Product stewardship

Strategy and management

Product stewardship is a vital precondition for our business. It is our "license to operate". That includes evaluating the environmental and health risks of Evonik products and minimizing them where possible.

As well as complying with all statutory requirements, such as the European chemicals regulation REACH[1] and the Globally Harmonized System of Classification and Labelling of Chemicals (GHS), product stewardship at Evonik includes voluntary commitments that go beyond these regulations. We have been committed for many years to the international Responsible Care® initiative and the Responsible Care Global Charter of the International Council of Chemical Associations (ICCA). The key elements of both aspects of product stewardship are defined in group-wide product stewardship standard, which defines how they are to be implemented and sets out control mechanisms to monitor their observance. In addition, the key elements of our product stewardship have also been defined in a product policy. More. Moreover, in 2023, Evonik started work on a product stewardship policy, which would be published on our website in 2024. 416-1, 417-1

Responsible handling of chemicals

We examine the entire value chain of our products from the procurement of the raw materials to the delivery to our industrial customers. This is a product stewardship approach and should not be confused with a complete life cycle assessment. In light of global trade in chemicals and chemical products, it is important to encourage broad communication on their safe handling and use. We therefore have an extensive worldwide information system. This includes information portals, safety data sheets—not just for dangerous products—in more than 35 languages, technical data sheets, and extensive information on our website. We also have 24/7 emergency hotlines, including an interpreting service and email addresses.

Our specialist departments provide advice for our customers at all stages in the product life cycle, from the selection of the raw materials through dealing with possible toxicological, ecotoxicological, and physical chemistry risks and the resulting exposure-based risks. Our advice also includes regulatory requirements relating to the planned application, right up to transportation and disposal. Where necessary, we give customers training in how to handle our products. We did not register any breaches of product labeling regulations in 2023. 416-2, 417-2

Implementation of the REACH regulation and quality of dossiers

Under REACH, all substances produced, imported, or placed on the market in the EU in quantities of more than 1 metric ton p.a. have to be registered. Evonik supports the aim of protecting health and the environment in the handling of chemicals. To implement the complex REACH requirements, we maintain a close dialogue with our suppliers and customers, as well as with industry associations and authorities.

As well as the continued need to register substances, the priorities are the evaluation of dossiers and substances and restriction and authorization. Evonik itself is not presently affected by authorizations. We compare the substance lists published by the authorities with our own portfolio to identify as early as possible whether any of our substances come within this focus so we can take appropriate action. We maintain close contact with our customers on this. Our reviews also cover the raw materials we purchase. Where substances are categorized as being of very high concern, for example, if they are on the REACH list of potential candidates, we discuss the steps to be taken with our suppliers or look for alternatives. We have set up email addresses for all REACH-related inquiries from customers and suppliers to ensure they receive timely and full replies.

European chemicals regulation REACH C11

Another focus of our REACH activities is updating the dossiers for substances that have already been registered. This is based closely on the Cefic action plan, which Evonik has signed as part of a voluntary commitment. The review of all of Evonik's dossiers with a view to enhancing quality will take place stepwise up to year-end 2026. Progress is outlined annually in this report and in a report to Cefic. We have reviewed more than 420 dossiers since the action plan started in mid-2019.

[1] REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals.

The Globally Harmonized System (GHS)

The GHS established by the United Nations is a worldwide system for the classification of chemicals for labeling on packaging and in safety data sheets. The GHS is still not applied uniformly around the world. We therefore have an in-house database to gather information on progress, changes, and national requirements for internal communication. Evonik applies the GHS/CLP[1] requirements worldwide.

Our chemicals management systems

We evaluate all substances placed on the market (> 1 metric ton p.a.). Particularly dangerous substances are included from lower amounts. That allows a soundly based assessment of the risks. Where necessary, restrictions are placed on certain usage patterns or, in extreme cases, a complete ban is issued on use in certain products.

Evonik evaluates its substances using its own chemicals management system (CMS). This system supports us in the global evaluation of our substances. The content of the CMS has been harmonized with the requirements of ICCA and the REACH requirements. All substances that were added to our portfolio through acquisitions between 2017 and 2020 have already been included in the CMS and evaluated. We want to include and evaluate substances added through acquisitions between 2021 and 2023 by the end of 2026.

