

A4 2022 Quarterly Webinar

Circularity: The Role for Substitution Thinking

November 29, 2022
11:00 AM – 12:00 PM ET

TOPICS IN
ALTERNATIVES ASSESSMENT

Free Webinar Series Hosted by the Association
for the Advancement of Alternatives Assessment





HOW WE MAKE A DIFFERENCE

- Advancing the science, practice, and policy of alternatives assessment and informed substitution
 - Fostering international and interdisciplinary collaboration
 - Supporting a community of practitioners dedicated to the adoption of safer chemicals
-

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- ✓ Discounts to A4 events

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Goals for Today



In a circular economy, chemicals needed for processes and products are regenerative by design. Currently, our chemicals economy is far from circular. Moving forward, substitution thinking will play an important role in identifying alternatives that better adhere to circularity principles.

Goals for today:

- **Gain insights** from OECD reports and initiatives to support the integration of sustainable chemistry and substitution thinking into the redesign/design of chemical-intensive products and processes.
- **Hear from you:** How is substitution playing a role in your company's journey towards circularity goals?

Today's Speaker



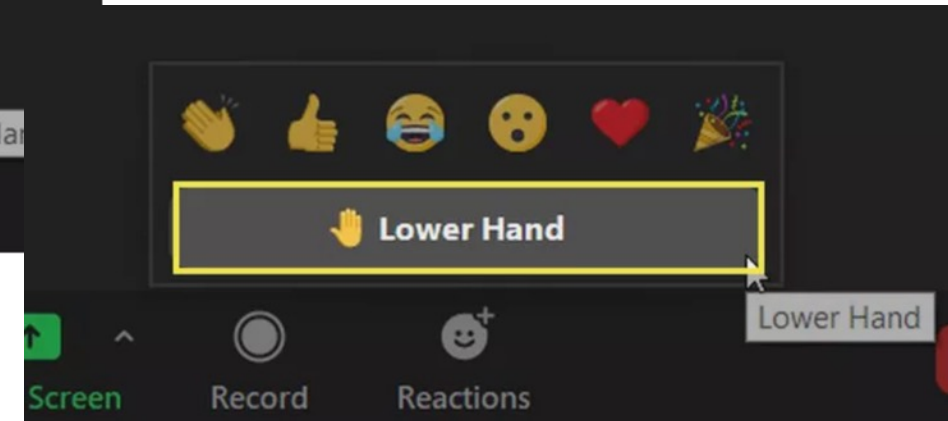
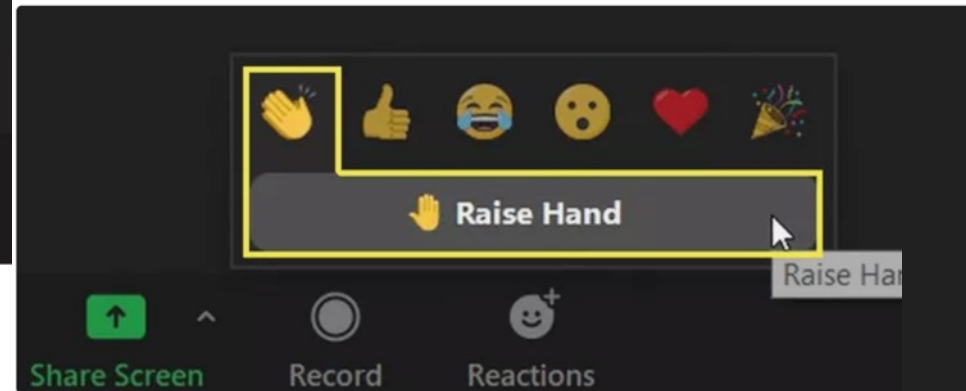
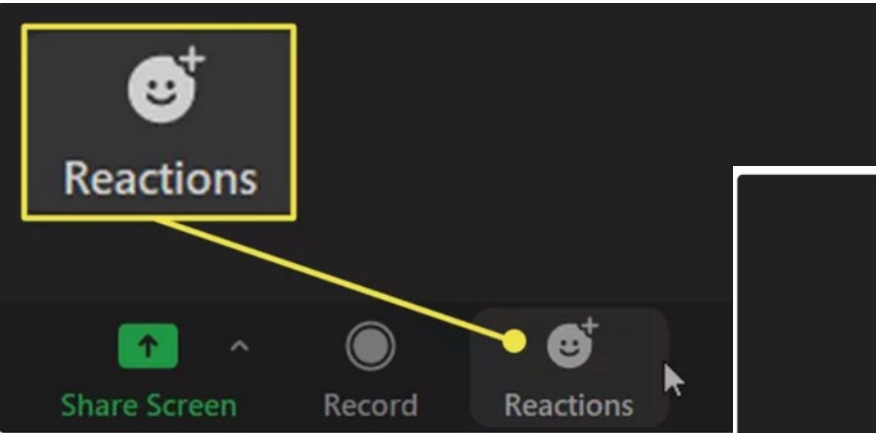
Eeva Leinala
Organization for Economic
Cooperation and Development

Webinar Logistics



- We are using Zoom Meeting. **Please keep your lines muted and your videos off.**
- Use “**speaker view**” in Zoom – it will offer the best viewing experience.
- During the Q&A portion of the session, if you wish to ask a question or offer a comment, **please raise your hand** [we’ll show you how in the next slide]
 - Feel free to unmute your line and turn on your video so engage more voices/faces in the conversation.
 - Also feel free to use the chat.
- This session is being recorded and will be posted with the slide deck on the A4 website: www.saferalternatives.org
- An inventory of resources described on this webinar will also be posted on the A4 website.

