PVC PROBLEM VERY CLEAR

Why the ECHA report supports phasing out PVC as the most effective and future-proof risk management measure

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EXECUTIVE SUMMARY

Commonly used plastics pose many threats to human health and the environment, making them one of the most pressing environmental issues of our time. But in the landscape of the various plastics that surround us, polyvinyl chloride (PVC) stands out. Not only is it found everywhere, from home furnishings to children's toys and medical supplies, contributing to widespread, irreversible plastic pollution, but it is also associated with grave toxic effects along its whole life cycle - from production to disposal.

The risks posed by PVC in terms of chemical safety have been on EU lawmakers' radar for decades. But it is only recently that the European Commission tasked the European Chemicals Agency (ECHA) with formally investigating this material and the additives used in it. The Commission's 2022 decision to prioritise PVC for potential regulation *(EC, Restrictions Roadmap, 2022)* fits into the broader ambition of the Chemicals Strategy for Sustainability: to get rid of the most harmful chemicals used in the EU.

Published in November 2023, the report summarising the results of ECHA's investigation finds that regulatory action to tackle the risks posed by PVC and some of its additives is needed. Although qualified by a number of uncertainties, the report unequivocally identifies several risks posed both by PVC resin and by substances added to PVC to achieve specific properties. It also acknowledges the availability of alternatives for all the uses that were assessed. The evidence provided by this report is sufficient to warrant regulatory action by European decision-makers. In particular, given the scale of the impacts posed by additive-related risks and the lack of control over them, ECHA proposes developing one or several restrictions under the REACH Regulation. This justification should apply for PVC as a material too, especially soft PVC. A broad restriction would be the most effective and future-proof option:

- It would avoid the potential for regrettable substitution if only a limited group of additives are considered for regulatory action;
- It would address the risks posed by PVC over its whole life-cycle;
- A group approach to banning PVC is coherent with past actions, for example to regulate microplastics. It is most appropriate to deal with the present and potential future risk, also in terms of regulatory consistency and clarity of the measures to the various parties.

While the European Commission holds considerable discretion as to what to do next, the ECHA report constitutes a strong technical and scientific basis for exercising that discretion in a particular way. The Commission cannot ignore it.

The following report is an attempt to make clear what is and what is not part of the ECHA assessment, and explain why this assessment, although incomplete, already supports strong EU regulation. Our analysis provides an external view on and condensed account of the ECHA investigation, looking at the various components of the evaluation and conclusions and providing complementary information where the assessment failed to be exhaustive. Our in-depth examination of the ECHA report leads to a single conclusion: the Commission should adopt a restriction on PVC, in addition to regulating its most dangerous additives.

1 SETTING THE SCENE

Polyvinyl Chloride - also known as PVC - is a plastic used in a variety of everyday consumer and construction uses, from bath toys to floorings and pipes. It has been under official scrutiny for decades due to the recognised risks to human health and the environment it poses along its whole life-cycle. The PVC industry was never able to deny these risks and has focused instead over more than two decades on finding ways to minimise them. But to what extent have these efforts succeeded in allowing the authorities to show so little interest in regulating PVC?

During manufacturing, use and waste management, PVC releases toxic chemicals and microplastics, posing a threat to water sources, the ozone layer, and other aspects of nature which are integral to the health of our planet.

These impacts may have been overlooked, but they are not new. Twenty-four years ago, the European Commission published a Green Paper on the "Environmental issues of PVC", pointing to the many problems PVC causes for the environment and human health. The paper showed that an "*integrated approach is therefore necessary to assess the whole life cycle of PVC in order to develop the necessary measures to ensure a high level of protection of human health and the environment as well as the proper functioning of the internal market*" (EC, 2000, p. 3). However, only limited regulations, such as the restriction of the use of lead in PVC, have so far been adopted to control the wider risk posed by PVC.

The PVC industry has managed to derail the debates on addressing these issues, using aggressive lobbying. The industry is delaying badly needed action by claiming that technical progress reduced some of the risks related to PVC, and that its alleged societal benefits outweigh the drawbacks. Companies along the PVC product value-chain are now also engaging in "regrettable substitution" - i.e. switching out a regulated substance for an unregulated one which poses an equal hazard, meaning that harmful impacts remain.

In its 2022 Restriction Roadmap, the European Commission raised the prospect of addressing the risks of this toxic plastic, once and for all, by including PVC and its additives in its list of hazardous chemicals that should be restricted (EC, 2022a). As a starting point, ECHA was tasked with preparing an investigative report that would support future potential regulation. The final results of this investigation were published in November 2023.

The Commission's intention to regulate PVC is rooted in the European Union's growth strategy, the European Green Deal, which has as a goal "*to protect better human health and the environment as part of an ambitious approach to tackle pollution from all sources and move towards a toxic-free environment*". In its Chemical Strategy for Sustainability the Commission positioned the EU chemical industry as a globally competitive player in the production and use of safe and sustainable chemicals (EC, 2020).

The continued marketing of cheap PVC articles flies in the face of these objectives. It hinders the market opportunities for safer, sustainable and local alternatives that would add value for Europe's economy and enhance European companies' global competitiveness.

Under the European legal framework, the restriction of the production and/or placing on the market of chemicals or mixtures is not only justified but necessary when they are proven to pose an unacceptable risk that lacks adequate control (Article 68.1 REACH). Beyond the REACH framework, European states are bound by their EU and international legal obligations to prevent exposure from toxic chemicals such as PVC.[1]

The European Commission has so far not taken any concrete steps to act following the publication of the report. However during a recent CARACAL meeting (meeting of March 21, 2024), it indicated that it is considering measures that focus on the few additives prioritised in the ECHA assessment - hence excluding a wide restriction covering both PVC and all its additives of concern. Such narrowing down of the scope of a restriction to merely a few additives would severely contradict the objective of reducing emissions and exposure to PVC and its many risks.

In what follows, we argue that the investigation report on PVC and its additives published by ECHA provides a solid basis for a broad restriction proposal under REACH. It shows unambiguously that PVC poses a risk that currently lacks adequate control, and that alternatives are available to replace most uses (Section 2). Further evidence and information from the literature and from PVC experts that were not taken into account by ECHA appears to strengthen this assessment (Section 3). The conditions for acting under Article 68 REACH are therefore met and should promptly lead the Commission to start the restriction process that covers both PVC and its additives, in line with its legal obligations (Section 4).

1. A 2019 report from the UN Special Rapporteur on Toxics and Human Rights emphasises that States have a duty to "prevent and minimise" exposure to hazardous substances to protect against preventable diseases and disabilities, with prevention as a precondition to respecting that duty. This duty is derived from internationally recognised rights, many found in the EU Charter of Fundamental Rights, including the rights to life, health, dignity and bodily integrity; the right to information and the right to a healthy environment; as well as equality and access to an effective remedy (UN, 2019).

2 WHY ECHA'S REPORT SUPPORTS PHASING OUT PVC

The sections below highlight how the findings of the ECHA report support a ban on PVC material altogether, and not only on some of its additives, under the REACH Regulation.

2.1

ECHA's report confirms that the PVC life cycle poses a risk that is not properly managed

2.1.1

ECHA acknowledges PVC additives' risks to human health and the environment and recommends minimising emissions due to the non-threshold nature of the risk

Statement on additives:

Poly(vinyl chloride) is a complex plastic system. Individual components of the PVC system, including residual vinyl chloride monomer and certain additives, may pose risks of harm to human health as most of these components are not covalently bound to the polymer matrix.

EC, 2022b. The use of PVC in the context of a non-toxic environment.

