The EEB continues to support the proposed restriction on lead used as a stabilizer in PVC.

We strongly support the proposed labeling provisions, which will allow manufacturers and consumers to make informed decisions.

In a few cases, derogations have been narrowed appropriately (if slightly) to reduce likely exposures; for example, PVC in flooring material. Overall, however, **we are disappointed by the continued expansion of derogations and the increase in allowable limits.**

Lead pigments

SEAC has added a derogation for two lead-based pigments, lead sulfochromate yellow and lead chromate molybdate sulfate red, based on an entirely confidential comment for which no other information was provided. These compounds are non-threshold carcinogenic and reprotoxic substances. One applicant (DCC Maastricht B.V. OR) has been granted authorisation for limited use of these compounds, primarily as high-visibility markings on roads or metal surfaces. Due to the confidential nature of the comment, we are not aware of specific uses with relevance to recycling of PVC.

This derogation amounts to an authorisation to recycle PVC materials with these lead pigments. This is not a use granted by the authorisation or evaluated for risk by RAC.

The derogation is likely to complicate implementation of the PVC recyclate standards, since the simplest method of analysis (X-ray fluroescence, or XRF, identification of total lead in the recyclate) would not distinguish between lead-based pigments Proper analysis in the case of PVC bear lead-based pigments would require other, probably more difficult, test methods. We have no information on whether SEAC has considered the impact of this derogation on the implementation of the present restriction.

The lack of transparency behind this derogation is greatly regretted.

Recycled rigid PVC

We stridently object to the increased limit for lead in recycled rigid PVC from 1% to 2%. We see no evidence that such an increase is warranted.

- The Tauw (2013) study modelled lead concentrations in recycled PVC building materials to be “far below 1%”, and the draft opinion points out that this “has also been confirmed by measurement samples taken from window profiles” (p16).
- SEAC itself points out that the 2% limit “is based on worst-case assumptions” (p16). But such cases can easily be avoided with minimal testing and batching. The ease and very low cost of XRF testing (some handheld models are now available well under €10.000) makes the batch-to-batch identification of lead in PVC viable for even the smallest PVC recycling facilities. This would allow compliance with the 1% standard.
- No evidence is given to support the idea that the risk is not increased by the higher limit. Although the derogation applies only to specific products for which consumer

exposures are not expected, this does not mean that consumer exposures are negligible.

- The different limits for rigid and flexible PVCs mean that the single proposed label would be insufficiently specific.

Flexible PVC

In an attempt to limit lead exposures from recycled rigid PVC, the derogations require this material to be covered by virgin PVC. However, the text of the derogations makes it unclear whether the same is true of recycled flexible PVC. The specific derogations for "mats for stables and greenhouses; multi-layer hoses; noise insulation sheets;" make no mention of covering the recycled layer or of co-extrusion, although RAC's note #6 (p4) confirms that this is the intention. This encapsulation should be clearly and specifically described in the derogation text.

Given the higher expected migration of lead from flexible PVC, we would of course prefer a lower threshold in uses with any reasonable potential for consumer exposure (e.g., noise insulation and hoses).

Clean recycling loops

We have previously commented on the need to maintain clean recycling loops as Europe moves towards the circular economy. **We do not believe that the future risks from recycling lead-stabilised PVC have been appropriately evaluated.** Indeed, in the response to comments, the RAC rapporteur admitted that "similar points about emissions from recycled articles are made in comment #1609, and we agree that these have been overlooked" (response to comment #1671).

The committees prioritize recycling as "the most appropriate option to control releases of lead in relation to end of life disposal" (response to comment 1674). **We strongly believe that this is a misconception based on a drastic oversimplification of PVC disposal options.** Disposal options include landfilling and incineration, and the restriction proposal treats these together (in opposition to recycling). Yet they are very different in terms of their management of lead.

- **Incineration** creates significant emissions directly to air, as well as water (for wet-cleaning facilities) and sludge and ash (which must then be managed as hazardous waste) (Annex XV restriction report, Annex F.1.3).
- **Landfilling** has zero emissions to air. Emissions to soil depend on integrity of the landfill: The lower bound is zero (and the restriction background comments that "metals are not expected to pass through the landfill body"). Emissions to water (via leachate) are very low, from about an order of magnitude less than air emissions from incineration. Moreover, leachate is managed and treated for heavy metals, and leachate volume declines through the lifetime of the landfill).

