

PVC risks: industry reacts to ECHA report

A European Chemicals Agency's (ECHA) investigation found that some substances added to polyvinyl chloride (PVC) plastic may pose risks to people and the environment

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PVC pipes

The European Chemicals Agency (ECHA) has collected information on the potential risks of polyvinyl chloride (PVC) and its additives to human health and the environment, at the request of the European Commission. It has published a [report](#) with the results, which also includes an assessment of possible alternatives.

The investigation focused on 63 PVC additives, including plasticisers, heat stabilisers, and flame retardants. Whilst the ECHA concluded that the risks from PVC resin to workers and the environment are 'adequately controlled' with the current operational conditions and companies' safety measures, it

recommended regulatory action to minimise risks across a variety of areas. In particular, it said regulatory action is needed:

- “to minimise risks associated with plasticisers, particularly certain ortho-phthalates, which are harmful to reproduction;
- to minimise risks from heat stabilising organotins, such as DOTE, which may cause developmental malformations and reproductive harm;
- to reduce emissions of flame retardants as suggested in ECHA’s Regulatory Strategy for Flame Retardants; and
- to implement and improve technologies that minimise PVC microparticle emissions especially at recycling facilities and landfills.”

ECHA has sent its investigation to the European Commission. The Commission will now assess it and decide whether there is a need to formally ask ECHA to prepare a proposal to restrict PVC and its additives under the Registration, Evaluation, Authorisation and Restriction of chemicals (REACH) legislation.

Reacting to ECHA’s report, VinylPlus, the European PVC industry’s Commitment to Sustainable Development, questioned some of the risks ECHA identified, in particular for some ortho-phthalates and other plasticisers, organotin stabilisers, and microparticles.

VinylPlus was one of the stakeholders that provided ECHA with evidence for its investigation. According to the organisation, the evidence it submitted ‘demonstrates the safety of PVC for human health and the environment’. VinylPlus said it will ‘carefully examine the report and its annexes’ and respond to the data gaps and concerns raised by the ECHA.

PVC is a versatile and affordable plastic: it is durable, resistant to abrasion, lightweight, and has good mechanical strength and toughness. Some types of PVC also have risks, some of which have been well known for decades. Plasticised PVC is one of the most used, and one of the cheapest, plastics available. The addition of plasticisers makes the material soft and flexible. Plasticisers are added to PVC in quantities of up to 60% of the final product by

weight. However, because they are not chemically bonded to the plastic, those same plasticisers migrate out of the PVC to the surface as the material ages, leaving it hard and rigid. Commonly used plasticisers for PVC are phthalic acid esters – phthalates – and these are chemicals that, once in the environment, have been associated with a plethora of health impacts. Unplasticised PVC, on the other hand, contains no phthalates or BPA.

Another issue is that PVC is extremely sensitive to thermal stress and can only be processed in the presence of heat-stabilising additives to avoid changes in its chemical structure. DOTE, the stabilising additive identified by ECHA, is mainly used in rigid PVC.

Lead was once widely used as a PVC heat stabiliser, but the European industry voluntarily phased it out in 2015. Its legacy prevails, however, as a lot of PVC waste destined for recycling still contains lead. To ensure recycling is safe, items made from recycled rigid PVC items need to be completely covered by a lead-free layer, so people and the environment are protected from accidental exposure to lead. In addition, recovered rigid PVC can only be recycled back into the same application, for example window profile to window profile.

In its reaction to the ECHA report, VinylPlus emphasised that the European vinyl industry has a 'track record of proactively and successfully substituting hazardous additives such as Low Molecular Weight (LMW) phthalates and lead/cadmium-based stabilisers'. Its efforts, it argued, have made PVC safer, more sustainable, and more circular, as around a third of PVC waste produced annually in Europe is currently recycled.

ECHA's recommended regulatory action was well received by Zero Waste Europe, which alongside other 60 NGOs has called the European Commission to phase-out PVC by 2030.

"The release of hazardous chemicals from PVC, including at the waste stage, is a situation we should not tolerate anymore, and that's why we're calling on EU policymakers to restrict the use of PVC where it can be replaced by alternatives," said Dorota Napierska, toxic-free circular economy policy officer at Zero Waste Europe.