The report acknowledges that PVC contains very high levels of additives

Based on a dense literature review and information collected through various calls for evidence, ECHA identified around 470 substances being currently used as additives in PVC. Since PVC as a powdery resin cannot be used alone, it requires additives to perform a set of required functions. These additives can be grouped in different chemical groups (for example ortho-phthalates and organophosphates) or based on their function - for example plasticisers, heat stabilisers or flame retardants.

Measured in terms of the total amount of compounded PVC material (resin and additives) used for PVC articles, additives alone account for around 25% of PVC's mass[2], which equals 1.6 million tonnes of additives per year (ECHA, 2023c, p. 6). Soft PVC has a significantly higher share of additives incorporated than rigid PVC. Some soft PVC uses, such as medical applications, vehicle parts and some consumer articles even containing more than 50% additives by weight (ECHA, 2023c, p. 7).

The report acknowledges that PVC contains many more additives than alternative plastic

When looking into plastics that can serve as alternatives to PVC, the ECHA report, supported by the scientific literature, confirms that ***"PVC, and in particular soft PVC, requires in total more additives (in the number of additives, function and their concentration in PVC) than other plastics"*** (ECHA, 2023a, p. 58f).

Although ECHA did not carry out a risk assessment for PVC alternatives, it is well known that alternative plastics usually contain lower additive volumes and concentrations. The release of additives for those other plastics hence "*can be expected to be generally lower, even if the hazards of the additives in alternative plastics would be at similar level as of the prioritised PVC additives*" (ECHA, 2023b, p. 137). This shows that PVC cannot be considered to be like any other plastic: the versatility of the material, linked to its high additive load, comes at the cost of using more additives with a variety of hazardous properties.

2. 5.2 million tons of non-compounded PVC and 1.6 million tonnes of additives result in 6.8 million tons of compounded PVC) (see ECHA, 2023c, p. 6)

The report acknowledges that PVC additives pose a risk to human health and the environment, a risk aggravated by "non-threshold" effects

The report compiles a list of 470 substances currently used as additives in PVC. ECHA looked first at all the additives used in PVC analysing a range of different health and environmental endpoints[3] and presented their assessment in the form of a scoring. The human health hazard properties they considered include carcinogenicity, mutagenicity and reprotoxicity (CMR), endocrine disruption for human health, and skin sensitisation. Environmental hazards they considered include endocrine disruption, combinations of persistence, mobility and toxicity (PMT) and aquatic hazards.

ECHA focused its assessment on those additives which appeared most concerning. These were identified based mainly on the hazard scoring, the release potential of the function as well as the number of substances contained in a group with the same function (e.g. plasticiser) (see ECHA, 2023b, p. 35f.). The more in-depth analysis looked in detail into 63 of the additives used in three functions: flame retardants, heat stabilisers and plasticisers.

The result of ECHA's screening is unequivocal - most additives under scrutiny pose a serious environmental concern, health concern, or both. For example, organophosphorus flame retardants, which can be used in soft PVC in order to meet certain specifications, are identified as both potential reprotoxicants and endocrine disruptors. The release of microplastics (also "microparticles") from PVC enhances the persistence of additives in the environment, further increasing concerns related to the risks they pose. ECHA clarified in that regard that "*the risks from environmental plastic microparticle exposures cannot be fully differentiated from risks of additives, as the microparticles, in particular PVC microparticles, generally carry additives and effects data on virgin plastic microparticles are rare*" (ECHA, 2023b, p. 28f.).

The high persistence of PVC particles is particularly problematic because there is no "effect threshold", i.e. effects occur as of the first emission. Several sources for information on potential hazards were consulted, and the report is clear that "*[m]any of the additives focused on [in] this project have already confirmed threshold or non-threshold severe toxicity*". This finding, in combination with the very high persistence of PVC particles and the complexity of co-exposure to additives, supports the conclusion that ***"PVC additives should be considered as of non-threshold character"*** (ECHA, 2023a, p. 16). ECHA finds that ***"minimisation of the releases of additives should be the focus of regulatory and/or voluntary actions" and "release minimisation may be expected to be most effective when minimisation of both the additives and microparticles is targeted"*** (ECHA, 2023a, p. 30).

When concerns are identified for several additives belonging to a structurally similar group, such as the orthophtalate plasticisers, ECHA concludes that it would be reasonable to take regulatory action not on a substance-by-substance basis, but on a group basis. The adoption of risk-reduction measures should not be delayed by waiting for harmonised classification, data generation, etc. for every substance in this group, which would prolong the ongoing emissions (ECHA, 2023a, p. 3).

2.1.2

ECHA acknowledges that the environmental stock of PVC will increase unless releases are minimised

Statement on microplastics:

Plastics are now ubiquitous, contaminating every niche on the planet, including the deep ocean, the atmosphere, and human bodies. The complexity and volumes at which global societies are producing these materials, comprising thousands of polymers and chemicals, far outpace our ability to mitigate the harm they cause to human and environmental health, thereby moving us outside the safe operating space for humanity. Multiple lines of evidence indicate that the production and release of both macro- and microplastics has direct and indirect impacts on stability of Earth system functions, impacting climate change, biodiversity changes, nutrient cycling and land and water systems. Plastics will continue to accumulate in the environment unless drastic efforts to reduce production are taken. In efforts to reduce plastics production, and thereby plastics pollution, we will need to apply principles including the waste hierarchy, essential use paradigms, and safety and sustainability criteria. Polymers like PVC should be banned, based on their known toxicity, including vinyl chloride monomers, chemicals commonly used in PVC products (e.g. phthalates), and the toxicity of PVC microplastics.

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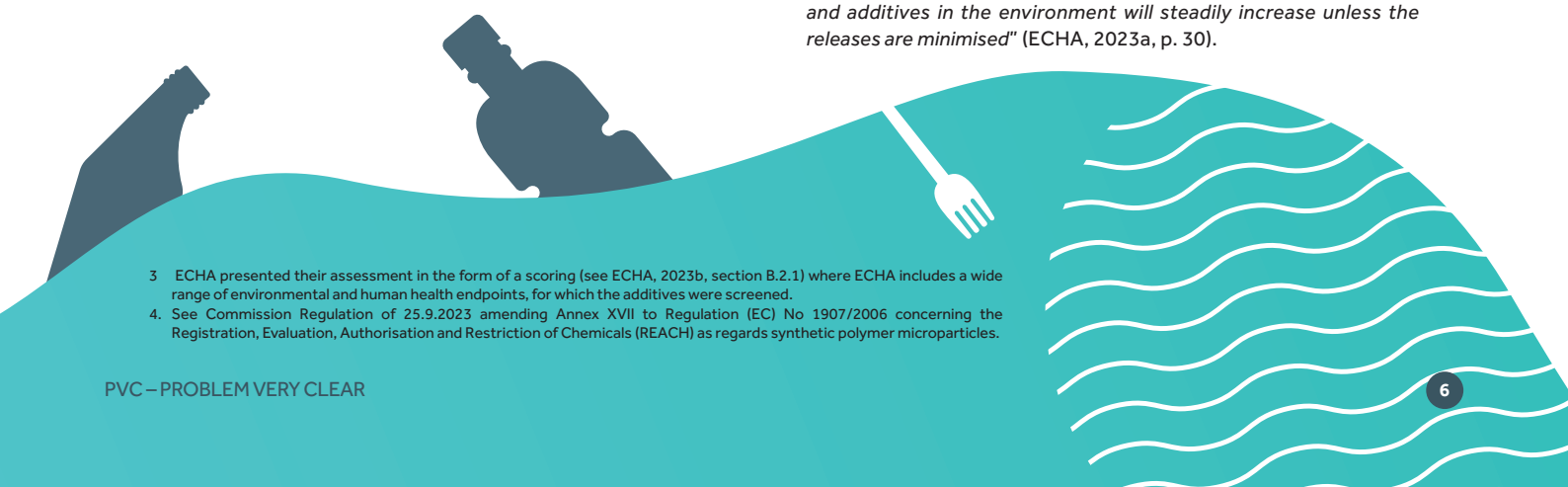
The report clearly states that "***reduction (minimisation) of PVC microparticle releases to the environment is needed***" (ECHA, 2023a, p. 38). The reasons that ECHA identified for the need to minimise PVC-specific risks are 1) higher anticipated additive releases from PVC and 2) higher co-exposure from additives through PVC microplastics. There are further arguments in favour of adopting measures to reduce those emissions which could apply to both PVC and other plastics. Microplastics are indeed recognised as posing a risk in and of themselves, which is why a restriction targeting their intentional use in products was adopted last year.[4]

A concerning fact is that "*a significant part of the **plastic additives remain in the plastic material for years after the plastic microparticles are released to the environment**, regardless of the size of the plastics*" (ECHA, 2023b, p. 97). It can be expected that PVC additives will accumulate in the environment, as PVC microplastics that end up in the environment also make the additives in the material very persistent. This leads to a risk for humans and other biota that ingest the microplastics and the additives contained in them. If emissions of persistent PVC microplastics and the hazardous additives they contain continue, "*the total stock of PVC and additives in the environment will steadily increase unless the releases are minimised*" (ECHA, 2023a, p. 30).



3 ECHA presented their assessment in the form of a scoring (see ECHA, 2023b, section B.2.1) where ECHA includes a wide range of environmental and human health endpoints, for which the additives were screened.

4. See Commission Regulation of 25.9.2023 amending Annex XVII to Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards synthetic polymer microparticles.

Without clearly identifying a regulatory option, ECHA states that the minimisation of microplastics-related emissions "*should be the focus of regulatory and voluntary actions*" (ECHA, 2023a, p. 30). **Unless the most appropriate and effective action is taken, it is expected that the total stock of PVC and additives in the environment will steadily increase and, hence, become harder to control.**

2.1.3

ECHA acknowledges the risks connected with PVC waste management

Statement on end of life/recyclability:

According to our estimates, the mass of PVC in stock in Europe has now grown to about 160 million tonnes. Neither material recycling nor energy recovery together with mixed municipal waste can solve this stock problem. PVC must therefore be collected separately, and the industry must offer a technical solution for this waste. But the list of failed solutions is long. In the end, a technical solution can be very expensive for the industry.

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As mentioned above, microplastics are the main emission route for the prioritised additives. Stakeholders, as well as EU political targets, aim for higher recycling rates of PVC in the future. Since recycling is considered one of the main microplastic emission sources in the PVC lifecycle, **the ECHA report anticipates that "*increases in the recycling rate do not directly reduce the releases and may even have a contrary effect*"** (ECHA 2023a, p. 30).

The management of PVC waste entails severe challenges. One key obstacle to more sustainable treatment is the separate collection of many different existing waste streams. Previous reports (EC, 2022b) found, for example, that "*PVC waste are collected and sorted to some extent but with greater effectiveness in the construction sector than others where it remains challenging*" (ECHA, 2023b, p. 90). About 30% of all post-consumer waste goes into landfills, making it the second largest disposal waste stream following incineration with 50% (ECHA, 2023b, p. 7).

In several parts of the report, ECHA acknowledges that there is information pointing to risks from landfilling PVC, including the release of additives, harmful emissions from fires as well as microplastic releases (ECHA, 2023b, p. 8). "***Accidental or illegal landfill fires can contribute to the formation of dioxins and furans*** *but will not be considered in the scope of this report*" (ECHA, 2023b, p. 8).

Unintended fires are however not the only risk from PVC in landfills. Although PVC is, according to the report, "*generally regarded as being resistant under soil-buried and landfill conditions*" the polymer can potentially degrade, leading to a release of PVC microplastics (ECHA, 2023b, p. 8). It is further acknowledged that landfilling poses a particular risk of co-exposure to the environment from additives in PVC waste, especially soft PVC (ECHA, 2023b, p. 135). **ECHA thus finds landfilling to be one of the pivotal life cycle steps generating risk from PVC additives, making up ~11% of the total releases, and so becoming the third biggest source of emissions after professional handling and recycling** (ECHA, 2023b, p. 140).

2.2

ECHA's report confirms that alternatives are available for all uses

The inescapable question: why should we continue using a polymer/material that contains a high load of hazardous additives if alternatives exist?

ECHA's report highlights that "*[a]lternative materials to PVC are available for all uses covered in the assessment*" (ECHA, 2023a, p. 2), including pipes, cables, flooring, window frames, packaging, blisters, toys, medical applications and artificial leather. This conclusion confirms the findings of previous reports commissioned by the European Commission (EC, 2022b).

Although ECHA states that loss or gain in performance may occur in some cases and that "*it is often impossible to fully compare the overall performance of the materials*" (ECHA, 2023c, p. 116), it can be assumed that, for most uses, alternatives are well established and therefore perform on an acceptable level (EC, 2022b).

Moreover, the ECHA report does not include a quantitative comparison of the human health and environmental risks of PVC and alternative materials. Instead, it presents a qualitative comparison between PVC and alternative plastics based on the potential risks of PVC identified (ECHA, 2023b, p. 30). The aspects assessed are:

1) Exposure/release of hazardous starting materials during polymer production;
2) Generation of dioxins and furans (PCDD/Fs) during production and during incineration of polymer waste;
3) Exposure of workers to polymer dust; and
4) Releases of microparticles into the environment.

ECHA finds that the manufacturing of some alternative polymers such as polystyrene and polyurethane pose potential risks associated with polymer production (ECHA, 2023b, p. 30). Yet ***"[t]he risks from the starting materials and the PCDD/Fs formation, even if controlled, are unique to PVC*** *when compared to the main polymeric alternatives like PE or PP. The manufacturing processes of PE and PP do not involve such hazardous substances nor have an influence in the generation of PCDD/Fs"* (ECHA, 2023b, p. 28). As mentioned above, PVC also needs more additives than its plastic alternatives.

The criteria chosen in this assessment however do not allow for a fair comparison between PVC and alternatives, as the starting point and focus of the assessment is PVC and its risks, which means the analysis of alternatives does not include more generally applicable and objective criteria. Previous reports commissioned by the European Commission in any case have confirmed the availability of safer materials for almost all uses of PVC, including critical uses for health (EC, 2022b).

Considerations for determining whether a use of a harmful chemical is essential or not were recently defined by the European Commission in a dedicated communication (EC, 2024). An essential use is critical for society and has no suitable alternative available that would deliver an acceptable level of performance (EC, 2024, p. 4). The Commission clarified that acceptability depends on the ability of the alternative to deliver the desired function and its being safer throughout its lifecycle.[5]

Although it is still unclear how the essential-use criteria will be implemented in the context of REACH processes, the information on assessment of alternatives provided by the Commission in its communication is useful when assessing the results of ECHA's PVC report. In addition, neither the essential-use communication nor REACH prevents essential-use considerations from being taken into account when making future decisions that might restrict the production or use of harmful chemicals in the EU (ClientEarth, 2024). Such considerations could in fact support and facilitate the work of the EU institutions when deciding on a PVC ban.

5. *"(i) are capable of providing the function and the level of performance that society can accept as sufficiently delivering the expected service; AND (ii) are safer (their overall chemical risks to human or animal health and the environment throughout the whole life-cycle are lower in comparison to the most harmful substance)"* (EC, 2024, p. 6).

