ZERO WASTE EUROPE

Building a healthy circular economy

Integrating chemicals, products, and waste under the Circular Economy Act

Policy brief

December 2025

zerowasteeurope.eu

Contents

Executive summary

Our health is shaped not only by lifestyle choices, such as diet and physical exercise, but also by environmental exposures we often cannot choose. It is precisely this lack of choice that matters. Society is continuously, and often unknowingly, exposed to a low-level mixture of harmful chemicals – a problem that remains both underestimated and largely unaddressed. Documented adverse health effects include, but are not limited to, altered neurological and sexual development, reduced fertility, as well as increased risks of asthma, obesity, diabetes, cardiovascular disease, neurologic impairment, and cancer.

The most recent and comprehensive report on Europe's environment, climate and sustainability by the European Environment Agency clearly concluded that **pollution and environmental degradation puts our health and wellbeing at risk, as well as our economic security and future prosperity**.

It is undeniable that **chemical exposure has significant costs**. Diseases caused by toxic chemical exposures can lead to massive economic losses, including health care expenditures and lifelong productivity losses resulting from reduced cognitive function, physical disabilities, and premature death, amongst others.

Both health impacts and economic costs provide a compelling rationale for the strong integration of health and safety considerations into any new circular economy policies, including within the design, implementation, and monitoring stages. As pollution is preventable, **we have a unique opportunity to use circularity and competitiveness to prevent a future public health crisis.**

In a clean and safe circular economy, all materials and products should be free from harmful chemicals in order to ensure their safety for both primary and secondary uses. This measure has already been confirmed in the EU Chemicals Strategy for Sustainability. The upcoming Circular Economy Act (CEA) should therefore align with the endorsed chemical strategy and incentivise adequate actions.

Recommendations

Achieving a healthy circular economy is complex but possible. It requires coordinated action across diverse pieces of legislation, supported by a holistic approach that addresses the entire lifecycle; from raw material extraction and manufacturing through to recycling and end-of-life disposal. Our paper provides the following recommendations for policy-makers and authorities:

- Include in the Circular Economy Act (CEA) the recitals that refer to key principles of the EU Chemicals Strategy for Sustainability, most notably:
    - A clean circular economy requires a combination of actions upstream, to ensure that products are safe and sustainable-by-design (including design-for-recycling), and downstream, to increase safety and trust in recycled materials and products.
    - The creation of a well-functioning market for secondary raw materials requires adequate information on the chemical content of products being available to consumers, value chain actors, as well as waste operators.
    - Recognise the increasing importance of decontaminating materials containing hazardous chemicals and/or substances of concern.
- Include binding requirements for traceability of chemicals and materials along the value chain. At a minimum, information about substances of very high concern should become mandatory in the Digital Product Passport (DPP).
- Develop a specific decision-making methodology to support decisions on the recyclability of waste, with particular attention to substances of concern.
- Include a requirement for communication of substances of very high concern in articles above a threshold at 0.01%, in the revised REACH regulation (Article 33).
- Support the development of EU-wide End-of-Waste (EoW) criteria following the prioritisation list established in 2022, while seeking to support mutual recognition principle between Member States in the meantime. In parallel, uphold the full consideration of the fourth criterion of the EoW criteria defined in Article 6 of the Waste Framework Directive (WFD) related to the adverse effects on human health and the environment to ensure that recycled materials are safe, traceable, and used within a closed regulatory loop.
- Introduce ecomodulation fees in the reformed European Extended Producer Responsibility (EPR) system, and incentivise the use of safe chemicals and design of toxic-free products via the polluter-pays principle.
- Support funding and de-risk innovation across the value chain, through public-private partnerships that support small and medium-sized enterprises (SMEs) and start-ups working on safe chemicals and sustainable materials.
- Support EU-made safe products via updated green criteria in the revised EU's Public Procurement Directive, and their mandatory use, including via public investments.
- Propose ambitious measures in the "European Product Act" to update rules for better product safety and stronger market surveillance. The revision of the Market Surveillance Regulation should strengthen legal liability, provide more enforcement resources, enhance pan-EU coordination and update rules for digital trade.

Introduction

Human health depends on more than just lifestyle choices related to diet and physical exercise. Environmental exposures play an increasingly critical role in both human and the planet's health, yet these exposures are largely beyond individual control. One of the most underappreciated threats to public health is society's chronic, low-level exposure to a number of hazardous chemicals. Correlations between widely used chemicals and children's diseases continue to emerge, while prenatal and parental exposure to certain chemicals is increasingly associated with serious health effects on multiple generations. It includes, but is not limited to, reduced fertility, altered sexual development, high asthma risks, obesity, diabetes, cardiovascular disease, neurological impairment, and cancer.

The European Environment Agency's most recent comprehensive report on Europe's environment, climate, and sustainability makes clear that pollution and environmental degradation threaten not only human health and wellbeing, but also economic security and future prosperity. Current and future economic costs are in fact huge: diseases linked to toxic chemical exposures result in massive healthcare expenditures, lifelong productivity losses from reduced cognitive function and physical disabilities, diminished quality of life, and premature death.

These health consequences and their subsequent economic costs make it abundantly clear that chemical safety must be integrated into any circular economy framework, including design, implementation and monitoring. Given that pollution is preventable, the current administration has an obligation towards future generations to leverage circularity and competitiveness in order to address current challenges and prevent the escalation of an already growing public health crisis.

In a genuinely clean and safe circular economy, all materials and products should be free from toxic chemicals in order to ensure their safety, both for primary and secondary uses - enabling safe, long-term use, reuse, and recycling. This vision was articulated in the EU Chemicals Strategy for Sustainability. The upcoming Circular Economy Act (CEA) must therefore align with this strategy and incentivise the concrete actions needed to achieve it.

State of play concerning societal exposure to chemicals

Over the last fifty years, our economies have been designed to prioritise productivity, efficiency and convenience-driven by the will to continuously increase the Gross Domestic Product (GDP). This has led to a culture of extreme overproduction, which in turn has caused the overshooting of several planetary boundaries.[1] This has not only had severe consequences for our planet, but also for our health and wellbeing. Despite a growing number of regulations and policies introduced in the EU over the last 20-30 years, society's health has been compromised, and is in steady decline.

> *"People are exposed to complex mixtures of chemicals in their daily lives by consuming contaminated food and drinking water, breathing in polluted air and dust and using consumer goods. Human exposure to hazardous chemicals is linked to a wide range of health impacts, amongst others, skin sensitisation, reproductive toxicity, neurological disorders, endocrine disruption and carcinogenicity."* EEA, 2025

Innocent until proven guilty?

Regulations exist for a reason: they protect our health, our rights and the environment. It is widely acknowledged that the EU has the best chemical regulations in the world. The main EU chemicals law — Registration, Evaluation, Authorisation, and Restriction of Chemicals (REACH) — should operate on the principle of "*no data, no market*." This principle aims to reverse the burden of proof, which requires companies to register "substances on their own, in mixtures or in articles to be manufactured in the European Community or placed on the market". In theory, the principle stipulates that if companies refuse to register the substance, access to the market for the substance or article concerned will be denied. In practice, the EU laws pressure authorities to allow chemicals on the market within just three weeks, without an even basic understanding of their hazards. Many chemicals remain insufficiently tested, and current EU risk assessments do not address their cumulative toxicity. REACH places a heavy burden on government regulators to prove harm – turning it into a "*no data, no problem*"[2] principle. Even when toxicity is proven, **it takes over a decade to stop the most**

[1] Potsdam Institute for Climate Impact Research (PIK). *Planetary Health Check 2025*. Potsdam, Germany: Planetary Boundaries Science (PBScience), 2025. www.publications.pik-potsdam.de/pubman/item/item_32589/component/file_33044/PlanetaryHealthCheck2025.pdf.

[2] MEP Jutta Paulus, Group of the Greens/European Free Alliance.

hazardous chemicals from being used in Europe.[3] This means that communities continue to be exposed to toxics, and governments and taxpayers are burdened with the costs of the pollution.

As a result, the "best regulations in the world" dramatically failed to protect the society from having dozens of harmful chemicals, such as phthalates, bisphenols, flame retardants, heavy metals and PFAS, in their bodies.[4] The levels of these chemicals and their combined effect (mixture toxicity) often raise long-term health concerns.[5] Although emissions from a number of regulated dangerous chemicals have dropped in the EU, exposure to substances with unknown effects remains high.[6] At the same time, the volume and number of substances put on the market are increasing. It took more than 20 years to recognise danger linked to endocrine disruptors,[7] while neurotoxicants[8] and mutagenicity data for many low-tonnage REACH substances[9] are still a regulatory blind spot - despite being among the most devastating.

Painful reality check

According to some estimates, about 8% of deaths can be attributed to hazardous chemicals. These numbers could be underestimated, given that we are aware of the health effects of only a small portion of chemicals in use today. In some cases, these substances also interact, resulting in toxic chemical cocktails.[4] The EU is seeing an increase in cancer rates, infertility, and metabolic diseases like Type 2 diabetes.[10] Chemicals are also one of the significant environmental cardiovascular risk factors.[11] The proven impact of chemicals on our health – and on that of future generations – shows that we cannot simply keep polluting and clean up 'later'.[12]

---

[3] European Environmental Bureau. *The Need For Speed: Why It Takes the EU a Decade to Control Harmful Chemicals and How to Secure More Rapid Protections*. 2022. www.eeb.org/library/the-need-for-speed-why-it-takes-the-eu-a-decade-to-control-harmful-chemicals-and-how-to-secure-more-rapid-protections.

[4] European Human Biomonitoring Initiative. "HBM4EU." Accessed December 15, 2025. www.hbm4eu.eu.

[5] European Environment Agency. "Risks of Chemical Mixtures for Human Health in Europe." Last modified May 8, 2025. www.eea.europa.eu/en/european-zero-pollution-dashboards/indicators/risk-of-chemical-mixtures-in-humans.

[6] European Environment Agency. "Chemicals." Last modified April 30, 2025. www.eea.europa.eu/en/topics/in-depth/chemicals.

[7] Gore, Andrea C., et al. "Leading the Way: How the Endocrine Society Continues to Pioneer Endocrine-Disrupting Chemicals Research." *Endocrine News*, 2023. www.endocrinenews.endocrine.org/leading-the-way-how-the-endocrine-society-continues-to-pioneer-endocrine-disrupting-chemicals-research; Endocrine Society. *Endocrine-Disrupting Chemicals in the European Union*. January 2023. www.endocrine.org/-/media/endocrine/files/advocacy/society-letters/endocrine-disrupting-chemicals-in-the-european-union-jan-2023.pdf.

[8] ChemSec. "Neurotoxicants Have Been a Regulatory Blind Spot—But Not Anymore." Accessed December 15, 2025. www.chemsec.org/neurotoxicants-have-been-a-regulatory-blind-spot-but-not-anymore.

[9] Hjorth, Rikke, et al. "How Many Mutagens Are Missed Under REACH Due to Limited Low Tonnage Information Requirements?" *Regulatory Toxicology and Pharmacology* 164 (2025): 105946. www.pubmed.ncbi.nlm.nih.gov/40992498.

[10] European Commission, Joint Research Centre. "Cancer Cases and Deaths on the Rise in the EU." October 2023. www.joint-research-centre.ec.europa.eu/jrc-news-and-updates/cancer-cases-and-deaths-rise-eu-2023-10-02_en; European Society of Human Reproduction and Embryology. *Factsheet on Infertility: Prevalence, Treatment and Fertility Decline in Europe*. April 2024. www.eshre.eu/-/media/sitecore-files/ESHRE-internal/EU-Affairs/ESHRE_InfertilityFactsheet_April2024Final.pdf; "Alarming Rise in Young-Onset Type 2 Diabetes." Editorial. *The Lancet Diabetes & Endocrinology*, June 2024. www.thelancet.com/journals/landia/article/PIIS2213-8587(24)00161-X/fulltext; International Diabetes Federation Europe. *Type 2 Diabetes: A Preventable Catastrophe? A Call to Action*. May 2023. www.idf.org/europe/media/uploads/sites/2/2023/06/IDF-Europe_Type-2-Diabetes.-A-preventable-catastrophe.pdf.

[11] European Environment Agency. *Preventing Cardiovascular Disease Through a Healthy Environment*. EEA Briefing, 2025. www.eea.europa.eu/en/analysis/publications/preventing-cardiovascular-disease-through-a-healthy-environment.

[12] Zero Waste Europe. "We Had a Green Deal, Now Europe Needs a Health Deal." Accessed December 15, 2025. www.zerowasteeurope.eu/library/we-had-a-green-deal-now-europe-needs-a-health-deal.

An important factor which we cannot ignore are the biological determinants that impact our health; forcing us to recognise that **children and women need more protection**. Current evidence clearly shows that persistent organic chemicals promote hypertensive disorders during pregnancy, placental abnormalities, and fetal growth restriction,[13] but diseases associated with in-utero and early-life exposures can manifest any time during the life span. Some do not become evident until later in childhood, adolescence, or even adulthood. Men are also at risk, with recent evidence warning that chemical pollution is fuelling a **growing men's health crisis in Europe**. Rates of prostate and testicular cancer, as well as male infertility, continue to rise — with evidence linking these trends to exposure to harmful chemicals such as phthalates, PFAS, pesticides, and microplastics. Alarmingly, exposure even before conception is associated with disorders in male children.[14]

The Bonn Declaration for a Planet Free of Harm from Chemicals and Waste explicitly calls for gender mainstreaming in chemical management, to ensure that chemical safety strategies are inclusive, equitable, and effective. Vulnerable groups also include individuals with increased susceptibility due to pre-existing disease, compromised immunity, elderly people or people with poor health conditions.[15]

Emerging research links multiple noncommunicable diseases in children to manufactured synthetic chemicals.[16] Over the past half-century, noncommunicable diseases (NCDs) rates in children have risen sharply, and a large body of evidence links them to synthetic chemicals:

- The incidence of childhood cancers has increased by 35%.
- Male reproductive birth defects have doubled in frequency.
- Neurodevelopmental disorders now affect 1 in 6 children.
- Autism spectrum disorder is diagnosed in 1 in 36.
- Paediatric asthma has tripled in prevalence.
- Paediatric obesity has nearly quadrupled in prevalence and has driven a sharp increase in type 2 diabetes among children and adolescents.

