

## SAFE AND SUSTAINABLE BY DESIGN CHEMICALS

### Key Messages

- Hazardous chemicals are a direct threat to human health and the environment and can therefore never be identified as safe and sustainable.
- The safe and sustainable by design criteria should be ambitious and comprehensive. However, in order to introduce the criteria as soon and as efficiently as possible we suggest to initially include only the most important parameters. We suggest to add more parameters over time with a clear timeframe so industry can prepare and gather data for these future aspects of safe and sustainable by design.

### INTRODUCTION

The Commission outlines its ambitions to make the European economy more sustainable in the European Green Deal. Climate neutrality, circular economy, biodiversity protection, and a toxic free environment are goals that are presented in the policy document. It is a priority to protect citizens and the environment against the negative impact of hazardous chemicals. To this end, the Commission adopted, along with other initiatives, the Chemicals Strategy for Sustainability last year, as well as the Zero Pollution action plan earlier this year.

The Chemicals Strategy presents specific actions to support a transition into an economy where chemicals, materials and their use in products are safe and sustainable. It starts with the design phase and goes on with the whole life cycle: production, use, and end-of-life.

In the process of creating safe and sustainability criteria for chemicals ChemSec is here presenting its views on how the Commission should proceed and how the safe and sustainable by design criteria could support reaching the goals of the Chemical Strategy for Sustainability.

In order to make it comprehensible, the safe and sustainable by design criteria is divided into two types of parameters: safety and sustainability.

### PARAMETER FOR SAFETY

Hazardous chemicals are a direct threat to human health and the environment and can therefore never be identified as safe and sustainable. The negative effects from hazardous chemicals can be direct and observable, but they can also be long lasting and more difficult to identify. Because of this, it is important to phase out and stop using hazardous chemicals.

The presence of hazardous chemicals also disrupts the emerging circular economy. It is impossible to calculate the risk of exposure as materials are being used and reused several

times. Further on, the use of hazardous chemicals is making the recycling industry miss out on market opportunities worth billions of euros.

The most hazardous chemicals are the ones that fulfill the criteria for being “Substances of Very High Concern” (SVHC). But chemicals that are not SVHCs are not safe by default. A wider range of chemicals are problematic and we can call them “Chemicals of Concern”.

Another aspect of importance to safety is uncertainty about properties, or data gaps. We cannot consider a substance safe on the basis that it has not been tested. Obtaining data on the many chemicals in production has been and is a main challenge, but there really is no way around it. It must be done.

Products cannot be considered safe when including chemicals with the following properties. Also, these chemicals cannot be considered safe if these properties have not been examined.

- Carcinogens, Mutagens and Reproductive toxicants, Categories 1a, 1b and 2
- PBTs, vPvBs
- PMTs, vPvMs
- Endocrine Disrupting Chemicals
- Respiratory sensitizers, Category 1
- Skin sensitizers, Category 1
- Specific Organ Toxicity, Categories 1, 2 (repeated exposure and single exposure) and 3 (single exposure)
- Acute Health Hazards, Category 1 and 2
- Acute Aquatic Toxicity Category 1
- Chronic Environmental Hazards, Categories 1-4
- Ozone Depleting Compounds

## PARAMETERS FOR SUSTAINABILITY

Measuring sustainability, there are several parameters that would be meaningful to include in the safe and sustainable by design criteria for chemicals. The following are ChemSec’s suggestions:

- CO<sub>2</sub> emissions
- Water use
- Waste in production
- Impact on ecosystems and biodiversity
- Basic social dimensions

## CO<sub>2</sub> EMISSIONS

Initially, the most important sustainability parameter to include is CO<sub>2</sub> emissions.

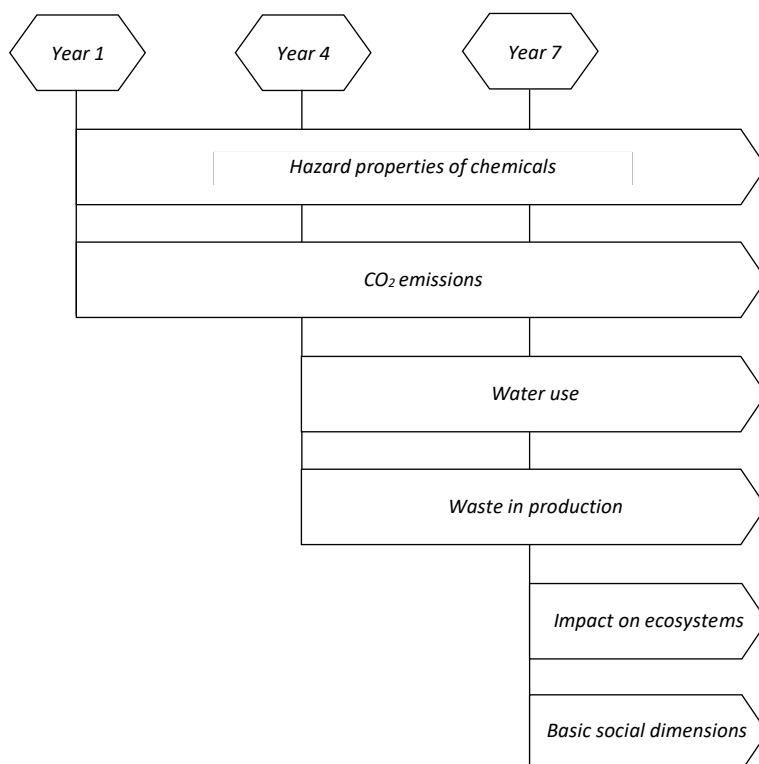
There are today established and standardized methods to measure CO<sub>2</sub> emissions. The ISO 14067 *Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification*, which is compatible with other ISO life cycle assessments, as well as the Greenhouse Gas Protocol Product Standard are examples of models that are already widely used, and could be useful for the safe and sustainable by design criteria.