We want to engage you during the Q&A - Please raise your hand in Zoom



To raise your hand

1. Open the “reactions” button
 2. Hit “raise hand” button
 3. Please “lower hand” button afterwards
- ✓ The chat will work too



CIRCULARITY: THE ROLE FOR SUBSTITUTION THINKING

A4 Webinar
November 2022

Eeva Leinala, OECD Secretariat



The OECD...

Established: 1961

Headquarters: Paris

Membership: 38 countries

Structure: Council (Ambassadors)
Committees and Working Parties
Secretariat



The Organisation for Economic Co-operation and Development (OECD) is an international organisation that works to build better policies for better lives.

Forum and knowledge hub for data and analysis, exchange of experiences, best-practice sharing, and advice on public policies and international standard-setting.



OECD ENVIRONMENT, HEALTH AND SAFETY (EHS) PROGRAMME

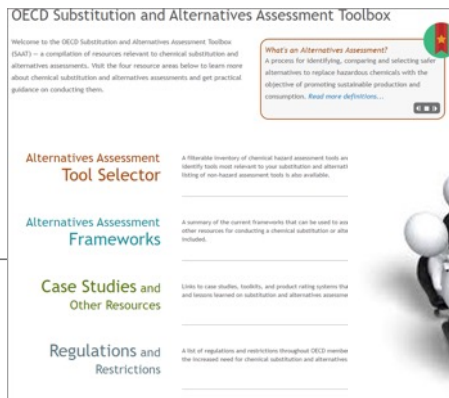
38 Member countries, many partner countries and other stakeholders work together to develop and co-ordinate activities on chemical safety and biosafety on an international basis. One of the core aspects of the work relates to the Mutual Acceptance of Data.

The main objectives of the Programme are to:

- Assist OECD Member countries' efforts to protect human health and the environment through improving chemical safety and biosafety
- Make chemical control policies more transparent and efficient and save resources for government and industry; and
- Prevent unnecessary distortions in the trade of chemicals, chemical products and products of modern biotechnology.



<http://www.oecd.org/chemicalsafety/>



Substitution of Harmful Chemicals



Sustainable Chemistry

Working Party on Risk Management

Created in 2021!



Shifting towards Safer Alternatives for PFAS Substances (OECD/UNEP Global PFC Group)

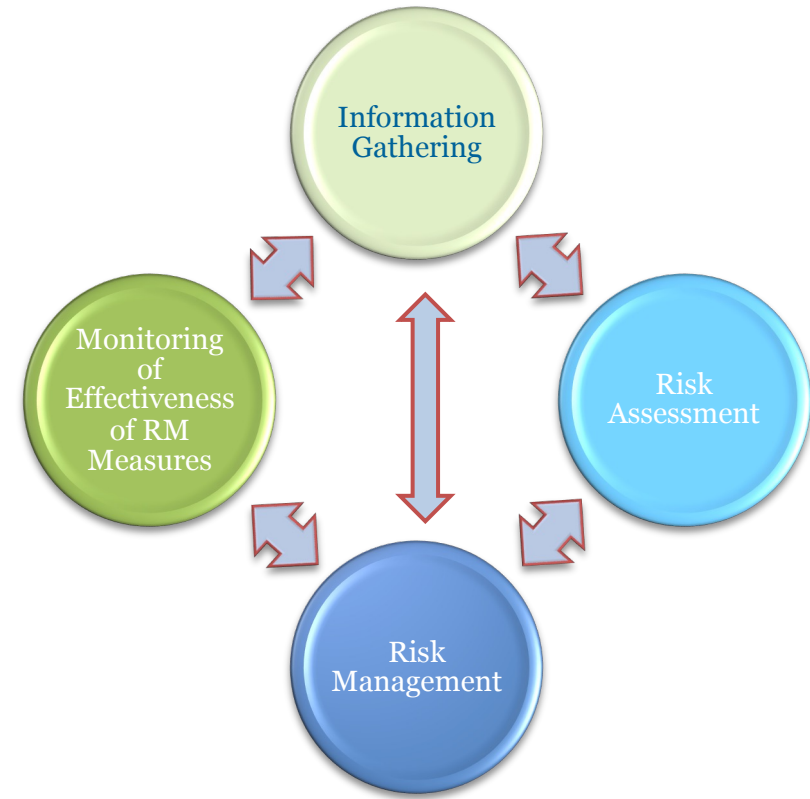


Risk Management Tools and Approaches Including Socioeconomic Analysis





Traditional Chemical Management Process





Goals for International Chemicals Management are Not Being Achieved

Strategic Approach to International Chemicals Management (SAICM) is a policy framework to promote chemical safety around the world.



Achievement of the sound management of chemicals throughout their life cycle so that by the year 2020, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health

- Global Chemicals Outlook II:
- The global goal to minimize adverse impacts of chemicals and waste will not be achieved by 2020.
- Solutions exist, but more ambitious worldwide action by all stakeholders is urgently required.



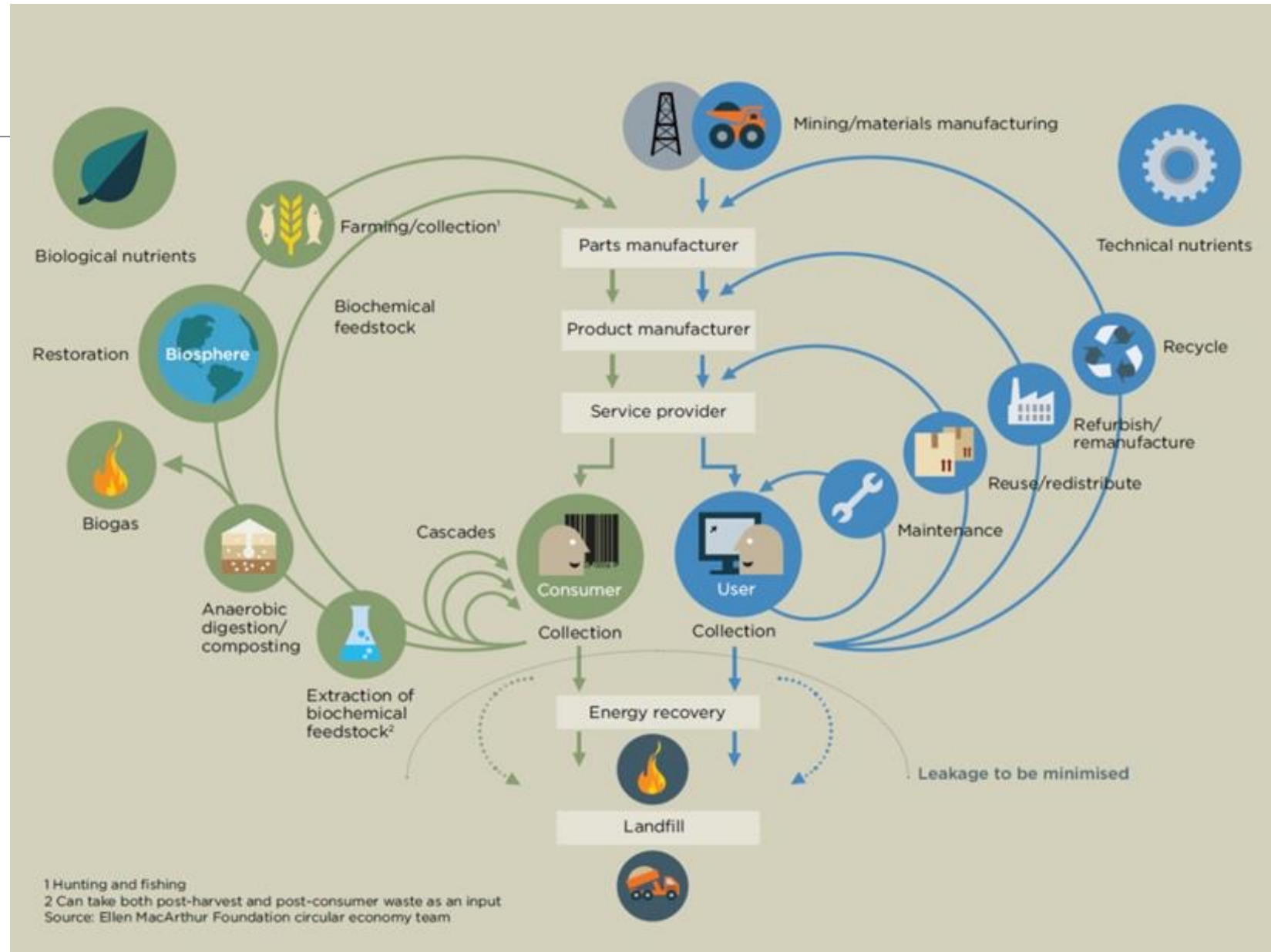
Global Chemicals Outlook II



- Size of global chemical industry exceeded USD 5 trillion in 2017.
→ projected to double by 2030
- Hazardous chemicals and other pollutants continue to be released in large quantities.
- The benefits of action to minimize adverse impacts have been estimated in the high tens of billions of United States dollars annually.
 - The World Health Organization estimated the burden of disease from selected chemicals at 1.6 million lives in 2016 (this is likely to be an underestimate).
 - Chemical pollution also threatens a range of ecosystem services.
- Driven by global megatrends, growth in chemical-intensive industry sectors (e.g. construction, agriculture, electronics) creates risks, but also opportunities to advance sustainable consumption, production and product innovation.



EU Commission Circular Economy Action Plan 2015



Copyright © Ellen MacArthur Foundation, Towards the circular economy Volume 1: Economic and business rationale for an accelerated transition (2013).



Proactive consideration at the design stage ...