3 HOW DATA GAPS AND LIMITED SCOPE MAY BE LEADING TO UNDERESTIMATED RISKS

The scope of the investigation report was predefined by the mandate that the Commission gave ECHA, who then further narrowed the investigation due to the limited amount of time to conduct such an investigation. This may have rendered ECHA's work more efficient, but it led to issues when it came to the completeness of the study and the representativeness of the issues PVC presents. Due to the report's limited scope and data gaps, it neglects or oversimplifies various areas when it comes to the impacts of PVC and its additives across its life cycle. All these pieces missing from the report must be considered before taking a decision on the next regulatory steps to tackle the risks posed by PVC.

3.1

A far too narrow scope

ECHA's targeted assessment of 63 "prioritised substances" analyses only ~13% of all additives used in PVC. The remaining 87% includes additives which fulfil functions different from the prioritised additives, such as pigments and lubricants, and additives that have the same function as one or more prioritised additives but were not short-listed by ECHA.

ECHA provided several reasons for the reduced scope. Some functions have a lower release potential; some substances do not have a clearly identified function in PVC. ECHA also chose to de-prioritise substances which were not registered under REACH (ECHA, 2023a, p. 9). While all of these were practical, relevant choices, the narrowing of the scope of the assessment inevitably led to the exclusion of chemicals which may pose a serious risk to human health and the environment.

For example, the additive "Perylene-3,4:9,10-tetracarboxydiimide" which is used as a pigment, was not among the prioritised substances selected by ECHA. According to the ECHA's database,[6] this substance is nonetheless under assessment for its persistent, bioaccumulative and toxic (PBT) properties. According to companies using this substance, it may also cause damage to organs through prolonged or repeated exposure. The solvent "Dodecan-1-ol" is similarly associated with a long list of adverse effects, including high toxicity to aquatic life and respiratory irritation, according to the classification provided by companies to ECHA.[7] **Highlighting only certain additives as especially concerning cannot lead to the conclusion that the others are harmless.**

Even some substances which belonged to the prioritised additives were left out due to being considered *"of low concern at the time of writing"* (ECHA, 2023b, p. 36). The exclusion of these substances from the scope of assessment may be explained by limited data availability, but fails to acknowledge the danger posed by these chemicals. Diisodecyl adipate, for instance, is suspected to damage fertility or foetuses.[8] Moreover, like the prioritised additives, the release into the environment of these additives through microplastics makes them very persistent and, therefore, just as concerning as the additives that ECHA decided to prioritise. **A significant reduction in the scope likely affected the accuracy of the study in terms of estimating risk.**

Another aspect that led to risk being potentially underestimated in the report is how multiple, highly concerning hazards were taken up in the scoring. When a severe CMR hazard of higher certainty (cat. 1) was identified, properties from a lower certainty category (cat. 2) were ignored for this substance, not only for the same endpoint, but for CMR properties in general. Therefore, additives with CMR cat. 1 properties present potentially higher risk than the hazard scoring indicates, due to additional cat. 2 properties.

6. Substance infocard https://echa.europa.eu/de/substance-information/-/substanceinfo/100.001.223
7. Substance infocard https://echa.europa.eu/de/substance-information/-/substanceinfo/100.003.620
8. Substance infocard https://echa.europa.eu/de/substance-information/-/substanceinfo/100.043.894

One reason for restricting groups of chemicals or, we are proposing here, an entire material instead of individual substances, is regrettable substitution. A potential candidate for regrettable substitution among the prioritised PVC additives is the medium chain ortho-phtalate plasticiser DPHP, which is identified under ECHA's banding as being of medium concern, e.g. due to its potential endocrine-disrupting properties (ECHA, 2023b, p. 59). When analysing available alternatives, the ECHA report identified the long-chain ortho-phtalate plasticiser DIDP to be an alternative option to DPHP for use in artificial leather (ECHA, 2023c, p. 42). This substance is however also among the prioritised additives and, despite its having no harmonised classification, available carcinogenicity data show potential relevance for humans (ECHA, 2023b, p. 59). Replacing one additive with another where other concerning properties and risks are already looming does not reflect the level of human health and environmental protection we aim for in the EU, a bloc which claims to be a frontrunner in chemical regulation.

3.2

The flawed assessment of the risks related to the manufacturing of PVC

Statement on manufacturing:

Because of its toxic lifecycle, it's only a matter of time before we see another crisis like the East Palestine, Ohio train derailment disaster. To keep this from happening again, it is critical that we prevent PVC production, use, and disposal.

Mike Schade, Director, Mind the Store, Toxic-Free Future

The only three risks related to the manufacturing of PVC that the ECHA report considers are the releases of EDC and VCM during the production of PVC, the generation of PCDD/Fs during the production and incineration of PVC waste and the exposure of workers to PVC dust. Based exclusively on information provided by PVC manufacturers the report concludes that "*this information seems then to indicate that the operational conditions and risk management measures implemented in the VCM/PVC industry are adequate and effective to control the risk for workers [and the environment] from EDC and VCM*" and refers to BAT-AELs for PCDDFs set in the relevant BREFs for the EDC/VCM/PVC manufacturing chain and in the Waste Incineration BREF, which limit the amount of dioxins that are emitted to the environment. However, PVC facilities have been identified as significant national polluters - to air and water - by the European Environment Agency (Planet Tracker, 2023).

The ECHA report does not take into account:

- Emissions related to the production of chlorine, including chlorine and asbestos, mercury or PFAS depending on the technology used.

  Chlor-alkali plants routinely release chlorine gas into the air. The EC BAT for chloro- alkali reports average emissions of chlorine to the air of 0.01-15 g/ t of chlorine produced and 0.001-3.8 g/t to water (Brinkmann et al., 2014).

  Chlor-alkali plants using resin membranes release between 30.7 and 51.5 tonnes of PFAS annually to the environment in Europe (Vallete et al., 2018, p. 11).

  Several plants continue using mercury cells, which emit mercury to air and water and contaminate products and waste (Brinkmann et al., 2014).

- EDC and VCM emission data provided by the E-PRTR that are much higher than the data provided by the PVC industry, showing that emission control measures are not sufficient to minimise emissions (Falcke et al., 2017).

- Emissions of other toxic organochlorinated chemicals from EDC/ VCM plants including, among other substances, chloroform, carbon tetrachloride, hexachlorobutadiene, PCBs, dioxins and furans (Vallete et al., 2018, page 43).

- Lack of compliance with risk management measures as shown by enforcement reports (ECHA, 2023d).

3.3

The failure to consider the high risk of PVC accidents

PVC feedstocks EDC and VCM are extremely flammable carcinogenic substances, and VCM may explode if heated. Therefore, manufacturing and transport present a high risk of accidents.

ECHA identified no significant concerns in relation to accidents. They assume EDC and VCM are produced in closed and highly automated systems, where the highest exposure levels occur during maintenance activities. They assume transportation "*within plants or into shipping tankers is done through pipelines. During storage in tanks, inert blanketing substances such as nitrogen are used to prevent venting of 1,2-dichloroethane*" (ECHA, 2023b, p. 16).

There are non-negligible risks beyond those identified by ECHA. The risks posed by the manufacture of PVC were highlighted, for example, by the train accident in Ohio on 3 February 2023 when five train cars containing 400 tonnes of VCM derailed and burned, resulting in a major environmental and health disaster (TFF, 2024). Similar trains travel regularly though highly populated areas in Europe, as EDC and VCM are transported to PVC factories across Europe, for example from INOVYN sites in Antwerp (Belgium) to other INOVYN sites in Belgium and Germany (INEOS, 2023a), or between the INOVYN plant in Martorell (Spain) to the port of Barcelona (La Vanguardia, 2017; INEOS, 2023b). In 2005 a freight train - on its way to Akzo Nobel's plant in Rotterdam - with twelve wagons filled with 700 tonnes of chlorine gas derailed at midday outside Kungsbacka, Sweden (Expressen, 2005).

