PVC

FREQUENTLY ASKED QUESTIONS

What is PVC and what is it used for?

PVC (polyvinyl chloride) is a plastic made from chlorine and many additives. It is widely used e.g. in construction materials (pipes, window frames, cables, flooring), medical devices (tubing, blood bags), packaging (bottles, films), automotive products (dashboards, upholstery), and consumer goods (toys, furniture, clothes).

Why is PVC dangerous?

The list of potential adverse effects related to the PVC lifecycle is long. First, PVC poses health and environmental risks due to the harmful additives used to give it different properties. These additives can cause liver damage, infertility, cancer, and cognitive issues, particularly in vulnerable groups like children. The widespread use of PVC constantly exposes us to these dangers every day, making it a pervasive threat to public health. Further, the feedstock of PVC and the accidents when transporting it, as well as emissions from incineration, pose a risk to human health and the environment.

Is PVC replaceable, are there safer alternatives available?

Alternatives exist for almost all PVC applications. Choosing the best alternative depends on the specific use. The EC report (2022) looking at the role of PVC in a non-toxic environment provides examples of many replacement options for different applications. These are based on their technical and economic feasibility, capacity for reducing the overall risk and their availability. (See also Alternatives to PVC in building materials)

Are emissions from manufacturing plants controlled?

No. PVC facilities have been identified as significant national polluters - to air and water - based on data from the European Environment Agency, including emissions of highly hazardous chemicals including heavy metals and organochlorinated substances.

If PVC has alternatives, why is it not already being replaced?

Industry has been successful in avoiding regulation, i.e. disincentivizing moving to alternatives. In addition, while PVC is cheaper to produce than many (non-)plastic alternatives, the overall cost, including environmental and health impacts, makes it expensive when considered holistically. Also the cost for proper waste handling of PVC is high.

Doesn't PVC save lives in medical settings?

While PVC is widely used in medical devices such as catheters and blood bags, it exposes patients to toxic additives that can leach into the body, posing additional risks, especially to vulnerable patients. Safer, PVC-free alternatives are available. (HCWH Europe 2023, Towards PVC-free healthcare)

Can the additives used migrate out of the PVC and cause harm where they end up?

Yes, many additives, like phthalates, are not tightly bound and can migrate out of PVC, entering the human body and potentially causing harm.

ECHA has identified 470 substances used as additives in PVC and looked in detail only into 63, concluding that most of these additives may pose a serious environmental concern, health concern, or both.

Do PVC microplastics pose a risk to people and the environment?

Yes, PVC microplastics are persistent and contain larger amounts of additives than other plastics that are released to the environment. Actually, ECHA finds microplastics to be one of the main emission routes of PVC additives. The ECHA report alerts that the total stock of PVC and additives in the environment will steadily increase unless the releases are minimised.

Is there a sustainable practice to treat PVC waste?

PVC is difficult to recycle, with only around 12% of post-consumer waste being recycled in Europe and consumption of PVC continuing to rise, i.e. recycling doesn't solve the problem of increasing PVC stocks. The recycling process is challenging due to contamination and low-quality output, leading to more landfilling or incineration, which can release harmful dioxins.

Can PVC ever be considered safe without additives?

No, PVC has issues throughout its lifecycle, from carcinogenic raw materials to harmful emissions during disposal, making it a problematic material even without additives.

If PVC is so problematic, why isn't it already regulated?

In 2000, the European Commission identified PVC as harmful to the environment and human health, but industry lobbying stalled significant regulation. Over the past decades, only limited regulatory progress has been made, such as restricting the use of lead in PVC. The EU's Restrictions Roadmap has since prioritized PVC and its additives, signaling a need for further action.

What does the recent ECHA report on PVC conclude? Does it recommend a full phase-out of PVC?

It is clear from ECHA's investigative report that the plastic PVC and its additives pose a serious risk for health and the environment. Some groups of harmful additives, in particular plasticisers, heat-stabilising organotins, and flame retardants, should be subject to an EU-wide restriction.

ECHA acknowledges that PVC itself poses a risk to human health and the environment, notably also through the release of microplastics, yet doesn't recommend specific regulatory action beyond emission minimisation measures. ECHA does not explicitly recommend adopting a restriction for both PVC as a material and for its additives. NGOs consider ECHA's findings nevertheless support a ban on the material PVC.

One of the issues posed by PVC is the release of microplastics. But aren't microplastics, including from PVC, already sufficiently regulated?

Microplastics are only partially regulated in the EU. Horizontal pieces of legislation, such as the revised Industrial Emissions Directive, aim to improve the management of plastics from production to waste but they are not specifically designed to tackle microplastics. Recent legislation, like the ban on intentionally added microplastics in products, e.g. cosmetics or sport fields, addresses some issues but doesn't cover unintentional releases from PVC production or products. Ongoing negotiations focus on plastic pellet leakage but don't specifically address microplastics from PVC, such as those in drinking water pipes.

What regulatory measures do NGOs ask for?

In line with the commitments from the EU Chemicals Strategy for Sustainability, NGOs want harmful chemicals out of the EU market, and that includes PVC and its additives. The ECHA report provides a great amount of evidence to justify strong regulatory action, i.e a ban not only on the additives to PVC but also PVC itself. In comparison, a ban of only a few specific groups of additives may lead to regrettable substitution and would just remedy part of the problem posed by PVC. Significant evidence missing from ECHA's analysis, may lead to a significant underestimation of the broader risk posed by PVC. A comprehensive restriction on PVC, particularly soft PVC, along with its most dangerous additives, is seen as the most effective approach.

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