The assessment of chemical pollution and human health in Europe showed that deteriorating trends have dominated in the last 10-15 years, and that they are largely not on track to meet policy targets.[17] In parallel, **significant costs linked to chemical exposure only increase**.

---

[13] Wager, Christine G., and Ramkumar Menon Thompson. "Development and Child Health in a World of Synthetic Chemicals." *Nature Pediatric Research*, 2024. www.nature.com/articles/s41390-024-03547-z.

[14] Health and Environment Alliance (HEAL). *Chemical Pollution and Men's Health: A Hidden Crisis in Europe*. Science Report, 2025. www.env-health.org/wp-content/uploads/2025/11/2025_Chemical-Pollution-and-Mens-Health-Report.pdf.

[15] Scientific Committee on Health, Environmental and Emerging Risks (SCHEER). Definition of vulnerable groups, 23. www.health.ec.europa.eu/document/download/1780f59c-c3a4-4eca-8366-ca9e48934889_en?filename=scheer_o_064.pdf.

[16] The Consortium for Children's Environmental Health. "Manufactured Chemicals and Children's Health: The Need for New Law." *New England Journal of Medicine*, 2025. www.nejm.org/doi/abs/10.1056/NEJMms2409092.

[17] European Environment Agency. *Europe's Environment and Climate: Knowledge for Resilience, Prosperity and Sustainability*. 2025. www.eea.europa.eu/en/europe-environment-2025/main-report.

Economic costs of chemical exposure-associated disease burden:[18]

- Plastic chemicals are responsible for health-related economic losses exceeding globally $1.5 trillion per year.
- Estimated annual costs for diseases attributed to EDCs are €163 billion in the EU and $340 billion in the USA.
- A cost burden of $5–62 billion per year was estimated for diseases attributed specifically to PFASs in the US (including low birth weight and childhood obesity).
- Newer data attributing disease to phthalates suggest an additional $24 billion per year in cardiovascular mortality and $4 billion in preterm birth.

Human exposure to PFAS has been estimated to cost EUR 52-84 billion in annual health costs in Europe due to endocrine, immune, reproductive and developmental effects.[19]

The cleaning of all the PFAS contamination in Europe would cost upwards of €2 trillion over a twenty-year period, the accumulation of a €100 billion annual toll.[20]

In 2017, air pollution emitted from large industrial sites in Europe is estimated to have cost society between €277 and €433 billion. This is equivalent to about 2-3 % of EU GDP.[21]

The costs related to chemical exposure and neurodevelopmental disease and IQ loss in the EU may reach EUR 157 billion per annum.[22]

The adverse health effects related to three toxic chemicals commonly found in plastics (Bisphenol A, Di-2-ethylhexyl phthalate and Polybrominated diphenyl ethers) reached $1.5 trillion in a single year, in the form of premature deaths, chronic diseases and lower IQs.[23]

The economic burden of the men's health crisis is significant: the related costs are estimated to exceed €15 billion annually. Prostate cancer is now the 3rd most common cancer in men, with €9 billion in costs. Male infertility affects up to one in twelve couples, costing €3–4.5 billion a year.[15]

[18] Muncke, Jane, et al. "Health Impacts of Exposure to Synthetic Chemicals in Food." *Nature Medicine*, 2025. www.drive.google.com/file/d/1kuVtaMTEX_EKDxWUs-N30MI2FtE7fpkn/view.

[19] Goldenman, Gretta, et al. *The Cost of Inaction: A Socioeconomic Analysis of Environmental and Health Impacts Linked to Exposure to PFAS.* Copenhagen: Nordic Council of Ministers, 2019. www.norden.org/en/publication/cost-inaction-0.

[20] Forever Lobbying Project. "Lobbying." Accessed December 15, 2025. www.foreverpollution.eu/lobbying.

[21] European Environment Agency. *Counting the Costs of Industrial Pollution.* 2021. www.eea.europa.eu/en/analysis/publications/counting-the-costs-of-industrial-pollution.

[22] Demeneix, Barbara. "Evidence for Prenatal Exposure to Thyroid Disruptors and Adverse Effects on Brain Development." *European Thyroid Journal* 8, no. 6 (2019). www.etj.bioscientifica.com/view/journals/etj/8/6/ETJ504668.xml.

[23] Cropper, Maureen, et al. "The Benefits of Removing Toxic Chemicals from Plastics." *Proceedings of the National Academy of Sciences* 121, no. 52 (2024): e2412714121. www.pnas.org/doi/10.1073/pnas.2412714121.

Part of the industry is also united behind the need to phase out the most harmful chemicals. This is to ensure a competitive, toxic-free circular economy while supporting/ensuring the global competitiveness of European industry, and benefiting human health and our environment.[24] Some companies state that the strict environmental regulations in Europe are actually an advantage, which supports their business case.[25]

In other words: **let's start doing things right from the beginning.**

[24] ChemSec. *Joint Letter: An Ambitious REACH Revision Is Key for the Circular Economy.* 2025. www.chemsec.org/company-letter-an-ambitious-reach-revision-is-key-for-the-circular-economy.
[25]" The Antwerp Renaissance of the Plastics Sector." *CW2 International*, November 19, 2025. www.sciencelink.net/features/the-antwerp-renaissance-of-the-plastics-sector/23013.article.

Toward a healthy (and truly clean) circular economy

> "*In a clean circular economy it is essential to boost the production and uptake of secondary raw materials and ensure that both primary and secondary materials and products are always safe. This requires a combination of actions upstream, to ensure that products are safe and sustainable-by-design, and downstream, to increase safety of and trust in recycled materials and products.*"
>
> The EU Chemicals Strategy for Sustainability (p.5)

As pointed out by the EEA, **pollution and environmental degradation does not only put our health and wellbeing at risk, but also our economic security and future prosperity**.[17]

The Circular Economy Act must take into account that **the control of chemical substances is a prerequisite for/enables a circular economy, and the lack of such control hinders the material cycles**. This is an opportunity to end the current trade-offs between increasing recycling rates and minimising consumer and environmental exposure to substances of concern, especially regarding the chemical safety of recycled plastics.

Reduction of the EU's reliance on primary resources, particularly imported materials, would increase its strategic autonomy. As concluded by the EEA, **the use of secondary materials is currently hampered by a lack of trust due to potential chemical concerns in recycled materials**.[26] In particular, the quality and safety of recycled plastics and paper-based materials will need to improve and be more reliable to ensure their use will significantly grow within a circular economy. These improvements should work hand in hand with more transmission of adequate information, as well as a proper monitoring mechanism.

Scientific evidence clearly shows that the chemical safety of recyclates can often be compromised through carryover of contaminants or material degradation during the recycling process. Food packaging clearly illustrates this challenge: even for widely used materials such as polyethylene terephthalate (PET), paper, and cardboard - all of which have established recycling processes - **producing secondary materials that meet food-contact safety standards remains difficult**.[27] Most paper-based and plastic food packaging (including

[26] European Environment Agency. *Investigating Europe's Secondary Raw Material Markets*. 2023. www.eea.europa.eu/en/analysis/publications/investigating-europes-secondary-raw-material%20.

