

Chapter 9. Conclusions and Recommended Next Steps

This chapter presents the overall conclusions of the document and offers next steps that could be taken to improve sustainable design of plastics from a chemicals perspective. It also provides a case example of the approach described in the document.

9.1. Conclusions

This report examines the chemicals perspective of the material selection process to inform designers and engineers on how to manage the complexity of finding sustainable plastic for their products. The main contributions of this study are an overview of the main steps of this process, and a set of generalizable sustainable design goals, life cycle considerations, and trade-offs.

The main steps of the sustainable plastic selection from a chemicals perspective are summarised in Figure 9.1. The case of a detergent bottle is used to illustrate the steps with examples and is not meant to be prescriptive, nor capture all sources of information. In a real world scenario, all information available needs to be taken into account at each step in order to inform decision-making.

9.2. Limitations and Recommended Next Steps

Knowledge gaps. Note that scientific insights on chemicals are not always available, because not all chemicals in a finished plastic product have been identified, and because hazard data may not be available for all known chemicals. It is also complex and difficult to have a complete assessment of the chemicals in products. Make sure to report the process as transparently as possible to note what is known and where data gaps were encountered, and of what type the data gaps were (e.g. chemical information and toxicological data).

Ongoing chemistry discovery, new substances, and material availability. Note that chemistry is a continuum of discovery, with new materials being brought to the marketplace over time. Designers should be mindful of new materials able to create improved outcomes for products and their operating environment.

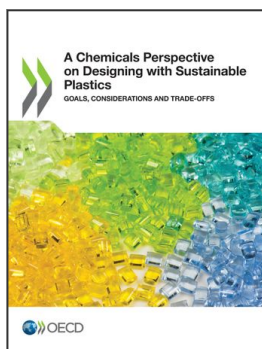
Integrate sustainability design goals earlier in the design process. In this study, the sustainable design goals are formulated in the second step of the sustainable plastic selection process. Implicitly, sustainability becomes less of a priority compared to the previous design requirements (e.g. mechanical and electrical properties). However, it is ideally taken into account earlier on in the design process. It was assumed that a Design for a circular economy approach was adopted, but sustainable design goals have to be an integral part of the design requirement stage of the design process (see Figure 1.2). As a result, ambitious innovations in system, service, product, and material design will be triggered earlier on.

Broaden the scope to include other material families. This study focused on sustainable plastics. However, plastic may not be the most sustainable family of materials for a specific (part of the) product to begin with. The chemical perspective could also consider, for instance, metals, ceramics, natural (wool and wood) or composite materials.

Involve more stakeholders. Designers and engineers were considered the main actors in selecting sustainable plastics. Nevertheless, in a circular economy, the whole value chain should be involved to implement more sustainable plastic solutions. Collaborations should be stimulated to foster innovations at a systems level. Also, designers and engineers often do not have full control over the design brief, meaning that decision makers should also be trained on the subject.

Figure 9.1. Main steps of the sustainable plastic selection process from a chemicals perspective and a case example





From:

A Chemicals Perspective on Designing with Sustainable Plastics

Goals, Considerations and Trade-offs

Access the complete publication at:

<https://doi.org/10.1787/f2ba8ff3-en>

Please cite this chapter as:

OECD (2021), "Conclusions and Recommended Next Steps", in *A Chemicals Perspective on Designing with Sustainable Plastics : Goals, Considerations and Trade-offs*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/0418ed5a-en>

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. Extracts from publications may be subject to additional disclaimers, which are set out in the complete version of the publication, available at the link provided.

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at <http://www.oecd.org/termsandconditions>.