufacture and identified uses.”
 - Exposure scenarios need to include, in regards risk management measures, “waste management measures to reduce or avoid exposure of humans and the environment to the substance *during waste disposal and/or recycling*” (section 5, step 1)
 - “emission estimation shall consider the emissions during all relevant parts of the life-cycle of the substance resulting from the manufacture and each of the identified uses. *The life-cycle stages resulting from the manufacture of the substance cover, where relevant, the waste stage.* The life-cycle stages resulting from identified uses cover, where relevant, *the service-life of articles and the waste stage.*” (section 5, part 2, para 5.2.2)
 - The ECHA website states: “The final exposure scenario defines the operational conditions and risk management measures required to ensure the safe use of the substance for each exposed population during all the lifecycle stages of the substance, *including the waste stage and the article service life, where applicable.*”
- Chapter R.18 of the ECHA guidance on chemical safety assessment is focused on the waste stage: “*Exposure scenario building and environmental release estimation for the waste life stage*”
 - “Manufacturers or importers of a substance as such, in mixtures or in articles subject to registration under REACH are obliged to take the waste life cycle stage of the substance into account when undertaking the appropriate (exposure and risk) assessments under Title II of REACH.”
 - “For substances for which a Chemical Safety Assessment (CSA) is required, *the waste life stage of the substance needs to be covered by suitable exposure scenarios*, the corresponding exposure estimation and the related risk characterisation.”

- ECHA “guidance on waste and recovered substances” (ECHA, 2010) states that “Recovered substances are generally not exempted from notification obligations for the classification and labelling inventory of CLP. Moreover, *they are not exempted from the authorisation and restrictions under REACH*”.

2) Restrictions under REACH Article XVII covering the waste phase

- ECHA “guidance on Annex XV for restrictions” notes that, in regards ‘extent of risk’, the risk-related considerations may cover “the use of substance in industry, its distribution via the supply chain *including service-life of articles and waste stage*”
- ECHA “guidance on waste and recovered substances” (ECHA, 2010): “The recovery operator needs to ensure that the *recovered substances comply with restrictions as set out in Annex XVII to REACH*”
- There are already existing REACH Restrictions that have been developed specifically to manage risks resulting from the waste phase of a substance. For example:
 - The Annex XV dossier proposing restrictions on lead stabilisers in PVC is based predominantly on emissions that arise “following the disposal of articles at the end of their service life” (i.e. during the waste phase)

3) REACH Authorisation covering the waste phase

- ECHA “guidance on waste and recovered substances” (ECHA, 2010): “The recovery operator needs to ensure that the recovered substances comply with the authorisation requirement in Title VII.
- Precedent set by the DEHP case (Vinyloop/Stena Recycling/Plastic Planet) in regards submission of AfA. Authorisations sought, and granted, e.g. for the formulation and industrial use of recycled soft PVC containing DEHP – the *recyclate was in the waste stage*.

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