As an extension of the CMS, our Chemicals Management System^{PLUS} is used for products containing more than 0.1 percent substances of very high concern. Our aim is to reduce or replace these wherever possible. The precondition for this is a detailed analysis so that we can derive suitable action to bring about a further reduction in the possible negative effects on people and the environment. All products that were added to our portfolio through acquisitions between 2017 and 2020 have already been included in CMS^{PLUS} and evaluated. We want to include and evaluate products added through acquisitions between 2021 and 2023 by the end of 2026.

The European Green Deal published by the EU Commission sets out a timetable for Europe to become climate-neutral by 2050. One element in the zero-pollution target is the chemicals strategy for sustainability (CSS), which will have far-reaching consequences for the chemical industry and its value chain. Evonik supports the goals of the Green Deal. In this context, we are actively campaigning both at the level of industry associations and with the EU Commission for the proposed changes to be made circumspectly in order to safeguard planning reliability and for the retention of REACH as the central regulatory instrument for chemicals. We also take part in consultation procedures.

Evonik sees the following more restrictive regulations that could result from the revision[2] of REACH as particularly critical: the generic risk approach, registration of polymers, the extensive data requirements to identify substances with endocrine disruptors and persistent properties, and the mixture allocation factor (MAF).

Green Deal

The main regulatory challenges for Evonik

- Amendment of the REACH Regulation, including more restrictive provisions
- Amendment of the Classification, Labelling, and Packaging (CLP) Regulation
- More stringent requirements as a result of the planned Ecodesign for Sustainable Products Regulation (ESPR[3])
- Tightening of the Industrial Emissions Directive (IED)
- Introduction of a Safe and Sustainable by Design (SSbD) guideline
- Implementation of the EU Taxonomy Regulation
- Tightening of the Packaging Regulation
- Extended reporting requirements as a result of the new Corporate Sustainability Reporting Directive (CSRD)

[1] CLP = Classification, Labelling and Packaging of Substances and Mixtures (Regulation EC no. 1272/2008).
[2] Revision postponed. The new EU Commission will resume work on this after the upcoming elections to the European Parliament in June 2024.
[3] ESPR = Ecodesign for Sustainable Products Regulation.

Under the generic risk approach, the exposure data required for a sound scientific assessment would be disregarded. The plan is to base restrictions or bans solely on specific hazard properties, which will be continuously extended. This approach is to be stepped up not only for end-consumer products but also for commercial users.

The EU Commission has been instructed to review and implement the requirements for polymer registration under REACH. The regulatory procedure process currently under discussion is likely to be divided into several phases. The first would be a notification phase to compile data on all polymers on the EU market. The second step would be the clustering of the polymers, including subsequent data generation. That would be followed by registration of the polymers actually subject to registration. It is estimated that up to 70 percent of polymers on the EU market would be subject to mandatory registration with corresponding data requirements. From an industrial perspective, the costs and work involved would have to be reasonable.

The CSS extends the data requirements for endocrine disruptors, including restrictions and possibly bans on consumer applications. Endocrine disruptors are either natural or chemical substances that disrupt or alter the regulation of the hormone system and can cause lasting damage.

The MAF relates to the introduction of an additional safety factor for the assessment of possible combined and synergistic effects. The EU Commission is calling for a generic MAF for all applications. Together with the chemical industry, Evonik is advocating for the use of a targeted MAF. At present, the application of an MAF of five for substances exceeding 1,000 metric tons per year is under discussion. That could mean that applications that have so far been evaluated as safe would have to be reviewed and adapted. The planned amendments to the CLP regulation also contain some critical aspects. For example, new hazard classes have been introduced for endocrine disruptors and for PBT/vPvB[1] and PMT/vPvM[2]. PBTs are substances with persistent, bioaccumulative, or toxic properties. PMTs are substances with persistent, mobile, and toxic properties. The introduction took place within the scope of the CLP (EU), without prior consultation at UN level (GHS). The EU's chemicals strategy aims to define substances that meet these criteria as substances of very high concern (SVHC) and regulate them as such through the CLP regulation. For Evonik and the chemical industry, it is essential that the guidelines currently being developed provide extensive assistance with classification and labeling.