Unfortunately, the restriction report generally treats these options together, assuming that there is no way to predict how a particular material will be disposed. The true emissions from disposal, however, will be very much dependent on the actual distribution of disposal methods, since landfilling appears to have dramatically lower emissions than incineration. **These estimates appear to be inaccurate and poorly supported:**

- Incineration is given too much weight. The modeling of emissions from disposal under the the "no derogation" case uses predictions of waste management practices from Tauw (2013), which assumes about 20% recycled, 20% landfilled, and 45% incinerated in 2020 -- that is, a greater than 2:1 preference for incineration over landfilling (p149). Data from Eurostat, however, indicates a near parity of landfilling and incineration in the 2016 EU-28 municipal wastestream (59 vs 66 mt, respectively).[1]
- Tauw's extrapolation to future PVC waste handling relies on a linear projection of trends from 1995-2007, and is used with slight modification in the restriction proposal's probabilistic release model through 2065 (Table F5, p189). This data assumes a steady 5:1 preference for incineration -- far higher than the current breakdown of MSW.
- The very strong weighting of incineration, with its direct air emissions, creates an unreasonably high impression of emissions rate for the combined "disposal" routes (including landfilling).
- The assumption that most PVC will go to incineration (by a 5:1 ratio) is inconsistent with some practical challenges associated with incinerating PVC:

    1. PVC incineration creates a large volume of hydrochloric acid that must be neutralized with additional chemicals, leading to a volume of waste that may exceed the PVC incinerated. (Tauw 2013, Appendix 2)

    2. PVC's high calorific value may lower incinerator throughput (as the calorific throughput must be limited).

- Therefore, Tauw notes, "Pure PVC waste usually is not accepted at waste incinerators", and "Usually a maximum concentration between 0.5 to 1.5 % of PVC in MSW is accepted though it is difficult to enforce these maximum concentrations." Thus, the assumption that PVC waste is preferentially incinerated by a 5:1 ratio over landfilling appears unlikely.

- If (as seems likely) landfilling is to be preferred over incineration, that preference will be much easier to implement with the proposed restriction's "Contains recycled PVC" label (as well as with the use of simple and inexpensive XRF testing).

Thus, we believe that the risks of disposal have not been adequately assessed. Recycling of lead-stabilised PVC will delay, but not prevent, its eventual disposal. Eventually, after some number of service lives, lead-stabilised PVC will need to be disposed; given current EU waste management trends, this will most likely be in an incinerator, which we believe to be the worst possible outcome for PVC waste.

RAC should re-evaluate its assumption that recycling is the lowest-risk alternative by including the risks over all service lives of the recycled material. With these risks included, segregating lead-stabilized PVC in landfills may provide a lower-risk alternative.

1 http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Municipal_waste_landfilled,_incinerated,_recycled_and_composted_in_the_EU-28,_1995_to_2016.png

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www.eeb.org
International non-profit association –
Association internationale sans but lucratif

Boulevard de Waterloo 34, B-1000 Brussels
Tel.: +32 2 289 10 90
Email: eeb@eeb.org

EC register for interest representatives:
Identification number: 06798511314-27

Circular economy.

As we have pointed out before, the recycling derogation is at odds with the EU's commitment to a circular economy. This is only one example of a broader discrepancy between different EU goals described in a recent EC communication on the interface between chemical, product, and waste legislation. [2] In fact, that report uses the problem of hazardous additives to PVC as an example of the challenge of "legacy substances".

The expertise of ECHA's committees leads them to emphasize a narrow view of the proposed restriction. Future risks from contaminated recycling loops are more difficult to calculate, and easier to discount. **We hope that the Commission will continue to address this challenge of the interface between chemicals and waste, and that it will provide guidance on how these goals can be better integrated.**

Finally, we note the close analogy of the current situation to that of the authorisation for DEHP in recycled plastic. Although the COM and the Member States ultimately approved the authorisation, Parliament took issue with that decision in a nonbinding resolution: "...it is not acceptable to tolerate potentially numerous cases of male infertility simply to allow soft PVC recyclers and downstream users to save costs in the production of low-value articles so as to compete with low-quality imports;" Moreover, Parliament specifically critiqued SEAC's emphasis on promotion of recycling, calling it "simplistic":

> one of the arguments given by the SEAC in favour of granting authorisation is that 'there is a political and societal incentive to promote recycling as a sustainable way to handle natural resources'; **whereas this simplistic argument disregards the waste management hierarchy** laid down in Article 4 of Directive 2008/98/EC, according to which prevention takes priority over recycling" (B8-1228/2015).

We firmly agree. The derogations in the current restriction are enabled only by an incomplete assessment of the long-term risks from lead-contaminated recycling loops. Our current enthusiasm for recycling, though well-meaning, must not put the health of future Europeans at risk.

For additional information please contact Tatiana Santos tatiana.santos@eeb.org

2 Options to address the interface between chemical, product and waste legislation. https://ec.europa.eu/commission/publications/options-address-interface-between-chemical-product-and-waste-legislation_en

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Boulevard de Waterloo 34, B-1000 Brussels
Tel.: +32 2 289 10 90
Email: eeb@eeb.org

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