[27] *Chemicals in a Circular Economy: Using Human Biomonitoring to Understand Potential New Exposures*. 2022. www.hbm4eu.eu/wp-content/uploads/2022/07/ChemicalsCircularEconomy.pdf; Gerassimidou, Semeliou, et al. "Unpacking the Complexity of the PET Drink Bottles Value Chain: A Chemicals Perspective." *Journal of Hazardous Materials*, 2022. www.sciencedirect.com/science/article/pii/S0304389422001984; Ring, Laura, et al. "Identification and Evaluation of (Non-)Intentionally Added Substances in Post-Consumer Recyclates and Their Toxicological Classification." *Recycling* 8, no. 1 (2023): 24. www.mdpi.com/2313-4321/8/1/24.

bioplastics) that is not made of PET cannot, in fact, be recycled into new food packaging due to missing processes and safety concerns.[28] The process of approval led by EFSA for other plastics as required by Regulation 2022/1616 on recycled plastics for food contact application, is still ongoing. Currently, these materials are, in the best-case scenario, downcycled to products that are then landing in the trash bin.

These challenges explain why the PPWR establishes derogations from mandatory recycled content requirements for specific packaging categories, notably medical devices and food intended for children. The regulation further allows potential future exemptions to primary targets when 'the suitable recycling technologies to recycle plastic packaging are not authorised under the relevant Union rules or are not sufficiently available in practice, taking into account any safety related requirements, especially concerning contact-sensitive plastic packaging'.[29]

Furthermore, systematically and reliably monitoring mixed material flows, virgin materials and recyclates, for large numbers of hazardous chemicals is **resource intensive and expensive**. Operators may also face a loss of income if secondary materials become contaminated with hazardous substances, and downstream customers reject the materials as feedstock to their production processes due to quality concerns.

Most importantly, **there is currently a lack of coherence between chemical and circular economy legislation**.[30] Chemicals policies, namely the REACH Regulation and the RoHS Directive, show low-to-medium levels of coherence with several other policies. These include, but are not limited to important human safety laws, such as the Food Contact Materials Regulation,[31] and the recently adopted Batteries Regulation, Right to Repair Directive and Ecodesign for Sustainable Products Regulation. This situation highlights that **the longstanding disconnect between circularity and chemical policies persists, despite recent legislative developments**.

Therefore, above all, we must once again recognise what has already been acknowledged years ago; that **the interface between chemicals, products, and waste is a critical area for the circular economy.** Specifically focusing on managing hazardous substances throughout a product's lifecycle to improve recyclability and safety.

The interface between chemicals, products, and waste is where the lifecycle of a chemical-containing product intersects with waste management and recycling, showing challenges related to information gaps, the presence of hazardous substances in waste and regulatory uncertainty, but also creating opportunities for enabling clean materials cycles through a holistic and harmonised approach.

[28] Food Packaging Forum. "Food Packaging Materials and Recycling." Accessed December 15, 2025. www.foodpackagingforum.org/resources/food-packaging-materials-and-recycling.
[29] *Regulation (EU) 2025/40 on Packaging and Packaging Waste*, Article 7(12). www.eur-lex.europa.eu/eli/reg/2025/40/oj/eng.
[30] Rizos, Vasileios. "Unpacking Policy Coherence: A Network Analysis of the EU Policy Mix for the Circular Economy." 2025. www.sciencedirect.com/science/article/pii/S2352550925001800.
[31] Zero Waste Europe. *Food Packaging: Safety First. Towards Toxic-Free and Future-Proof Packaging.* 2023. www.zerowasteeurope.eu/wp-content/uploads/2023/07/zwe_jul23_briefing_safetyfirstfoodpackaging.pdf.

A key enabling condition identified by the European Commission to strengthen the circular economy is to support the market of secondary raw materials, where **End-of-Waste (EoW) criteria** play the role of an enabler. It is the legal transcription of the interface between waste, chemical and product legislation, established under Article 6 of the Waste Framework Directive. In other words, the EoW enables the transfer of materials from one legislative framework to another, while acting as a gatekeeper for their safety. In this sense, the fourth criterion of the EoW criteria defined at Article 6 of the WFD[32] related to the adverse effect on human health and the environment shall remain upheld to ensure that recycled materials are safe, traceable, and used within a closed regulatory loop. However, for EoW to deliver meaningfully, clarity is needed on the EoW final point, in other words, where the material is granted with an EoW status. There must be a distinction between product reuse in a system, EoW for preparation for re-use of products, and EoW for secondary raw material after recycling.

It is absolutely necessary to provide operators in the reuse, repair and waste management sectors with considerably **more information on the composition of products** than before. This should not only include hazardous substances but also materials and substances of concern that interfere with the recycling process, as well as recyclable or valuable materials.[33] In the recently published 2030 Consumer Agenda, the Commission recognised product safety challenges for second-hand, repaired, refurbished, and remanufactured products.[34]

Regulatory actions should prioritise phasing out the most harmful chemicals in plastic, paper and other materials. Most importantly though, they should minimise the presence of substances of concern in products in the first place.

Currently, very few products and waste streams are immune to the challenges posed by **legacy chemicals**. New chemicals are introduced on the market on a regular basis, while some become prohibited due to their identified risks. This much-needed regular identification creates an evolving regulatory framework, and a potential challenge for some products - what is manufactured legally today may include substances that will be prohibited in the future. Once these products reach their end-of-life stage, they undergo a recycling or recovery process, while the chemicals/substances remain in the material, creating what's called 'legacy substances'. This phenomenon is not new, and will keep being a barrier to circularity if not addressed.

These chemicals create two overarching classes of problems: safety and cost. As recommended in the EU Chemicals Strategy for Sustainability, increased investments in decontamination technologies to address the

---

32 *Waste Framework Directive*, Article 6 on End-of-Waste status, paragraph 1(d). www.eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0098.

33 Friege, Henning, et al. "How Should We Deal with the Interfaces Between Chemicals, Product and Waste Legislation?" *Environmental Sciences Europe*, 2019. www.enveurope.springeropen.com/articles/10.1186/s12302-019-0236-7.

34 European Commission. "2030 Consumer Agenda." November 19, 2025. www.commission.europa.eu/strategy-and-policy/policies/consumers/consumer-protection-policy/2030-consumer-agenda_en.

presence of legacy substances in waste streams could allow the recycling of more waste. This is particularly important for long-lasting products with the highest potential for circularity, such as textiles, furniture, electronics, construction and building materials. Sustainable innovations and technologies will have to be developed for this purpose, and must ensure an overall positive environmental and climate performance, from a full cycle perspective. Ideally, these methods should permanently eliminate legacy substances, rather than transferring these chemicals into other types of (solid or liquid) waste, that contains its own toxic compounds, which pose further treatment and disposal challenges (like, for example, application of Granular Activated Carbon or Reverse Osmosis as treatment for certain PFAS).

Nevertheless, when safe reuse or recycling of any product containing hazardous legacy chemicals cannot be guaranteed, such waste should be treated as hazardous.

The input of contaminated secondary raw materials into products should only be justified under exceptional and well-defined conditions.[35] Industry machinery in specific professional settings represent a viable option, as well-established protocols reduce risk exposure as compared to consumer-facing products.

In 2018, the European Commission promised to develop a specific decision-making methodology to support decisions on the recyclability of waste containing substances of concern. It also intended to prepare guidelines that would ensure the presence of substances of concern in recovered materials was better addressed in the early stages of proposal preparation, in order to better manage their risk.[36] The Packaging, Packaging Waste Regulation (PPWR) aims to establish recyclability criteria for the packaging sector by January 2028, which will account for the properties and fate of substances of concern. However, the PPWR is a sectoral legislation, and the issue of legacy chemicals is not limited to packaging. Therefore, a truly horizontal approach should be encouraged by the CEA.

In a number of cases, speeding up the restriction process under the REACH Regulation is the most effective way to enhance clean material cycles. A good example is a case of aromatic brominated flame-retardant (ABFR) additives.

[35] European Commission. *EU Chemicals Strategy for Sustainability*. 2020.

[36] European Commission. *Communication on the Implementation of the Circular Economy Package: Options to Address the Interface Between Chemical, Product and Waste Legislation*. 2018. www.eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52018DC0032.

The European Chemicals Agency's (ECHA) investigation found that the use of **aromatic brominated flame retardants** (ABFRs) pollutes the environment due to their persistence, bioaccumulation and toxicity. These substances are released to the environment throughout the product lifecycle, with the waste stage being of particular concern. To address the challenges, ECHA emphasised the need to eliminate problematic plastic additives early in the value chain, and that any **regulatory action on ABFRs should consider a group approach**.[37]

Still, almost one year after this report, the Commission requested ECHA to prepare a restriction dossier with a much more limited scope, i.e. for three substances and three product categories.[38]

This is an example of how **the lack of swift and ambitious regulatory action**, while supported by very strong scientific evidence and an advanced policy process, continues to feed lack of certainty for businesses and **enables future legacy substances to constitute a barrier to the circular economy**.

Innovations and technological advances in the treatment of waste – including decontamination of certain waste streams[39] and neutralisation of infectious and hospital waste[40] – lead to the decreased risk of certain secondary materials and products being used. Incineration should no longer be accepted as "the solution".[41]

It is **crucial to start developing an effective system for tracking chemicals used in products as soon as possible** (e.g., via a Digital Product Passport). This would also enable recyclers to address the issue of legacy substances in the future.

[37] European Chemicals Agency (ECHA). "ECHA Raises Environmental Concerns Over Certain Aromatic Brominated Flame Retardants." 2024. www.echa.europa.eu/-/echa-raises-environmental-concerns-over-certain-aromatic-brominated-flame-retardants.

[38] European Commission. *Request to the European Chemicals Agency to Prepare an Annex XV Restriction Dossier on Non-Polymeric Additive Aromatic Brominated Flame Retardants.* 2025. www.echa.europa.eu/documents/10162/17233/rest_abfr_opfr_com_mandate_en.pdf.

[39] FEAD (European Waste Management Association). *Position Paper on Contaminants and Substances of Concern in the Waste Management Sector.* 2024. www.fead.be/position/fead-position-paper-on-contaminants-and-substances-of-concern-in-the-waste-management-sector.

[40] Ecosteryl. LinkedIn post on eco-friendly waste treatment alternatives. Accessed December 15, 2025. www.linkedin.com/posts/olivier-dufrasne-a85ba322_heading-to-buenos-aires-next-week-activity-7386311680139558913-FSUs.

[41] Zero Waste Europe. "The True Toxic Toll." Accessed December 15, 2025. www.zerowasteeurope.eu/project/the-true-toxic-toll; Zero Waste Europe. "Better Than Burning: Calling for a Moratorium on Incineration." Accessed December 15, 2025. www.zerowasteeurope.eu/campaign/better-than-burning-calling-for-a-moratorium-on-incineration.

Urgent need for more transparency and chemical traceability

> "*The creation of a well-functioning market for secondary raw materials and the transition to safer materials and products is being slowed down by a number of issues, in particular, the lack of adequate information on the chemical content of products. Consumers, value chain actors, as well as waste operators, therefore cannot make informed choices.*"
>
> The EU Chemicals Strategy for Sustainability (p.6)

Advancing towards a circular economy requires a change in the functioning of the value chain, which requires multi-stakeholders involvement and contribution. Market developments show that high ambition with regards to chemical safety is essential if Europe wants to become a leader in the circular economy by 2030.[42] Despite the common belief that the EU always has the most stringent chemical safety rules in the world, this is not always the case. In the United States, for example, commercial practices are evolving due to the influence of private certification schemes and labels that sometimes go beyond EU regulation.[43] Voluntary schemes also require stringent adherence to transparency and traceability. The US Environmental Agency (EPA) Safer Choice programme requires recycled content targets in packaging to be met by weight.[44] This decision prevents the use of mass balance chain of custody, which goes against the principle of chemical traceability.[45]

If the ambition of the Clean Industrial Deal is to make the EU the world leader on circular economy by 2030, an **increase of overall transparency is simply a must**. The CEA should ensure that the correct information on what enters the market is available, and **enforce transparency and traceability of chemicals and materials along the value chain**. Building leadership in a circular economy must consider chemicals from the outset, so that we can build a safe and clean circular economy - the only economic model in which the EU should strive

[42] European Commission. *The Clean Industrial Deal: A Joint Roadmap for Competitiveness and Decarbonisation.* 2025. www.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52025DC0085.

[43] Practice Greenhealth. "Healthy Flooring." Accessed December 15, 2025. https://practicegreenhealth.org/healthyflooring; Green Science Policy Institute. "Furniture Flame Retardants." Accessed December 15, 2025. www.greensciencepolicy.org/our-work/furniture.

[44] US Environmental Protection Agency. *Safer Choice Voluntary Programme.* 2024. www.epa.gov/system/files/documents/2024-08/epas-safer-choice-and-design-for-the-environment-dfe-standard-with-changes-in-green.pdf.

[45] Zero Waste Europe. *Recycled Content in Plastics: The Mass Balance Approach.* 2021. www.zerowasteeurope.eu/library/recycled-content-in-plastics-the-mass-balance-approach.

to become a world leader. Specifically, the CEA has to re-enforce the important - but far from delivered - commitment made by the Commission in the 2020 Circular Economy Action Plan to "*co-operate with industry to progressively develop harmonised systems to track and manage information on substances*". Disclosure requirements within the REACH revision and other product legislation (both existing and forthcoming) present significant opportunities for advancing transparency.

To ensure coherence of EU policies, the CEA should promote clean manufacturing and safe material cycles by applying essential criteria from the **Ecodesign for Sustainable Products Regulation** (ESPR). This legal framework provides excellent tools - we just have to start using them.