## A MODEL FOR IMPLEMENTATION

For efficient implementation of the safe and sustainable by design criteria we suggest to include the parameters in a stepwise approach. It is important that industry have a fighting chance to meet the threshold levels for the parameters and to reach the targets values before the parameter is included in the criteria. This will also enable the safe and sustainable by design criteria to be introduced in the near future instead of being postponed indefinitely.

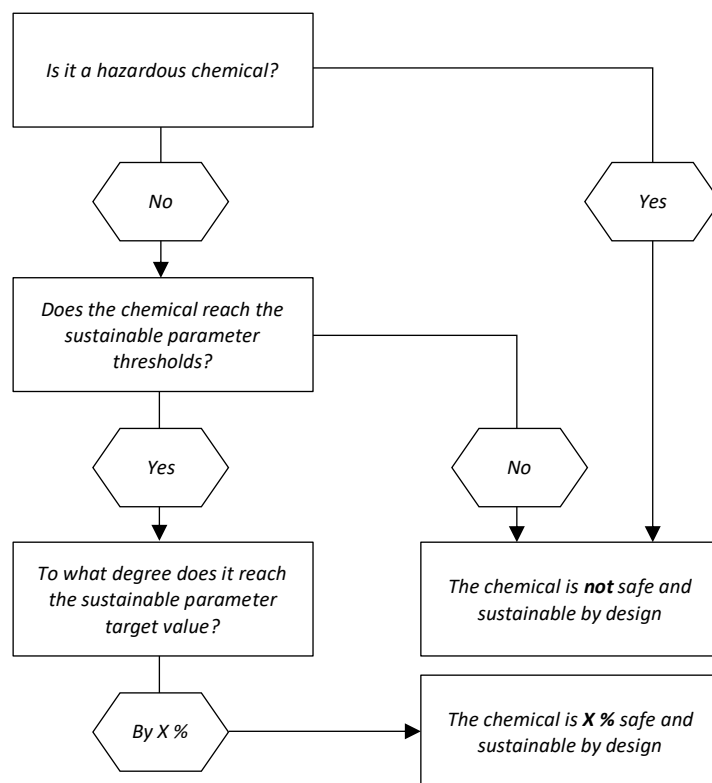
We suggest that there should be a minimum threshold level for all parameters. If the threshold is not met the product should not be considered safe and sustainable by design. The concept of threshold levels is something that is identified as a useful method in a recently published report from the European Environmental Agency (EAA). Products should thereafter be graded on how well they reach target values for each parameter.

We suggest that the number of parameters that will be used to measure the level of sustainability should be updated at regular intervals. The target for each individual parameter should also be updated. This will give industry enough time to adapt and submit necessary information. The first sustainability parameter to be included should be CO<sub>2</sub> emissions, then water use and waste in production. In the figure below the interval for updating the model is every three years.



If there is no data, the parameter should be regarded as not fulfilled and the chemical should not be considered safe and sustainable by design.

The following flowchart describes how a chemical would be assessed:



The first box is binary and indicates if it is a hazardous chemical or not. If it is hazardous, it is considered not to be safe and sustainable. The rest of the parameters indicates how well the chemical is meeting the target for CO<sub>2</sub> emissions, water use, and waste in production.

## LACK OF DATA

Even if we believe data is available to a large extent on hazard properties, as well as CO<sub>2</sub> emissions, the lack of data is a notable issue, both with regards to the hazard properties of chemicals and the sustainability aspects of the manufacturing processes.

In many cases a lack of necessary data makes it difficult to adequately evaluate the effects of certain chemicals. In order for the safe and sustainable by design criteria for chemicals to work, it is crucial that the data is made available.

The issue is the same for the sustainability parameters. Lack of data is an issue in all value chains, and this will make it more difficult to conclude the level of sustainability for chemicals. If there is no data, it will also be impossible to set relevant sustainability targets.

Another issue is that it is not always possible to compare the data that is collected. It all depends on whether or not the same methods for collecting data have been used. If the methods are different for two different data sets, a comparison of them might not be credible.

There have been some attempts at solving these problems. One such is the Product Environmental Footprint (PEF) that is being developed by the Commission together with the industry. It aims at finding standardized methods to be used when gathering data. The long-term goal is that companies will be able to benchmark against each other and create a positive movement towards more sustainable products.

Once the data is collected, policymakers will be able to formulate threshold levels and target values and these will be the baseline for the scoring. This is why we suggest to introduce the parameters stepwise so that industry will have more time to gather the data that is needed for the parameters that suffers from lack of data today.

## SUSTAINABLE PRODUCTS

The safe and sustainable by design criteria for chemicals can easily be translated and used for materials and products, because all materials and products contain chemicals.

The following flowchart is close to identical to the one previously presented for chemicals, and describes how we suggest a product should be assessed:

