P-A-R-C Safe and Sustainable by Design Toolbox

Information Leaflet for the potential users of the tool

About this leaflet

The *Partnership for the Assessment of Risks from Chemicals* (PARC) has a dedicated work package on supporting the development of tools for implementing the 'safe and sustainable by design' (SSbD) framework. The purpose of this collection of connected tools (toolbox) is to support users in applying the SSbD framework. The toolbox is currently in an early stage of development and will be further improved in close cooperation with industry, academia and authorities to account for their needs and perspectives and ensure a wide usability and applicability.

Safe-and-Sustainable-by-Design

The SSbD framework enable the design, development and assessment of new, or existing chemicals, and materials keeping in mind both the functionality and the potential impact on human health and the environment. It is an important prevention approach in the European Commission's (EC) ambition to achieve a toxic-free environment by 2050.

The EC SSbD Framework

The SSbD framework is defined in the Commission Recommendation (EU) 2022/2510 of 8 December 2022. The framework is currently undergoing 2 years testing phase and an update is expected in 2025 based on experience collected. In addition to the Recommendation, further technical details can be found in in two reports from the Joint Research Center (report 1 and report 2).

The framework is composed of a (re-)design phase and an assessment phase that are applied iteratively as data becomes available.

The (re-)design phase consists of the application of guiding principles to steer the development process. The goal, the scope and the system boundaries — which will frame the assessment of the chemical or material — are defined in this phase.

The assessment phase comprises of 4 steps: hazard, workers exposure during production, exposure during use and life-cycle assessment. The assessment can be carried out either on newly developed chemicals and/or materials, or on existing chemicals and/or materials to improve their safety and sustainability performance during production, use and/or end-of-life.

Please follow the link for more details and the latest developments of the framework.

The Toolbox

The P-A-R-C SSbD Toolbox is a *structured* collection of tools to support designers, developers, risk assessors of chemicals and materials from industry, academia and governments in addressing questions about functionality, chemical safety and environmental sustainability. In addition the toolbox will in time cover also socio-economic aspects, to support the exploration work on a potential 5th step for the framework.

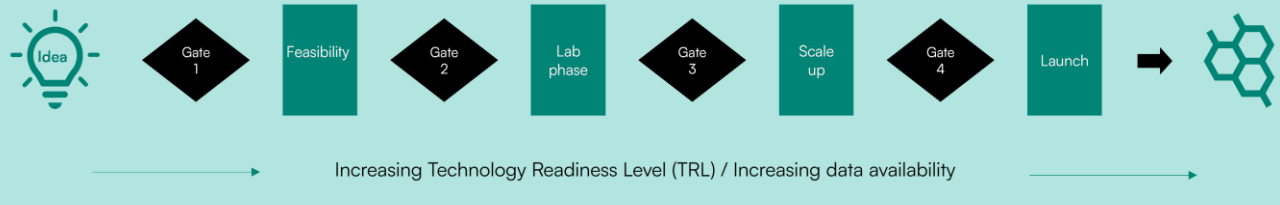
The toolbox will provide access to tools itself as well as connection between the tools.

The goals of the toolbox are to provide:

- structured inventory and overview of tools suited for SSbD assessment and (re-)design;
- structured workflows for applying the tools to answer SSbD assessment and (re-)design questions;
- an evaluation and decision-support approach to support interpretation and follow-up (re)design actions;
- a clear connection with the commercial developmental stages of a chemical or material;
- incorporating the foreseen production, use conditions and end-of-life of the chemical, material or product.

Innovation in stages

The development of a (new) chemical and material from first idea to final market launch is a stepwise and often iterative process. At the first stages of innovation the information (on safety, sustainability, socio-economic aspects, market potential) is limited, and grows as the innovation is taken forward. The toolbox will be designed in such a way that it enables (re-)design and assessment at the different stages of innovation maturity, including decision support. As the specific use of a chemical greatly determines the overall impact foreseen production, use conditions and end-of-life of the chemical material or product are incorporated.



The *PARC SSbD Toolbox* will be comprehensive in its ambition; its scope includes:

- chemical safety, including chemicals hazards, chemical risks at the production stages, chemical risks at (re-)use and waste stages;
- product sustainability aspects;
- functionality of chemical substances in a product;
- evaluation and (re-)design during the design and development (innovation) stages;
- socio-economic assessment approaches (when they are more mature).

Toolbox Development Approach and Timeline

PARC Work Package 8 is working on the toolbox development through interrelated activities:

- actively engaging with stakeholders to incorporate their needs in the development of the PARC SSbD Toolbox;
- conceptual development of the toolbox for (re-)design and assessment of safety, sustainability, socioeconomic assessment and functionality through the innovation cycle;
- early identification of knowledge gaps and need for new tool development;
- computational implementation, including the functional link of the models with input-output relationships;
- development of use-case workflows for SSbD assessment and SSbD (re-)design;
- applying the PARC SSbD Toolbox to use-cases involving different chemicals and materials used in different product groups.

We aim to release a beta version of the PARC SSbD Toolbox by December 2023. There will be continued effort to refine the toolbox throughout the duration of the partnership.

Get in touch and join the effort

Development of a toolbox that is fit-for-purpose relies on collaboration with all stakeholders.
Do you want to share with us how the PARC SSbD Toolbox can better support your innovation in chemicals, materials or products?
Do you have tools that need to be included?
Do you want to share a case study that we can apply the toolbox to?
We would love to hear from you! Please contact us at PARC-Task-8.1@rivm.nl.

About P-A-R-C

The European Partnership for the Assessment of Risks from Chemicals (PARC), initiated in 2022 for a duration of 7 years (until 2029), aims to develop next-generation chemical risk assessment to protect human health and the environment. It is expected to support the European Union's Chemicals Strategy for Sustainability and the European Green Deal's "Zero pollution" ambition with new data, actionable knowledge, methods and tools, expertise and networks. To achieve this, projects are implemented within PARC focusing on specific research areas including human and environmental (bio)monitoring, toxicity testing, and the development of the Safe and Sustainable by Design (SSbD) criteria concept. PARC is developing its own indicator framework including performance indicators to monitor the implementation and achieved impact of PARC (Task 1.3). This will allow for a more efficient tracking of achieved goals and be easily used by all participants across the consortium, and the different boards of PARC to showcase and disseminate PARC's progress and contribute to the central monitoring of the impact of Partnerships under Horizon Europe.
Learn more about PARC at https://www.eu-parc.eu/

PARC Partnership for the Assessment of Risks from Chemicals

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