The current Article 33 of REACH only requires communication of substances of very high concern above 0.1% in articles. But even companies conclude that this threshold is too high to ensure a healthy circular economy and advocate for a threshold at 0.01% for all substances.[46]

Information about substances of concern[47] should become mandatory in the Digital Product Passport (DPP), as required by the ESPR. DPP is being rolled out in phases across various industries, with initial requirements for batteries (2026/2027), followed by others like textiles (2027), construction materials (2028), and packaging (2028/2030).

Complementing the Union's chemicals legislation, the ESPR offers a guide on how chemical safety should become an integral element of product sustainability. While REACH provides a safety net intended to allow market entry only for products that meet a minimum safety level, i.e., avoiding "unacceptable risk", the ESPR aims to make sustainability the norm. Therefore, the CEA should promote systemic **availability of information related to substances of concern along the whole circular supply chain**, as required by the ESPR.

The OECD published recently the "*Best Practice Guide on Chemical Data Sharing Between Companies*",[48] to further elaborate on the proprietary rights elements of data-sharing between data owners and purchasers. This document recognised that access to 'Non-Clinical Health, Safety and Environmental Data and Information' on chemicals is critical to ensure their safe use throughout their lifecycle. Therefore, effective mechanisms must be in place to enable access and sharing of existing data among different stakeholders.

We have opportunities to use tools now that were missing before. The ongoing digitalisation of services linked to access to information and a DPP provides an opportunity to avoid duplication of efforts and better streamlining of information.

[46] Tarkett. "Material Health Statement." Accessed December 15, 2025. www.professionals.tarkett.co.uk/en_GB/search/documentation-center.
[47] *Regulation (EU) 2024/1781 on Ecodesign for Sustainable Products* (ESPR). www.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024R1781.
[48] OECD. *Best Practice Guide on Chemical Data Sharing Between Companies*. Paris: OECD Publishing, 2025. www.doi.org/10.1787/c5f3c668-en.

Figure 1 showing an example of current burdens: a reality check for food packaging

REQUIREMENTS		REALITY	
	Regulation 10/2011 on plastic food contact materials and articles ✔ 'Declaration of Compliance' (DoC) must be provided to enforcement Authorities on their request **PPWR** ✔ Identical definition of Substances of Concern (SoC) as in Ecodesign for Sustainable Products Regulation ✔ By 2030, SoC must be identified by means of digital technologies (information shall include at least the name and concentration of the substance of concern present in each material in a packaging unit) **SUPD** ✔ Calculation, verification and reporting of data on recycled plastic content in single-use plastic beverage bottles **Regulation 2022/1616 on recycled plastics for materials and articles** ✔ 'Declaration of Compliance' **SCIP database**		**FCM Framework Regulation** ✔ No specific requirements and DoC for other materials than plastics ✔ No specific rules for recycled materials other than plastics **Regulation 10/2011 on plastic food contact materials and articles** ✔ DoC is often incorrectly filled and incomplete (due to claimed confidentiality) **SCIP database** ✔ Announced to be repealed[49] **SUPD** ✔ Verification and reporting of data on recycled plastic content Within the legislative development, the definition of 'chemical traceability' has been removed. It referred to "*the ability to prove that* ***it is feasible*** *that* ***chemical building blocks*** *of specific outputs* ***can come*** *from the used input material stemming from post-consumer plastic waste*". Such a definition doesn't guarantee a traceability, but rather a

[49] Zero Waste Europe. "Zero Waste Europe Raises Concerns About Environmental Omnibus." Press release. Accessed December 15, 2025. www.zerowasteeurope.eu/press-release/zero-waste-europe-raises-concerns-about-environmental-omnibus.

	✔ Information requirements on Substances of Very High Concern (SVHC)		possibility, undermining the overall framework. ✔ Mass balance (allocation rules)[50]

Digital Product Passport (DPP)

Growing evidence points to the DPP as the right tool to share information with key actors along the value chain, leading to the following potential benefits:[51]

- Economic: reduced pre-treatment costs thanks to automation of pre-sorting; increase in material recovery rates thanks to selective dismantling and sorting of parts with high-value materials;
- Qualitative: fostering trust in second-hand markets and life extension applications (reuse, repair, etc.); improving workers' safety; increasing transparency on waste flows and improving treatment of hazardous substances contained in waste.

The first step of making DPP operational should be **ensuring interoperability with existing reporting databases** (i.e. Substances of Concern In Products, SCIP, and European Product Registry for Energy Labelling, EPREL) to avoid duplication of efforts. In December 2023, the Commission released a new proposal on a common data platform for chemicals to streamline information sharing across agencies and legislation for the purpose of assessments, reporting, and regulation. This proposal could be a good opportunity for connectivity between this proposed EU-wide chemicals data sharing platform and information about chemicals in DPPs. Ultimately, this would also improve understanding of overall exposure and mixture assessment factors, which is particularly of use for academics and regulatory agencies.

Ultimately, by embedding chemical traceability into the DPP, regulators, manufacturers, and consumers will be able to access product-specific chemical data, ensuring safer and more sustainable production practices.

This will particularly benefit product design by incentivising the phase-out of non-essential chemicals of concern and preventing regrettable substitutions - replacements with equally problematic chemical compositions. A classic example is the replacement of bisphenol A (BPA) with alternative bisphenols that have similar molecular structures and therefore similar endocrine-disrupting properties.[52] Consequently, to protect

[50] CE Delft. *Impacts of Allocation Rules on Chemical Recycling: Consequences on the Environment and Maximum Circularity of Plastics.* 2023. www.zerowasteeurope.eu/library/impacts-of-allocation-rules-chemical-recycling.

[51] Wautelet, Tanguy, and Ayed-Cherif Ayed. *Exploring Possible Digital Product Passport (DPP) Use Cases in Battery, Electronics and Textile Value Chains.* CIRPASS Consortium, 2024. www.doi.org/10.5281/zenodo.10974901.

[52] CHEMTrust. *From BPA to BPZ: A Toxic Soup?* Report, 2018. www.chemtrust.org/wp-content/uploads/chemtrust-toxicsoup-mar-18.pdf.

human health and the environment, EU authorities determined that 34 bisphenols may require restriction under EU chemicals legislation.[53]

Keeping material flows non-toxic from the start makes managing products' end-of-life easier, and prevents creating legacy chemicals that remain stuck in our products long after they were banned.[54]

In the short term, the cost of gathering information on chemicals, especially across their supply chains, is likely to be significant for many companies. However, industrial actors should reflect on the mid-term benefits of increased transparency, factoring in the cost of decontamination and depollution,[55] to better estimate the positive financial implications of collecting and sharing chemical data in their value chain. This cost-benefit analysis is necessary to inform decision-making, and ensure companies invest sufficiently in chemical traceability.

Finally, while chemical traceability is a key foundation to effective chemical regulation, it cannot replace the mandatory **restriction and substitutions of the most harmful chemicals.** The planned revision of REACH should ensure that hazardous substances do not enter the consumer product value chain in the first place. Product regulations should also ensure that products are safe for both consumers and the environment, and that their production and processing put neither workers nor the environment at risk.

[53] European Chemicals Agency (ECHA). "Bisphenols." Accessed December 15, 2025. www.echa.europa.eu/hot-topics/bisphenols.