VCM also leaks into the atmosphere during the alarmingly frequent accidents that take place at European sites. For example, the French Ministry of Environment database ARIA has compiled information on 14 accidents in France since 2007, resulting, in some cases, in emissions of several tonnes of VCM into the air (ARIA, n.a.).

Accidents in chemical plants occur quite often. **Between 2010 and 2021, it is estimated that over 17 million kg of toxic chemicals were released during accidents in Belgium, the Netherlands and Germany alone.** Inovyn Belgium, which produces PVC and its feedstock, is the company with the highest impacts due to accidental releases (Planet Tracker, 2023).

3.4

The limitations of ECHA's assessment of the risks during the use phase

ECHA's report identifies the risks associated with the use of PVC materials by consumers, using a realistic worst-case scenario approach. ECHA finds the use-phase/service-life of articles have a low contribution to the release of the prioritised additives (ECHA, 2023a, p. 28). **However, it only quantifies these risks for a limited number of product categories and additives,** focusing on automotive use, artificial leather, and food packaging, **while neglecting other prominent use cases such as medical applications.**

Although the report states that 27% of medical applications contain PVC with an average additive content of 57% (ECHA, 2023c), the report fails to include medical applications in its assessment. Medical applications should have been included and assessed under a realistic worst-case scenario approach, taking into account the benchmark of a 24-hour exposure and the maximum amount of chemicals used. For example, soft PVC medical tubing, which is often used for long periods of time and generally has a high level of additives, provides a direct route for exposure, especially when used intravenously or as a feeding tube.

This omission is significant as neonatal units have reported high exposures to phthalates, known endocrine disruptors, in babies exposed to PVC tubing (Bernard et al., 2023). The exclusion of medical devices from the risk assessment is a critical gap given the prolonged and intimate nature of exposure in these applications. This demonstrates how the report does not take into account all relevant use scenarios in its assessment of PVC during its service life.

ECHA does not fully consider risks linked to everyday exposure to PVC microplastics and certain additives (mainly phthalates and flame retardants) that can potentially take place in indoor settings. According to the UK Environmental Agency, most additive emissions are likely to occur during article service life (UK EA, 2024). Indoor dust studies have identified PVC microplastic in private apartments and houses, offices, hotels, classrooms, hospitals, and in indoor markets such as those selling clothing, grocery and home furnishings (Bhat, 2024). PVC building materials are widely used in indoor spaces and can be a source of human exposure to volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) (Xue et al., 2023). Swedish studies have shown that PVC flooring has been linked to human uptake of phthalates in infants (Carlstedt et al., 2013) and in pregnant women (Shu et al., 2018).

Water pipes are also a highly relevant use, as they alone account for up to 8% of the PVC being used in the EU (ECHA, 2023c, p. 7). Drinking water is directly taken up by consumers and therefore needs special protection. NGOs looked into the recently published list[9] of substances that States can use in materials in contact with drinking water. Those NGOs have expressed their concern that PVC is on the list, as "*Vinyl chloride (75-01-4), [is] classified by the European Chemicals Agency (ECHA) as carcinogenic 1A, a category that applies to substances when [they are] known to be a carcinogen to humans based on existence of evidence in humans*" (Ecologistas, 2024).

Statement on the use of PVC in water pipes:

What happens to PVC water pipes as they age? I foresee a flux of PVC micro/nanoplastics contaminating the drinking water supplies and the activated sludge at the wastewater treatment facilities. The massive use of PVC in the built environment is another utterly unsustainable trajectory from the point of view of the ongoing health and vitality of Europeans. The nano- and microplastic issues are lurking there also.

Terrence Collins, Teresa Heinz Professor of Chemistry at Carnegie Mellon University

3.5

Uncontrolled burning and dumping not considered

The significant increase in incidents of waste dumping as well as waste fires as a local or regional source of air pollution has not been discussed in the report. Reliable data concerning the frequency of fires in waste storage facilities is not available for all European countries.

However, investigations into the number and source of fires in waste facilities in Sweden for example have confirmed that **numerous fires occur in waste storage annually, and all involve plastics.** Moreover, there is evidence that fires in municipal waste can produce high levels of emissions of environmentally significant chemical species such as dioxins (Fjellgaard Mikalsen, et al., 2021). Given the fact that waste storage and some fires are unlikely to be significantly reduced in the future, reducing the problematic content in waste fractions- i.e. elimination of plastics such as PVC - can meaningfully reduce the overall potential consequences.

Statement on PVC fires:

Fires burning PVC create dioxins which can wreck development and ruin lives in myriad living things including humans. While it was obvious decades ago, few would have entertained the idea that there would be massive fires raging across Europe (and in other places) and a war torching the built environment of 40+ million people.

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3.6

Missing pieces in the evaluation of the risks posed by end-of-life

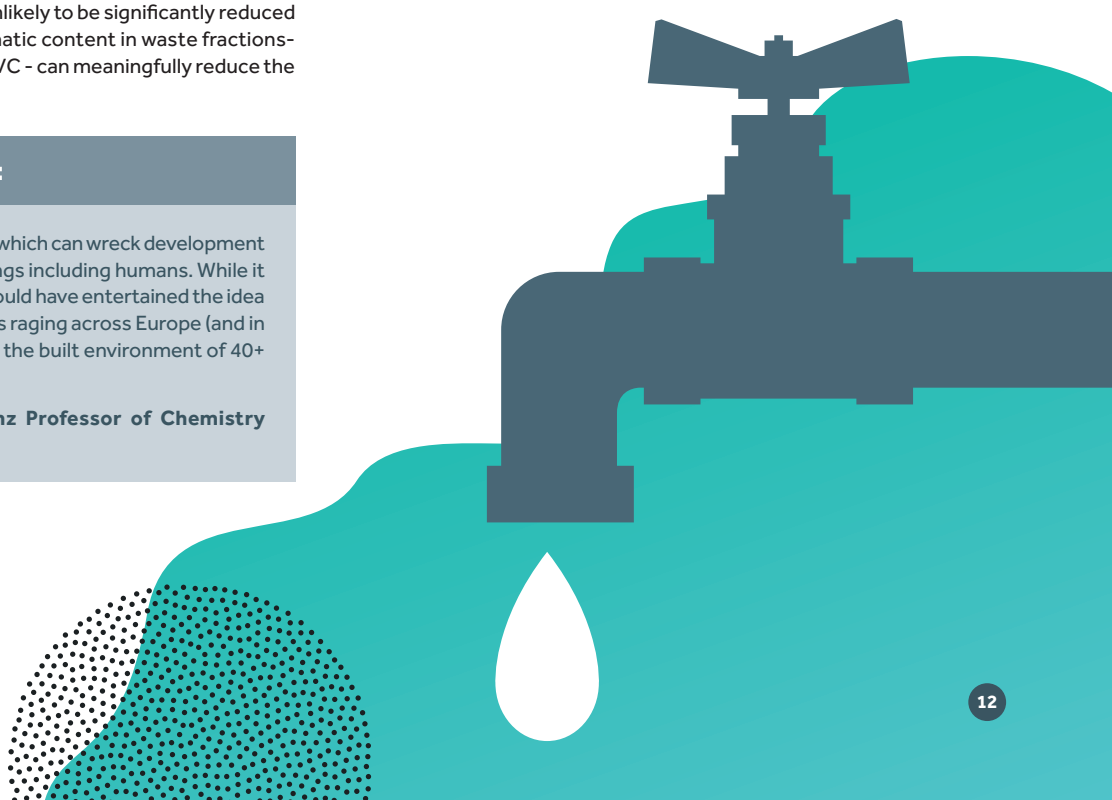
A. Recycling/downcycling

ECHA's final conclusion on progress made in Europe so far, as well as on future perspectives in the case of PVC recycling, is in our opinion too rosy and not supported by the overall evidence presented in the report.