The proposed Ecodesign for Sustainable Products Regulation (ESPR) sets out performance and information requirements for almost all product categories. **More**. These include, among others, durability, recycling, and resource efficiency. In Evonik's view, the planned information requirements for the digital product passport are unnecessarily extensive because they require the disclosure of product information that relates to the protection of intellectual property. Moreover, certain substances of concern (SoC) could be subject to regulation in parallel with the REACH regulation. In principle, Evonik welcomes this approach because it is an important part of product safety in a circular economy.

The EU Commission also aims to tighten the Industrial Emissions Directive (IED). It wants to introduce an environmental management system comprising a chemicals management system that includes an assessment of the risks to health and the environment and a substitution analysis. The plan is to make the environmental management system obligatory for operators, although it differs from established environmental management systems such as ISO 14001 and ISO 50001. Furthermore, thresholds are to be tightened, and compliance with performance thresholds, for example, for energy and resource efficiency, will be mandatory.

Safe and Sustainable by Design (SSbD) is a new concept to evaluate the safety and sustainability of products in the innovation phase. SSbD is being tested until the end of 2024 and is being monitored both by industry associations and by Evonik in close interdisciplinary exchange between product stewardship, innovation, and sustainability. It is initially planned as a guideline rather than legislation but will probably have implications for our product portfolio.

[1] Chemicals that are persistent (P), bioaccumulative (B), and toxic (T) or very persistent (vP) and very bioaccumulative (vB).
[2] Chemicals that are persistent (P), mobile (M), and toxic (T) or very persistent (vP) and very mobile (vM).

With regard to the implementation of the EU taxonomy, Evonik sees a need for further discussion of the "do-no-significant-harm" (DNSH) criteria for the environmental objective pollution prevention and control. Regulatory enhancements in the reporting period only provided clarity on some of the ambiguous wording. Furthermore, the first delegated act on the EU taxonomy setting out the criteria whereby selected economic activities make a substantial contribution to the environmental objective pollution prevention and control was adopted in 2023. The economic activities for this environmental objective only cover a very small proportion of our portfolio (1 percent of our sales in 2023). Hardly any account is taken of the use of our products for pollution prevention and control, for example, by reducing emissions, remediating contaminated sites, or as an alternative to hazardous substances.

The EU Commission is planning to replace the Packaging and Packaging Waste Directive with a regulation. Here too, Evonik sees a danger that certain substances could be subject to regulation in addition to the provisions of the REACH regulation. The development of these proposals is being monitored both by industry associations and internally at Evonik.

The aim of the EU's Corporate Sustainability Reporting Directive (CSRD) is to place sustainability reporting on the same level as financial reporting. This includes the introduction of the European Sustainability Reporting Standards (ESRS) as uniform standards for sustainability information. In the future, Evonik will have to prepare sustainability reports on the basis of the CSRD and thus disclose information required by the ESRS. The requirements for product stewardship are contained in standard ESRS E2 Pollution.

Aspects of product stewardship in the value chain are also examined as part of the sustainability analysis of our business (see "Strategy and growth" p.20). In the reporting period, we identified and evaluated various product stewardship signals in the context of the sustainability analysis of our business. Signal categories 1 and 2 specifically relate to critical substances and regulatory trends. Signal category 3 relates to sustainability ambitions along the value chain, including for product stewardship and chemical safety, even before the introduction of corresponding regulations. PARCs with a negative rating—sales classified as transitioner or challenged—only account for a small proportion of our portfolio. We want to keep the proportion of sales generated with challenged products below 5 percent (see "Strategy and growth" p.22). To achieve this, we are continuously replacing hazardous products and working on alternative solutions.

Sustainability analysis of our business C12

Market signals[a]

1 Critical substances
2 Regulatory trends and global commissions
3 Sustainability ambitions along the value chain
4 Ecolabels, certification, and standards
5 Relative environmental and social performance
6 Contribution to ecological and social value creation
7 Contribution to the SDGs
8 Internal guidelines and objectives

[a] Signal categories 1–5 compusory, 6–8 optional.