[54] Schenten, Julian, et al. *Traceability of Chemicals in Products for a Non-Toxic, Resource-Preserving and Climate-Neutral Circular Economy*. Workshop report, LIFE AskReach project, 2023. www.askreach.eu/wp-content/uploads/2023/01/AskREACH_Traceability-WS_report_2023-01.pdf.

[55] Forever Lobbying Project. "Lobbying." Accessed December 15, 2025. www.foreverpollution.eu/lobbying.

The EU's comparative advantage: safe & sustainable product policy at the heart of the circular economy

It starts by recognising the challenges which result from current business models and models of economic activity. If we're just looking at the environment, we know at the moment it's just more profitable to trash the planet than protect it. And businesses will do what markets incentivise them to do.

At this historic moment of geopolitical change and economic transformation, the question for businesses is whether they will step up to shape the future – or be shaped by it"

Lindsay Hooper, CEO of Cambridge Institute for Sustainability Leadership

As recognised in the recent EU Consumer Agenda, available and affordable sustainable goods and services are central not only to consumer well-being and environmental protection, but also to Europe's long-term competitiveness and strategic sovereignty, as they reduce dependence on unsustainable imports and help build resilient value chains.[56]

Rigorous human and environmental safety and health standards shall stay at the core of EU production and the Single Market, and become a distinctive strength of European competitiveness at the global level. **Public investments must support European products stamped with a 'Made in Europe' label, which should become a symbol of high quality and safety, fostering consumers' trust, as well as a key distinction of the EU market as a frontrunner**. The CEA should boost demand for EU-made clean, toxic-free products via

[56] European Commission. "2030 Consumer Agenda." November 19, 2025. www.commission.europa.eu/strategy-and-policy/policies/consumers/consumer-protection-policy/2030-consumer-agenda_en.

public and private procurements. In parallel, this should be supported by better tackling the non-compliance of products sold on our market, including via a revised the rules on market surveillance.[57]

Finally, the CEA could meaningfully support 'rethinking' chemistry for a circular economy: operationalisation of Safe and Sustainable by Design principles[58] and designing out unnecessary chemicals that are not truly delivering functional real-world benefits saves resources. For example, simplifying and standardising the range of plastic additives would simplify and standardise the range of circulating plastic formulations, enabling a more circular economy for plastics. Representatives from academia and waste management companies have already indicated that this would enable more effective and efficient post-consumer processing, and a closed-loop recycling system.[59]

Given the multiple crises we currently face, there is a need to distinguish between essential and non-essential elements of our economy, enabling clearer decisions about where to conserve resources and where to invest in keeping materials in circulation for as long as possible Although chemicals and materials production is the largest contributor to a product's environmental impact, reducing the material content of individual products is not always the most effective approach. A more effective strategy is typically the reduction of overall resource consumption.

Scientific evidence supports limiting the chemicals used in materials to those that are well-studied and safe. This approach would promote safer, essential applications while minimising industry's toxicity footprint.[60] It is important to take into account the complexity of the existing materials system for reuse and recyclability. In the case of plastics, for example, the next step could be to **limit the number of unique monomers and additives**, to facilitate future recycling potential and reduce current complexity. This would lead to **a higher feedstock efficiency**.

The EU faces a fundamental challenge in the critical raw materials (CRM) landscape. While the EU is not a strong player in mining or raw material production, it **has strong systems for recycling, waste collection, and setting rules for products**, which is a competitive advantage.The new EU Batteries Regulation, mandating digital passports, recycled content targets, and extended producer responsibility, demonstrates how the EU can leverage its power as a major consumer market rather than as a producer. With superior waste collection systems compared to other regions, the EU has the potential to become a recycling hub and should focus on capturing all batteries and electronic waste - potentially even importing waste from countries lacking recycling technology. However, this strategic advantage has been continuously until now undermined by subsidies for the linear economy, and a lack of border enforcement against free-riders - treating circularity as an environmental policy rather than a core economic and industrial strategy.

---

[57] European Commission. "Commission Seeks Views on Strengthening EU Product Safety and Market Rules." November 12, 2025. www.single-market-economy.ec.europa.eu/news/commission-seeks-views-strengthening-eu-product-safety-and-market-rules-2025-11-12_en.

[58] Abbate, Cristina, et al. "Operationali ation of the Safe and Sustainable by Design Framework for Chemicals and Materials: Challenges and Proposed Actions." *Integrated Environmental Assessment and Management* 21, no. 2 (2025): 245–262. www.publications.jrc.ec.europa.eu/repository/handle/JRC135705.

[59] Hallett, Jessica, et al. *Addressing Plastic Additives: Policy Recommendations*. Briefing Topic No. 10. London: Imperial College London, 2023. www.spiral.imperial.ac.uk/server/api/core/bitstreams/4cce9d29-5c01-4829-9d0a-6e9500902086/content.

[60] Fenner, Kathrin, and Martin Scheringer. "The Need for Chemical Simplification As a Logical Consequence of Ever-Increasing Chemical Pollution." *Environmental Science & Technology* 55, no. 21 (2021). www.pubs.acs.org/doi/10.1021/acs.est.1c04903.

Back to basics: more reuse, less waste, and better overall quality

A recent EEA report[17] concludes that we produce and consume far too much – a consequence of uncontrolled disposable, cheap, and often poor-quality products flooding the market. Online marketplaces and imported products generally slip under the radar of the EU's market surveillance, and there is plenty of evidence of non-compliance with EU regulations.[61] It is therefore of utmost importance to reinforce the EU framework via the forthcoming European Product Act, ensuring that all products on the single market are safe and fit for an increasingly digital and circular economy.[62]

While ESPR aims to improve product design, DPP and other labels that make available product information, Extended Producer Responsibility (EPR) schemes must ensure products are properly handled as waste but also enable circular infrastructure. One way forward as outlined in this study[63] could be a separation of EPR fees into 2 tiers:

1. Waste management fee – to fully cover the costs of treatment, disposal, and clean-ups;
2. Reuse and prevention fee – to finance repair, reuse, refurbishment, remanufacturing and waste prevention infrastructure (to achieve prevention and reuse targets) Alternatively, a fund to support reuse and repair activities, as in the French AGEC law,[64] allocating EPR funds to reuse and repair,[65] could be an option.

EPR ecomodulation could, if revised, incentivise design change and promote clean, toxic-free products. Thus far, the impact of fee modulation has been minimal due to their extremely low financial weight. Utrecht University found that collection and recycling are set up in such a cost-efficient way that they cost less than 2% of the product price (sometimes even as little as 0.1%) – too small to act as a price incentive.[66] To overcome

---

[61] BEUC (The European Consumer Organisation). "Two-Thirds of 250 Products Bought from Online Marketplaces Fail Safety Tests, Consumer Groups Find." Press release, 2020. www.beuc.eu/press-releases/two-thirds-250-products-bought-online-marketplaces-fail-safety-tests-consumer-groups; BEUC. *Products from Online Marketplaces Continue to Fail Safety Tests.* 2022. www.beuc.eu/reports/products-online-marketplaces-continue-fail-safety-tests; BEUC. "PFAS Are Widely Present in Everyday Products, New Findings by European Consumer Groups Show." 2025. www.beuc.eu/sites/default/files/publications/BEUC-X-2025-030_PFAS_widely_present_in_everyday_products_new_findings.pdf.