From the quantitative point of view, in total, **close to 8.1 million tonnes of PVC was recycled in Europe from 2000 until 2022, thus over more than 20 years**. At the same time, the EU output of new PVC products was approximately around 120 million tonnes, that is, 6–6.5 million tonnes per year. Importantly, only very few PVC waste streams are, to any extent, recycled today; that small number of waste streams constitute around 70% of all recycled PVC in total. Industry committed to recycling at least 900,000 tonnes of PVC waste into new products by 2025 and one million tonnes by 2030. **With an estimated 2.5-2.9 million tonnes of PVC waste generated annually in Europe, this means that millions tonnes of PVC waste will still need to be landfilled or incinerated every year.** Moreover, it is still unclear if recycled PVC, which is most often of poorer quality due to impurities, can be recovered during a second recycling cycle. This creates another temporary pool of PVC products, leading to increasing amounts of PVC waste entering the waste management system over the coming years.

Stakeholders' expectations that they will improve recycling rates so quickly as to surpass one million tonnes of PVC recycled per year by 2030 (i.e. 12% of PVC marketed each year), and for all waste streams, is a hypothetical scenario which cannot justify regulatory inaction.

Based on the information provided in ECHA's report, **even if *"analytical techniques could theoretically be used to scan individual waste PVC articles"* (to support sorting, a key step needed before recycling), *"in practice this would not be done because it would be economically not viable considering the amount of resources needed"*** (ECHA, 2023c, p. 94). If economic profitability (associated with the availability of sufficient volumes of adequately sourced and sorted PVC waste) cannot be achieved, the recycling of PVC will not take place. **Expectations related to meaningfully higher PVC recycling rates appear therefore as nothing more than wishful thinking.**



9. Commission Decision (EU) 2024/367

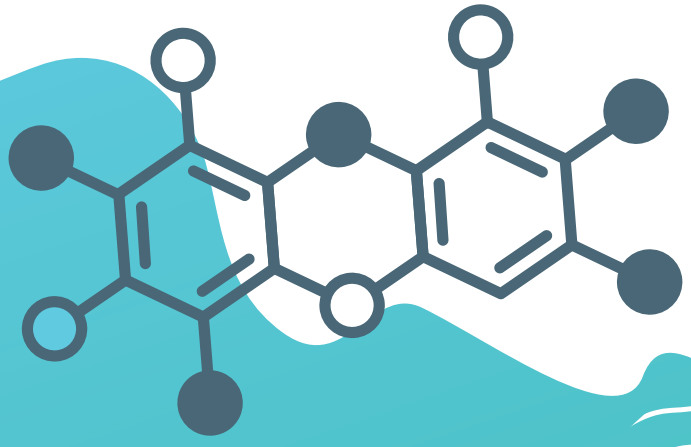
More specifically on the option of chemical recycling of PVC, a report from the Dutch Organisation for Applied Scientific Research from 1999 states that *"it is simply unlikely that a rather expensive technique like chemical recycling will be used voluntarily. Separated collection, cleaning and subsequent treatment by chemical recycling is simply too expensive, and will only play a role in exceptional situations"* (TNO, 1999). Now, 25 years later, chemical recycling is still being portrayed as a promising solution and the industry is *"investing heavily in research and development projects aimed at increasing chemical recycling and extracting and exploiting waste-to-energy by-products for the parts of PVC waste"* (VinylPlus Report, 2023). Over-promising and unjustifiably optimistic reliance on what remains a speculative technology must not lead to another 20-plus-year delay in reaching conclusions on what we know to be the limited options for truly and meaningfully scaling up PVC recycling.

From a technical point of view, there are still many soft PVC products that enter the waste stream and which already have high concentrations of restricted phthalates, which hinder recycling (ECHA, 2023c, p. 93). The introduction of new regulatory limit values for a number of other additives identified as a priority in the ECHA report will undoubtedly lead to the creation of another large amount of waste containing (new) legacy chemicals and will have a major impact on any potential recycling scheme for soft PVC. Again, counting on (currently non-existent) technologies to identify, separate and extract legacy additives from the PVC waste is a dangerous assumption that will result in an increased amount of incinerated PVC waste.

B. Incineration

Incineration is currently the main disposal pathway for post-consumer waste in the EU, accounting for 51% of the total waste (ECHA, 2023b, p. 7). Hazardous substances, such as dioxins and furans (PCDD/Fs), are generated when incinerating PVC as a material. The ECHA report links their generation to the technical equipment used and operational conditions within incineration plants, and they consider that emissions can be reduced through abatement systems, allowing *"incineration plants to meet the emission limits set in Europe"* (ECHA, 2023b, p. 7).

ECHA's report sees the regulatory responsibility for limiting these emissions as sitting within the Industrial Emission Directive (IED) and the limits it imposes though BATs-AELs and permitting authorities. The risk from these incineration transformation products is therefore considered sufficiently manageable through existing regulation (ECHA, 2023a, p. 7), although no evidence that this is the case is provided. Indeed, **the opposite is true: recent reports from biomonitoring research (ZWE, n.a.) on emissions from "state-of-the-art" incinerators across Europe show massive contamination in their vicinity from substances of very high concern such as dioxins, which can be linked to burning PVC** (dioxins (PCDD/F). Policy makers' doubts about current evidence on sufficient control of emissions led to the introduction of stricter requirements on data reporting in the recently revised IED.



C. Microplastic releases

Finally, as ECHA correctly concluded in its report, **end-of-life PVC (in recycling and landfills) can significantly contribute to microplastic pollution and interlinked releases of prioritised PVC additives**. ECHA admits that it is unclear if the implementation of technological means on recycling sites would be feasible and/or effective at reducing PVC microplastic release (ECHA, 2023a,p. 63). The best, feasible and most efficient solution is to reduce the amount of PVC reaching the waste stage, which means reducing the amount of PVC put into products in the first place.

Moreover, an overlooked potential source of microplastics, linked to the end-of-life phase, is incineration. Growing evidence shows that unburned plastics still exist in the bottom ash (a solid residue from incinerators). The results of a recent study showed that bottom ash was a neglected microplastics source with an abundance of 1.9–565 n/kg, which indicated that per metric tonne, such waste produces 360 to 102,000 microplastic particles after incineration (Yang et al., 2021).

In conclusion, we note that ECHA's assessment was implemented separately for rigid and soft PVC. Since there is a large difference in terms of the use volumes of the prioritised additives between the rigid and soft PVC and their end-of-life options, the recommended regulatory actions should also be better specified and differentiated for those two types of PVC applications.

3.7

The failure to account for the true cost of PVC

When considering substitution opportunities for PVC, **ECHA's report finds that *"[r]eplacing PVC with alternative materials is costly for many of the uses, as PVC is often a low-cost option"*** (ECHA, 2023c, p. 116).

This conclusion however does not consider all relevant costs, such as the costs related to:

Recycling

Post-consumer waste streams are more heterogeneous than for waste that occurs in the production process (pre-consumer). For post-consumer waste streams the additives are not well known. If there is no strong economic incentive for recovery, such as those which exist for the metals in cables, for uses such as PVC pipes, additional costs such as digging and cleaning costs make it economically unattractive to recover them (ECHA, 2023c, p. 95).

Waste treatment of PVC and its recycling face several obstacles for technical and economic reasons. One example is the wide use of PVC in composite materials, i.e. strongly connected materials, such as flooring, cables and blister packs. The industry association itself points out that *"[s]everal initiatives to improve the treatment of composite products are [...] [to date] under development and not available at industrial scale. The VinylPlus initiative indicated that the recycling of composite PVC material is most likely only feasible through selective dissolution processes"*, which means that recycling of PVC composites is neither easy nor cheap, and does not yet exist (EC, 2022b, p. 103). Even for PVC uses that are not composites, in many cases no sorting of waste takes place at the source, and ***"[a]lthough mechanical recycling is well established technology, economic constraints are still a bottleneck and recycling processes are limited by cost"*** (EC, 2022b, p. 104f.). This applies to the majority of PVC waste.

Health & remediation

As mentioned above, ECHA's report does not include a quantitative comparison of human health and environmental risks between PVC and alternative materials. The impact assessment could not monetise human health and environmental benefits, which were therefore described only qualitatively (ECHA, 2023c, p. 116). Although benefits were identified, and although ECHA limited its study to uses where only the material costs and nothing else were in the impact assessment, the cost estimates are only indicative. Nevertheless, **the conclusion of the impact assessment assumes *"for many of the uses [that PVC is] often a low-cost option" what sounds like a conclusive assessment, despite the benefits and cost to society not being monetised*** (ECHA, 2023c, p. 116).

An example of relevant health and environmental costs that are not considered are those resulting from the impacts of PVC micro- and nano-particles (MNPs) that are found in human bodies. A recent study found elevated levels of PVC MNPs in patients' carotid plaques, among eleven types of plastics that were identified (Marfella et al., 2024, p. 908). PVC MNPs were also the most common plastic detected in human placenta (Garcia, et al., 2024) and emerged as the second most common plastic in the testicles (Hu, et al., 2024). Previous studies found PVC to be among the "most abundant MNPs found in human breast milk[10] and urine".

Waste treatment

For the development of risk management options as well as in the socio-economic assessment of regulatory measures, the guidance also suggests including end-of-life costs in any assessment. This aspect needs further attention in the assessment of the costs related to the lifecycle of PVC.

The way waste disposal costs for current PVC products are considered in ECHA's impact assessment is not clear. The calculation of consumer surplus losses through substitution looks at the "article lifetime costs" which include purchase, installation, replacement, maintenance and dismantling costs (ECHA, 2023c, p. 2). The latter dismantling costs do not take into account the disposal costs, nor do the additionally calculated producer surplus losses. The two monetised cost figures of substitution therefore do not reflect the full lifetime cost of PVC, making it impossible to conclude that PVC is "cheap". *"ECHA rejects a phasing out of PVC, especially with the socioeconomic argument of the low costs of PVC compared to alternative plastics/materials. However, this argument is only applicable if the additional costs of the post-consumer phase—especially for the separate collection and disposal of PVC—are not taken into account. If included, PVC becomes an expensive plastic."* (Lahl & Zeschmar-Lahl, 2024, p. 10).

The ECHA report states that "*Stakeholders [i.e. VinylPlus] expect progress in the future to increase the share of PVC waste that is recycled with technological development (mechanical & chemical recycling) and social innovation ("designed for recycling", market incentives for collection)*" yet this narrative with its promises and hopes have existed for a long time already and has not materialised. It is rather the case that mechanical recycling "*cannot make a relevant contribution to solving the stock problem*" and that "*to date, not a single large-scale plant exists that can chemically recycle relevant quantities of PVC waste*" (Lahl & Zeschmar-Lahl, 2024, p. 8).

Looking at this expert assessment of the waste treatment costs of PVC and the poor outlook for it to be part of the "clean" circular economy that the Chemicals Strategy for Sustainability aims for (EC, 2020, p. 5), PVC emerges as being expensive and set to torpedo the EU's targets in other areas such as the circular economy.

10. "*Within the identified polymer matrices, the most abundant ones were polyethylene (PE, 38%), polyvinyl chloride (PVC, 21%), and polypropylene (PP, 17%) [...]*" (Ragusa et al., 2022)

4 THE BIGGER PICTURE - THE EU HAS THE LEGAL MANDATE AND OBLIGATION TO PHASE OUT PVC

PVC is considered to be one of the most harmful polymeric materials, which explains its listing in 2022 as a priority candidate for restriction under the REACH Regulation (EC, 2022a), and the mandate ECHA was given to conduct this study.

The European Commission is compelled by EU law to take the strictest measures against chemicals that pose the highest concern to society because of their risks to health and the environment. In its report, ECHA has provided policy makers with sufficient evidence of that concern - both for the additives used in PVC and for PVC itself - and therefore with the mandate to act. **In the absence of a compelling reason for disregarding ECHA's report, the Commission has no choice but to move forward with a PVC restriction proposal.**

4.1

The broader legal framework

The EU treaties require EU authorities to act pursuant to the objectives of protecting the environment and health (Article 191 TFEU). That entails the duty for policy makers to take action each time there is sufficiently serious evidence that damage to the environment or people's health may occur. That is the essence of the precautionary principle, and a prerequisite for the realisation of the human rights which the EU is bound to protect pursuant to international legal instruments and the EU Charter of Fundamental Rights. These objectives and principles are explicitly mentioned in the REACH Regulation (Article 1, Recital 131, confirmed in case C-558/07), the main tool by which the EU institutions and Member States are able to fulfil their obligation to prevent the risks posed by hazardous chemicals such as PVC. The proposals in the Chemicals Strategy for Sustainability, including to develop GRA and the group approach to chemical restriction, are further actions which would support the implementation of the EU's obligations.

4.2

The benefits of restricting PVC under REACH

REACH allows policy makers to restrict the worst chemical substances or mixtures (Art 68.2), or of those which pose an unacceptable risk to human health or the environment (Art 68.1). The Court of Justice clarified that this regime is "*often the most effective measure for achieving the objective pursued by that regulation*" (T-226/18). It is also the one the European Commission has committed to using, taking a generic risk approach, in order to eliminate, progressively, the chemicals known to be most harmful and for which there exist safer alternatives. This approach is "*simpler, generally faster and provides clear signals to all actors - enforcement authorities, industry and downstream users - on the types of chemical substances where innovation should be prioritised by the industry*" (EC, 2020, p. 9).

The benefits of using the restriction regime for tackling the risks posed by PVC flow naturally from ECHA's report:

- **Legally fit for purpose**: REACH enables the European Commission to propose restrictions of chemical mixtures when they are proven to pose a serious risk and lack adequate control. PVC and its additives constitute a mixture for which there is evidence of such a risk. The information ECHA collected is enough to trigger a restriction for both PVC and its additives under Article 69(1).
- **Simple and effective**: With a single measure, the EU could contribute to eliminating the production, marketing, use and import of a chemical known to pose multiple risks to both health and the environment. ECHA itself has emphasised the outstanding opportunity that REACH restrictions offer, as "*[i]t is unlikely that another legislation determining restrictions could cover in one process the necessary number of substances and/or substance groups and all relevant uses in practically one assessment*" (ECHA, 2023a, p. 65). We believe that this assessment equally applies to banning the PVC as a material with all its hazardous additives, not merely the prioritised additives analysed in the report.
- **A level playing field and easier enforcement**: Unlike risk management measures implemented on site - which have shown to be challenging to comply with and enforce (ECHA, 2023d) - restrictions allow for harmonised rules throughout the EU. They ensure a level playing field for companies while easing enforcement over the long run for national authorities.
- **Justified economic impacts**: REACH requires policy makers to consider the socio-economic impacts of a restriction when assessing whether it is the most appropriate regulatory option. These impacts are broadly understood (Annex XVI) and aim to support the authorities in making a final decision that is sufficiently protective, yet not disproportionate. In the light of Annex XVI of REACH, the socio-economic costs for the PVC industry cannot be the sole barrier to action, considering the broader societal costs that inaction would trigger as well as the availability of alternatives for all uses (ECHA, 2023a, p. 2). On several occasions the Court of Justice has made clear that industry's financial concerns in relation to a restrictive measure cannot alone take precedence over the protection of health and the environment (Case C-144/21). As in the discussions on some PFAS or microplastics, persistence, and therefore the likely increase of the particle stock in the environment, is a concern in itself that the Commission should take seriously if it wants to avoid an even higher cost linked to inaction.