REACH-type regulations in other regions

Various countries and regions have either introduced or are currently introducing chemicals regulations with requirements that are broadly similar to those of REACH. Examples are South Korea, Turkey, Taiwan, and the Eurasian Economic Union. Other countries, such as the USA, have also raised their standards significantly. Evonik is actively monitoring the development of regulations worldwide in order to be able to implement them in the relevant regions. In South Korea, consultations on the next volume band are taking place within the Chemical Substance Information Communicative Organization (CICO) and consortia. Substances are continuously being registered in Turkey. In addition, Evonik is monitoring the development of other upcoming regulations to prepare accordingly. These include, for example, the entry into force of the new chemicals regulation in the Eurasian Economic Union. This will probably take place in two phases. Based on the present status, the regulation is expected to come into effect in Russia on September 1, 2024 and in the other members of the Eurasian Economic Union two years later. There are plans to introduce REACH-style regulation of chemicals in India. Evonik was instrumental in the establishment of a new Product Stewardship Advocacy Committee to monitor further developments by the Indian Chemical Council (ICC). Evonik chairs this committee.

Further product stewardship topics

Our product stewardship covers a broad spectrum of topics, which we are continuously addressing. The most urgent issues from the perspective of our stakeholders and in our own assessment are outlined below.

Animal protection

We need toxicological and ecotoxicological data to assess the safety of our products. In keeping with our responsibility to protect animals, we start by examining possible alternatives to animal testing in detail. These include, for example, quantitative structure-activity relationship analyses, analogies, literature, and non-animal testing methods and approaches. These are referred to collectively as NAMs (new approach methodologies). NAMs will receive greater attention in the revision of the CLP and REACH. We have set up an internal working group to bundle our expertise. As an active member of the European Partnership for Alternative Approaches to Animal Testing (EPAA), we drive forward alternative methods on a cross-sector basis. Evonik was actively involved in drafting the position paper published by the German chemical industry association (VCI). We advocate at national and international levels to minimize the possible impact of the new demands made by the CSS chemicals strategy with regard to animal testing. For example, we are involved in the activities on the Next Generation Risk Assessment and the Usability of New Approach Methodologies for Risk Assessments and in discussions on data sharing.

Evonik is also involved in various national and international associations and initiatives engaged in the ongoing development of risk evaluation criteria such as EPAA, ECETOC[1], and Cefic-LRI[2].

It's important to avoid animal testing wherever possible. As well as using in-vitro testing, we achieve that by applying intelligent analogies that enable us to draw conclusions about how a target substance will behave. Last year, we worked with leading scientists on using and improving non-animal methods for inhalation toxicology and respiratory sensitization tests.«

Dr. Nils Krüger | Vice President Product Stewardship HRA (Hazard and Risk Assessment), Germany

Product stewardship

Nevertheless, from a regulatory and scientific perspective, in many cases, tests on animals are the only way to meet the necessary data requirements. If animal testing is unavoidable, Evonik ensures that the tests are performed only by test institutes that are validated in accordance with the applicable national and international legal provisions and that these tests meet animal protection standards. An internal working group monitors the auditing of the test institutes. **More**. As a responsible company, we also have our own animal protection guidelines, which are currently being revised.

Nanotechnology

Nanotechnology is a generic term covering a wide range of developments and innovations as well as established technologies. Their common feature is the investigation, production, and use of minute structures measuring around 1 to 100 nanometers. Some have been known for many decades, while others are new developments. Nanomaterials used in products and efficient system solutions for our customers make a substantial contribution to environmental protection and climate protection. Evonik strives to handle the associated technologies responsibly and conscientiously. We see considerable opportunities in new materials for high-end batteries and energy-saving technologies.

Our long-standing experience helps us implement measures to protect employees, customers, and consumers in the handling of nanomaterials. These measures are based on the latest assessment of the risks and dangers resulting from scientific investigations and epidemiological and toxicological studies. In addition, Evonik supports the establishment of new methods of

[1] ECETOC = European Centre for Ecotoxicology and Toxicology of Chemicals.
[2] LRI = Long-Range Research Initiative.

investigation aligned to the specific effects of nanomaterials, which refine the evaluation of risks. We are also continuously investigating the potential hazards and safe handling of these materials. We regularly discuss the opportunities and risks of nanotechnology with experts from industry, science, authorities, and industry associations. The revised definition of nanomaterials (Commission Recommendation 2011/696/EU) has resulted in some market uncertainty: The EU unexpectedly defined many powder substances as nanomaterials, and this definition has not been accepted or adopted in the rest of the world. In addition, the definition has not been transposed uniformly in national legislation within the EU. Furthermore, many other EU regulations have their own definitions that conflict with this recommendation. What is more, the European Court of Justice has ruled that "nano" is not an intrinsic property of a substance.