[62] European Commission. "Commission Seeks Views on Strengthening EU Product Safety and Market Rules." November 12, 2025. www.single-market-economy.ec.europa.eu/news/commission-seeks-views-strengthening-eu-product-safety-and-market-rules-2025-11-12_en.

[63] Zero Waste Europe. *Designing EPR to Foster the EU's Competitiveness and Strategic Autonomy.* 2025. www.zerowasteeurope.eu/library/designing-epr-to-foster-the-eus-competitiveness-and-strategic-autonomy.

[64] LégiFrance. *Décret n° 2024-123 du 20 février 2024 relatif aux fonds dédiés au financement de la réparation des produits relevant du principe de responsabilité élargie du producteur.* www.legifrance.gouv.fr/jorf/id/JORFTEXT000049171665.

[65] Refashion. "The Repair Fund Newest Obligations." 2024. www.pro.refashion.fr/en/news/reparation/the-repair-fund-newest-obligations.

[66] Vermeulen, Walter J. V., et al. *Pathways for Extended Producer Responsibility on the Road to a Circular Economy.* Utrecht University, 2021. www.uu.nl/sites/default/files/White-paper-on-Pathways-for-Extended-Producer-Responsibility-on-the-road-to-a-Circular-Economy.pdf.

this shortcoming of EPR as a driver for circularity, the current limit of the eco-modulation of fees to 'cost coverage' of waste management (Art. 8 WFD) must either be amended or a new fee structure established. Instead of EPR fee modulation, an EU-level 'ecodesign levy' – linked to ESPR criteria – could be aimed at improving product design (independent from EPR system).

While ESPR criteria are not available for product groups yet, a levy on the use of substances of very high concern (SVHC) could be considered at EU level, given that this data is available via the SCIP database. The collected fees could flow into a new EU own resource (e.g., a depollution fund) and be invested in recycling infrastructure and decontamination.

According to a recent analysis by Deloitte, the European chemical industry has capabilities required to overcome future challenges, maintain strong regional foundations, and thrive in global markets.[67] Strong incentives in strategic policies and the Circular Economy Act will drive the EU economy toward sustainability, circularity, and geopolitical resilience - promoting European solutions that prioritize safety.

[67] Deloitte. "Future of the European Chemical Industry: A Positive Outlook. Strengths, Mega Trends and the Formula to Success." July 30, 2025. www.deloitte.com/be/en/Industries/energy-chemicals/perspectives/european-chemical-outlook.html.

Key messages

- The Circular Economy Act (CEA) must promote more sustainable patterns of production and consumption, preserve value, ensure the strategic use of our resources, and ensure a safe transition for workers, SMEs, and citizens. High standards for safety and health should be one of the backbones of the EU's competitive edge.
- We should not only look into "easy" and short-term fixation of problems - we should consider the next decade as an opportunity to truly shape the future of our economy and environment.
- CEA provides an opportunity to change the whole market, rather than just changing some industries and businesses. It should lead green procurements, and connected finance must accelerate deployment and uptake of safer alternatives.
- To avoid a dual regulatory regime between the EU and national levels, we need the EU to represent the interest of the whole society, not a number of industrial lobbyists. We need to support some of the market making within value chains for some sectors that absolutely need to transition (reuse, repair, etc.).
- Businesses are used to competition. But they need enabling markets and the confidence to be able to invest and innovate for the future. The CEA should be their compass.
- Academia, industry and policy makers need to work together to develop tools to collect and use chemical data and improve skills and infrastructures (including recycling facilities) to ensure that the data is effectively used.
- Strong collaboration is the only way we can face adoption and technical challenges in safety and circularity of chemicals and materials.
- All stakeholders, academia, government, industry, and civil society, play complementary roles in data, regulation, innovation, and public engagement to drive circular solutions

Recommendations

- Include in the Circular Economy Act (CEA) the recitals that refer to key principles of the EU Chemicals Strategy for Sustainability, most notably:
    - A clean circular economy requires a combination of actions upstream, to ensure that products are safe and sustainable-by-design(including design-for-recycling), and downstream, to increase safety and trust in recycled materials and products.
    - The creation of a well-functioning market for secondary raw materials requires adequate information on the chemical content of products being available to consumers, value chain actors, as well as waste operators.
    - Recognise the increasing importance of decontaminating materials containing hazardous chemicals and/or substances of concern.
- Include binding requirements for traceability of chemicals and materials along the value chain. At a minimum, information about substances of very high concern should become mandatory in the Digital Product Passport (DPP).
- Develop a specific decision-making methodology to support decisions on the recyclability of waste, with particular attention to substances of concern.
- Include a requirement for communication of substances of very high concern in articles above a threshold at 0.01%, in the revised REACH regulation (Article 33).
- Support the development of EU-wide End-of-Waste (EoW) criteria following the prioritisation list established in 2022, while seeking to support mutual recognition principle between Member States in the meantime. In parallel, uphold the full consideration of the fourth criterion of the EoW criteria defined in Article 6 of the Waste Framework Directive (WFD) related to the adverse effects on human health and the environment to ensure that recycled materials are safe, traceable, and used within a closed regulatory loop.
- Introduce ecomodulation fees in the reformed European Extended Producer Responsibility (EPR) system, and incentivise the use of safe chemicals and design of toxic-free products via the polluter-pays principle.
- Support funding and de-risk innovation across the value chain, through public-private partnerships that support small and medium-sized enterprises (SMEs) and start-ups working on safe chemicals and sustainable materials.
- Support EU-made safe products via updated green criteria in the revised EU's Public Procurement Directive, and their mandatory use, including via public investments.
- Propose ambitious measures in the "European Product Act" to update rules for better product safety and stronger market surveillance. The revision of the Market Surveillance Regulation should strengthen legal liability, provide more enforcement resources, enhance pan-EU coordination and update rules for digital trade.

Zero Waste Europe (ZWE) is the European network of communities, local leaders, experts, and change agents working towards a better use of resources and the elimination of waste in our society. We advocate for sustainable systems; for the redesign of our relationship with resources; and for a global shift towards environmental justice, accelerating a just transition towards zero waste for the benefit of people and the planet.
www.zerowasteeurope.eu

Zero Waste Europe gratefully acknowledges financial assistance from the European Union. The sole responsibility for the content of this material lies with Zero Waste Europe. It does not necessarily reflect the opinion of the funder mentioned above. The funder cannot be held responsible for any use that may be made of the information contained therein.

ZERO WASTE EUROPE

Authors: Dorota Napierska, Lauriane Veillard
Editors: Aline Maigret, Ariane Osman
Date: December 2025

General information: hello@zerowasteeurope.eu
Media: news@zerowasteeurope.eu
Cities-related topics: cities@zerowasteeurope.eu

www.zerowasteeurope.eu
www.zerowastecities.eu
www.missionzeroacademy.eu