5 CONCLUSIONS

It is clear from ECHA's investigative report that PVC as a material and its additives pose a serious risk for health and the environment. These findings already provide sufficient evidence to support strong regulatory action:

- It is undeniable, as ECHA sees it, that a few harmful additives, in particular plasticisers, heat-stabilising organotins, and flame retardants, are out of control and should be subject to an EU-wide restriction.
- Beyond the most well-known additives, ECHA has also found that alternative additives are also of concern.
- While not recommending specific regulatory action beyond emission minimisation measures, ECHA acknowledges that PVC itself poses a risk to human health and the environment, notably through the release of microplastics. While control measures on site could help reduce microplastic emissions, a restriction on PVC is a much more monitorable, effective and enforceable means of action. This regulatory option was not explicitly dismissed by ECHA.
- ECHA acknowledges that alternatives to PVC are available for all uses. The main obstacle to substitution is high cost - an assessment that, as we showed, is incomplete as it fails to take into consideration all relevant costs.
- With regard to end of life, ECHA acknowledges the technical and economic limitations of sorting and collecting of numerous separate PVC waste streams to ensure recycling and proper waste management. That is an additional argument in favour of a PVC restriction.
- Significant evidence, e.g. related to the risks from PVC manufacturing or accidents, as well as from exposures during the PVC use phase, is still missing from ECHA's analysis. This may lead to a significant underestimation of the broader risk posed by PVC.

Therefore, while ECHA does not explicitly recommend adopting a restriction for both PVC as a material and for its additives, its findings nevertheless do not oppose a ban on the material PVC; **in our reading, they support such a ban.**

In addition to the usual risks considered in relation to chemicals, the assessment of PVC's end-of-life fate is highly relevant within the context of the Circular Economy Action Plan and the Zero Pollution Action Plan. While recycling has been relatively successful for a small number of specific post-consumer waste streams coming from the construction sector, PVC from all other waste streams (i.e. the bulk of PVC post-consumer waste) is still incinerated and landfilled, and the report points out the technical and economic obstacles to changing this situation.

A targeted ban of only a few specific groups of additives (eg. ortho-phthalates, flame retardants, etc.) would instead be insufficient, if not counterproductive, given the high risks at stake. Among other consequences:

- It is likely to fuel regrettable substitution, taking into account the wide number of substances used as additives in PVC (over 400) and the limited scope of the ECHA report analysis;
- It will not help address the identified risks from microplastics;
- It will not address the risk linked to manufacturing PVC resins and to accidents;
- It may not necessarily enhance recycling as additives are not the main technical barrier to PVC recycling; but most importantly it is unlikely to solve the many issues linked to PVC landfilling and incineration;
- It will not contribute to addressing the increasing stock of plastic in the environment (pipes, cables, microplastics).

The European Commission recognised in its Chemicals Strategy for Sustainability that group restrictions are the way forward to regulate the most harmful groups of chemicals. Banning only a few additives instead of the broader PVC group would constitute a move away from this approach, and solve only part of a wider issue.

In order to ensure that all risks posed by PVC are once for all and effectively addressed, the Commission must fulfil its mandate and request that ECHA prepare a restriction dossier under REACH.

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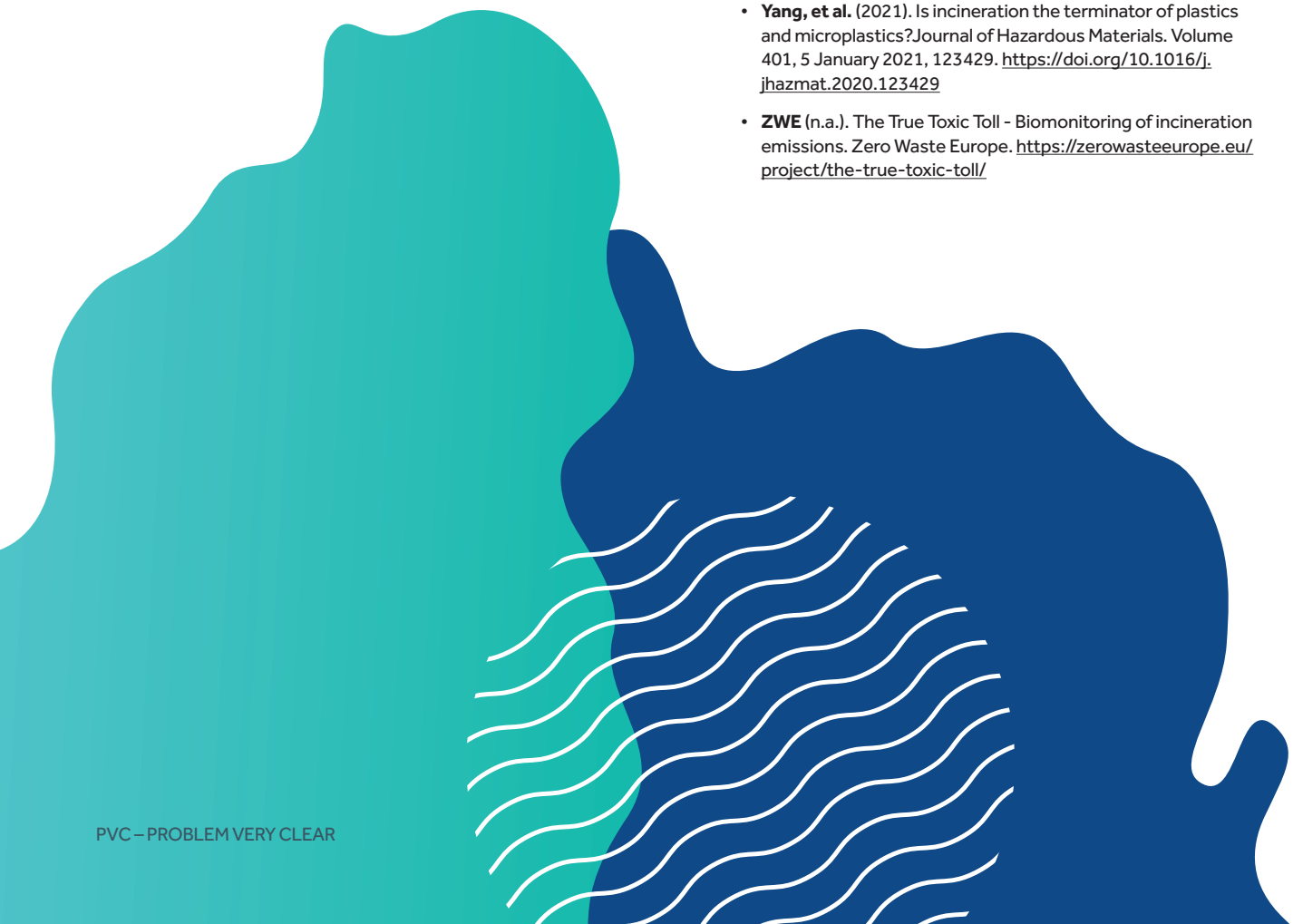

#breakfreefromplastic

The **#breakfreefromplastic** Movement is a global movement envisioning a future free from plastic pollution. Since its launch in 2016, more than 11,000 organizations and individual supporters from across the world have joined the movement to demand massive reductions in single-use plastics and to push for lasting solutions to the plastic pollution crisis.

RETHINK PLASTIC

Rethink Plastic, part of the Break Free From Plastic movement, is an alliance of leading European NGOs, representing thousands of active groups, supporters and citizens in every EU Member State.

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Design: Blush Design Agency – www.blushcreate.com

June 2024