- ... enables chemicals through-out their life-cycle to be better managed – in the sourcing, manufacturing/processing, use, product and end-of-life





OECD Global Forum on Environment, 2018



Ministry of Environment
and Food of Denmark

OECD Global Forum on Environment:
Plastics in a Circular Economy

**Designing sustainable plastics from
a chemicals perspective**

29-31 May, Copenhagen

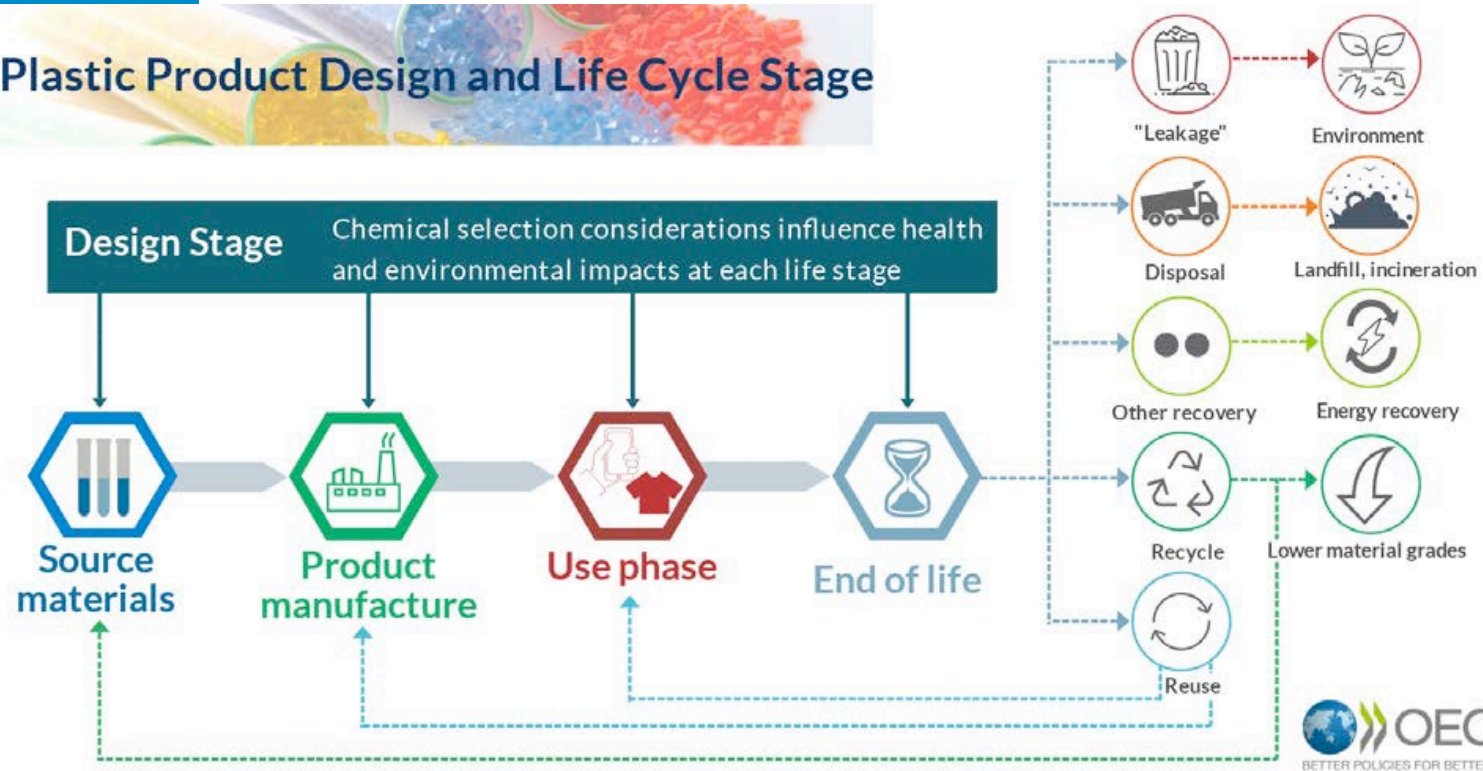


oe.cd/plastics-forum



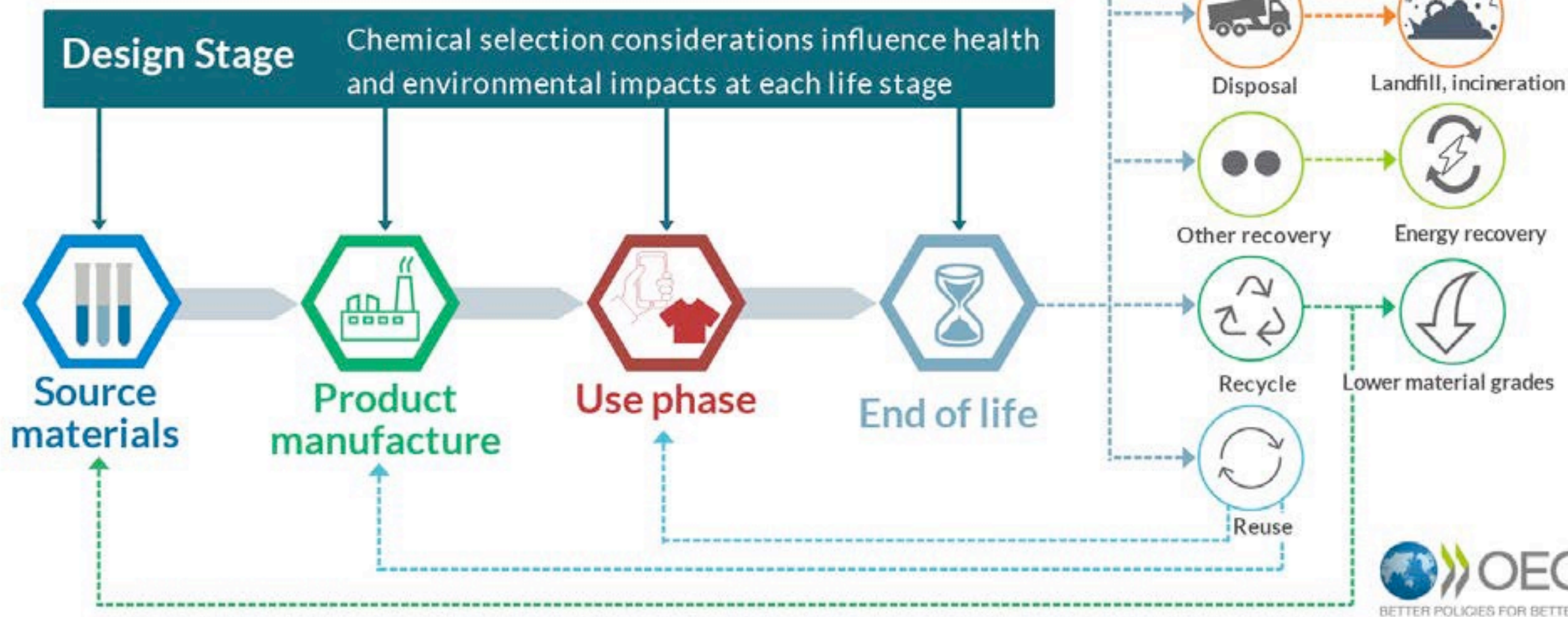
@OECD_ENV

Plastic Product Design and Life Cycle Stage



The Chemicals and Biotechnology Committee in collaboration with EPOC's Working Party on Resource Productivity and Waste.

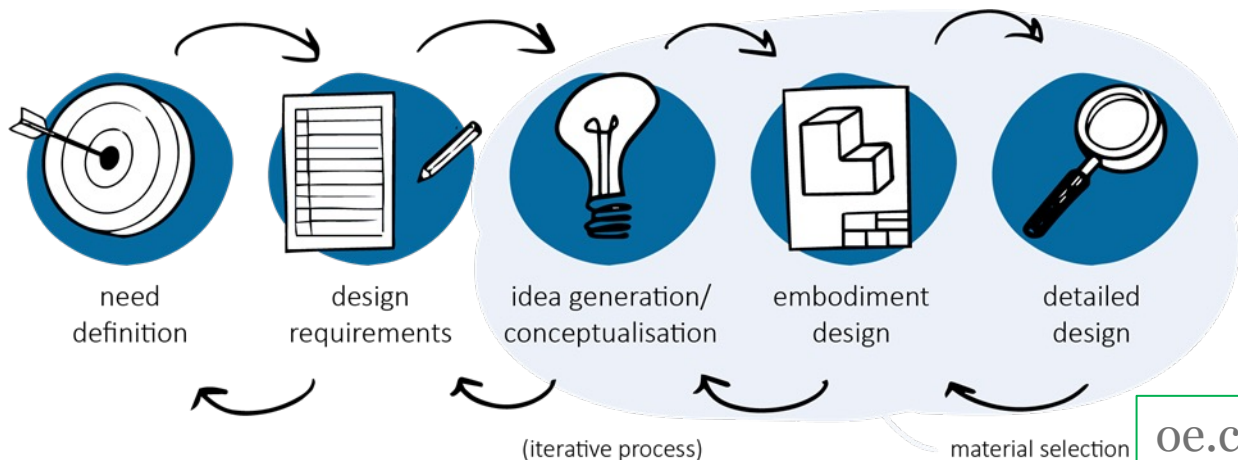
Plastic Product Design and Life Cycle Stage





Development of Considerations for Sustainable Design of Plastics From Chemicals Perspective

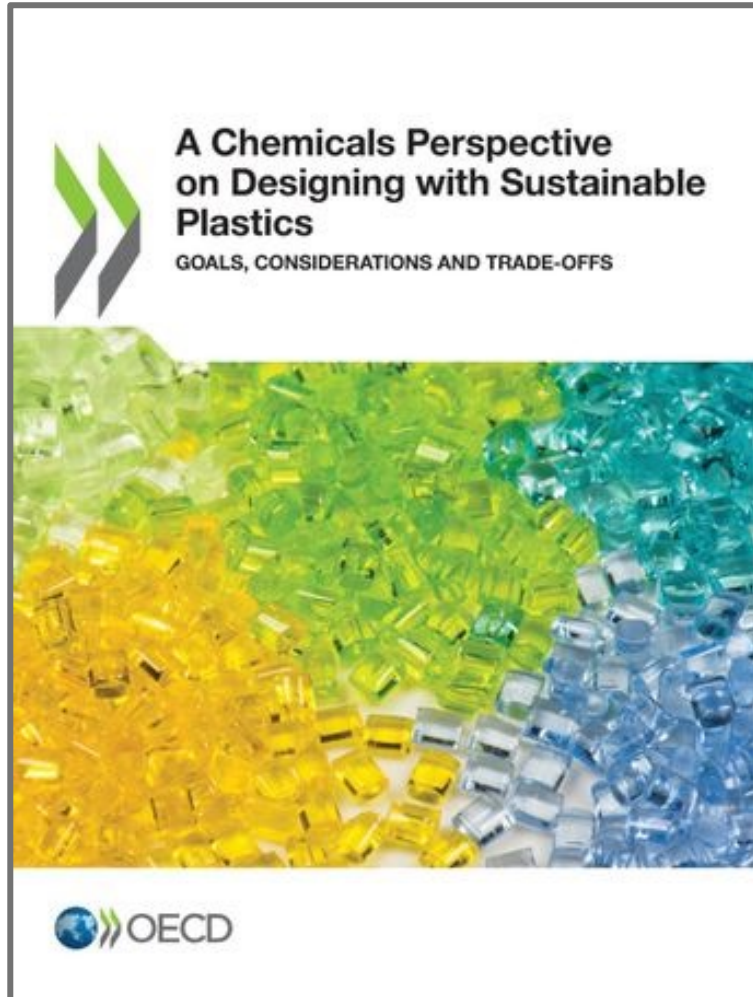
- Conducted case studies to inform the considerations development
 - plastic packaging (biscuit wrappers & detergent bottles) and construction material (insulation & flooring)
- Draw more general learnings from the case studies to inform the development of a considerations document



oe.cd/chemicals-plastics



A Chemicals Perspective on Designing with Sustainable Plastics: Goals, Considerations & Trade-offs

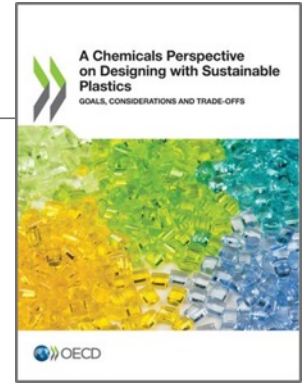


- Enable the creation of inherently sustainable plastic products by integrating sustainable chemistry thinking in the design process
- Equip designers and engineers with knowledge of how to manage the complexity of finding the most sustainable plastic for their products with a view of relevant chemical considerations and support better outcomes.



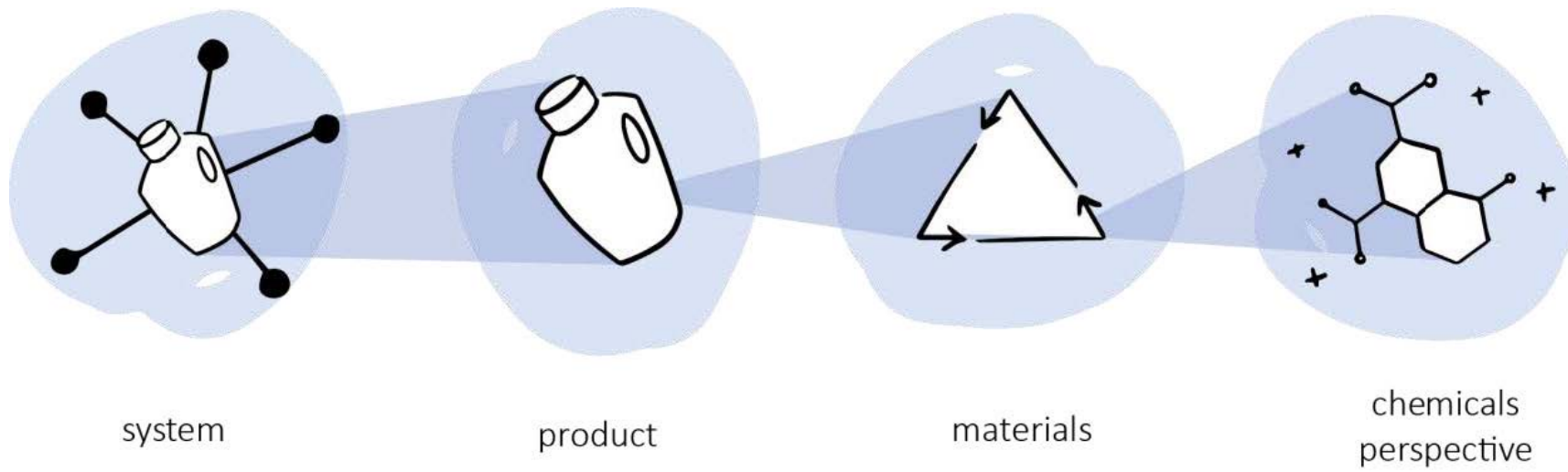
A CHEMICALS PERSPECTIVE ON DESIGNING WITH SUSTAINBLE PLASTICS

Goals, considerations and trade-offs

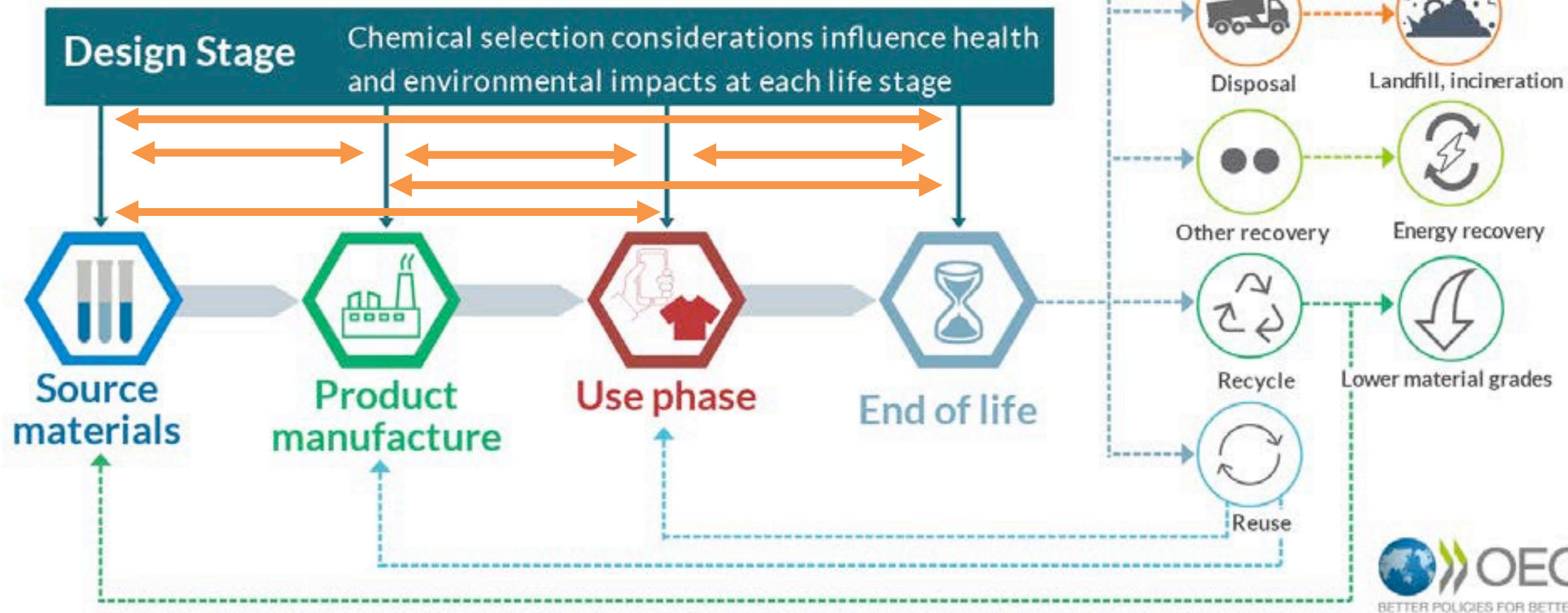


- **Design principles of sustainable chemistry and engineering (ACS):**
 - Maximize resource efficiency
 - Eliminate and minimize hazards and pollution
 - Design systems holistically and using life cycle thinking
- **Sustainable design goals:**
 - Select materials with an inherently low risk/hazard
 - Select materials that have a commercial ‘afterlife’
 - Select materials that generate no waste
 - Select materials that use secondary feedstock or biobased feedstock
- **General considerations for sustainable design from a chemicals perspective** were identified as key elements for designers to take into account for **each life-cycle phase** when selecting material composition culminating with whole product optimization.

Focused on embedding sustainable chemistry thinking at the design stage



Plastic Product Design and Life Cycle Stage





Substitution in response to
regulatory activity

Innovating a new
chemical/material/product

Assessment of Alternatives

Process change

...

Chemical
SELECTION
Decision



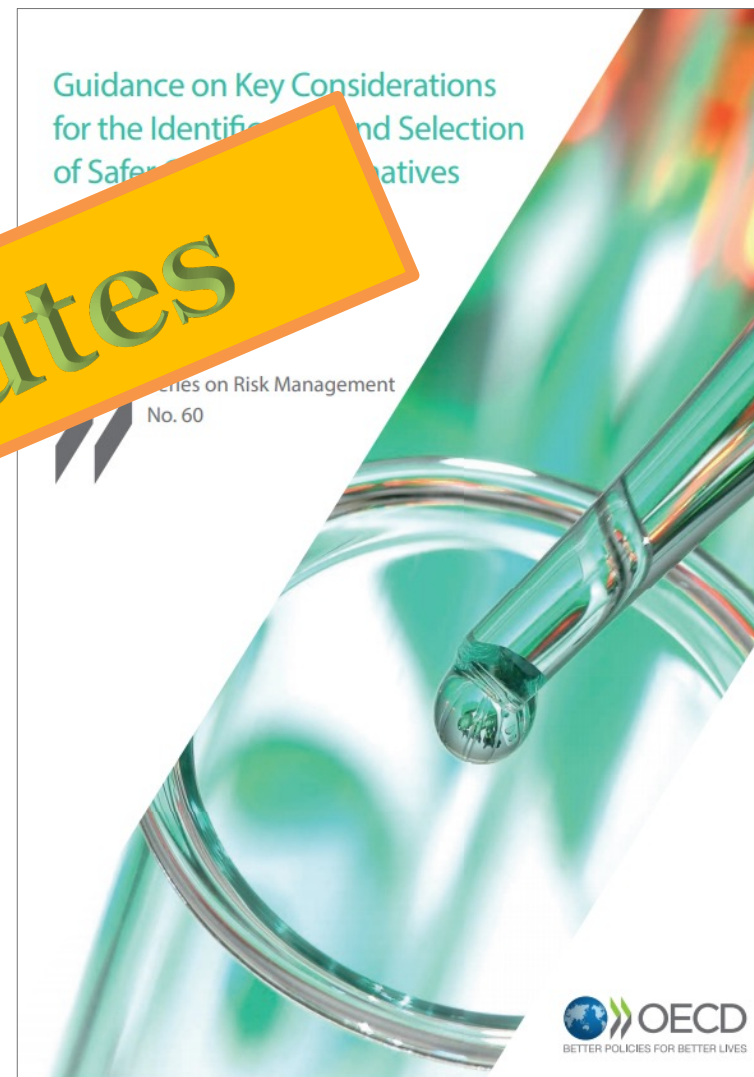
Guidance on Key Considerations for the Identification and Selection of Safer Chemical Alternatives

Goals of the guidance:

- Define “safer” chemicals in the context of alternatives assessments
- Advance a consistent understanding of the requirements to determine whether an alternative is safer

+++ Attributes

<https://www.oecd.org/chemicalsafety/risk-management/substitution-of-hazardous-chemicals.htm>

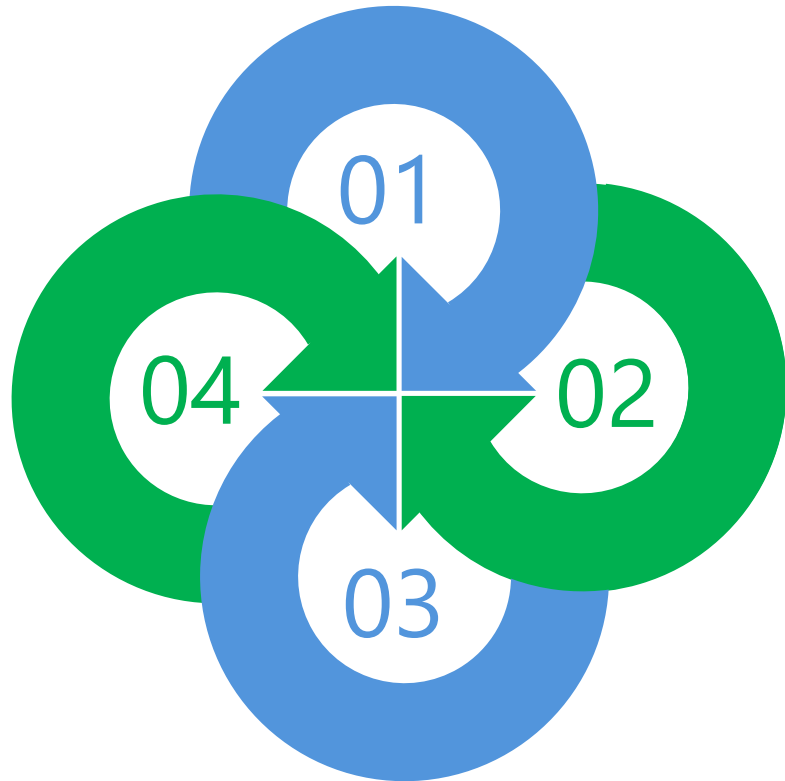




- **Repository of key resources to support AA and Substitution**
- <https://www.oecd.org/chemicalsafety/risk-management/substitution-of-hazardous-chemicals/>



Potential Policy for More Sustainable Solutions



Chemical Management Frameworks

Integrate proactive chemicals management – sustainable design; greener chemistries

Consider life-cycle thinking in order to understand trade-offs

Have in place a systematic chemicals management framework



Linking Risk Management and Innovation

Focus innovation on alternatives to chemicals that will be regulated, or are likely to be regulated



Financial Measures

Increasing financing for sustainable chemistry

Applying economic instruments that incentivise substitution



Education

Better integrate knowledge of toxicology and environmental health into chemistry and engineering programmes

- Guidance on Key Considerations for the Identification and Selection of Safer Chemical Alternatives
- OECD Substitution and Alternatives Assessment Toolbox
<https://www.oecd.org/chemicalsafety/risk-management/substitution-of-hazardous-chemicals/>
- A Chemicals Perspective on Designing with Sustainable Plastics: Goals, Considerations & Trade-offs
- 4 case studies - plastic packaging (biscuit wrappers & detergent bottles) and construction material (insulation & flooring)
[oe.cd/chemicals-plastics](https://www.oecd.org/chemicals-plastics)



Thank you!

eeva.leinala@oecd.org



Q&A – Comments

How is substitution playing a role in your company's journey towards circularity goals?

Upcoming A4 Activities

- Watch your emails for A4's announcements about upcoming webinars later this winter
- A4 International 2023 Symposium: October 2023 [official dates to be announced in early 2023]

A4 website: www.saferalternatives.org

THANK YOU!

Please complete evaluation poll before
you leave