Microplastics

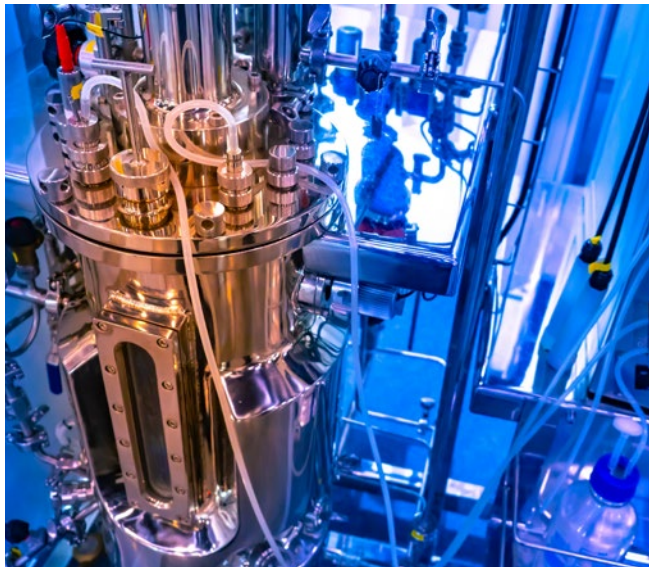
On behalf of the European Commission, in 2019, the European Chemicals Agency (ECHA) published a draft restriction on intentionally added microplastics. Evonik took part in public consultations, both directly and through industry associations (Cefic and VCI). The EU published its draft restriction at the end of August 2022. It was adopted in September 2023 and took effect in October 2023. Compared with ECHA's original draft, some improvements have been achieved for the chemical industry, for example, extending the transition periods for substitution, reporting, and labeling. Nevertheless, the restriction will increase the administrative work for producers and users. We are advocating for the publication of an additional guideline to specify details that have not yet been clarified to safeguard implementation.

Evonik became a signatory to Operation Clean Sweep in 2015. The aim of this global campaign is to reduce pellet loss in production, processing, and transportation. Evonik is also working on the removal of microplastics from wastewater. One example is the development of an electrochemical process, which was presented at the UNESCO – EU H2020 LimnoPlast Conference in May 2023. This process can be used to recover microplastics from wastewater for reuse. Evonik also offers alternatives that can replace microplastic particles in both rinse-off and leave-on cosmetic products.

Proposed restriction of PFAS in the EU

In spring 2023, five EU member states (Denmark, Germany, Netherlands, Norway, and Sweden) submitted a joint proposal on the restriction of PFAS to the European Chemicals Agency (ECHA). The proposed restriction affects an estimated 10,000 substances in almost all usage forms. Evonik is concerned that the implementation of this proposal could have a massive impact, for example, by disrupting value chains, and could prevent important applications in batteries, semiconductors, electric vehicles and renewable energy generation. Another critical factor is that the proposal does not contain any exceptions for the use of PFAS in industrial applications, for example, as intermediates. Moreover, the use of PFAS-coated pipes, valves and seals in plant engineering could be banned within 1.5 years of the introduction of the restriction. That would affect entire industrial plants.

A six-month public consultation on the proposed restriction of PFAS took place in 2023. Together with industry associations, Evonik played an active part in this consultation process and provided supplementary information and data in an effort to make the regulation more appropriate. Our critical assessment was shared by many other market participants. This was demonstrated by the fact that approximately 5,600 contributions to the consultation process were uploaded—more than in any previous consultation. Under the REACH regulation, the scientific bodies now have to prepare a scientific evaluation within 12 months. This will then be submitted to the European Commission, which will make a final decision on the possible restriction with the EU member states.



Bioreactor for the cultivation of micro-organisms in a biotech lab.

Evonik markets small amounts of polymers classified as a subgroup of PFAS for the manufacture of medical products. In addition, Evonik uses a small amount of PFAS compounds as precursors and intermediates, for example, in the production of pharmaceutical active ingredients and additives for the insulation of buildings.