IOMC TOOLBOX

SETTING UP AN INDUSTRIAL CHEMICALS MANAGEMENT SYSTEM

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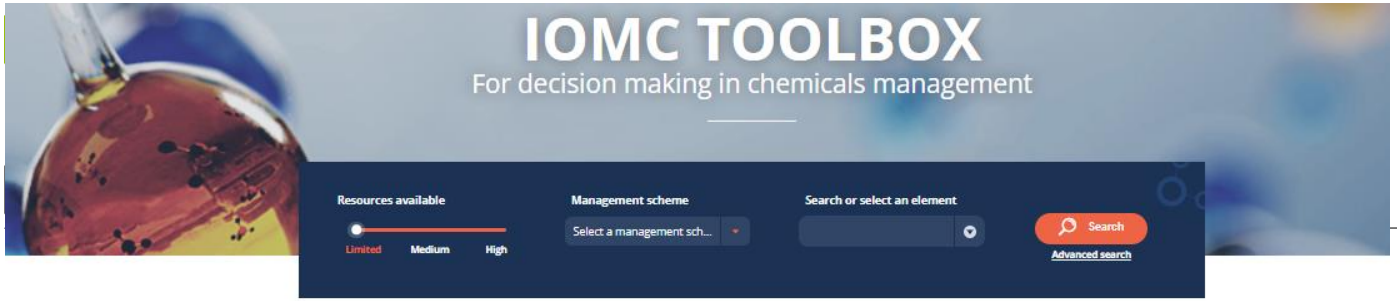
BETTER POLICIES FOR BETTER LIVES

IOMC Toolbox

For decision making in chemicals management

BETTER POLICIES FOR BETTER LIVES



About IOMC Toolbox

The IOMC Internet-based Toolbox for Decision Making in Chemicals Management (IOMC Toolbox) is aimed at countries who wish to address specific national issues regarding chemicals management.

The IOMC Toolbox is a problem solving tool that enables countries to identify the most appropriate and efficient national actions to address **specific national problems related to chemicals management.**

The toolbox identifies the available IOMC resources that will help the country address the identified national problem(s) or objectives. Special focus is given to identifying simple cost effective **solutions to national chemicals management issues.**

Management schemes

Chemical Accident Prevention, Preparedness and Response

This management scheme helps to protect the health of workers and the public, as well as the environment and property, by reducing the likelihood that accidents will occur and limiting the consequences if one does happen.

→

Classification and Labelling System Scheme

The GHS addresses the classification of chemicals by types of hazard and proposes harmonized hazard communication elements, including labels and safety data sheets.

→

Industrial Chemicals Management Scheme

This scheme strengthens the capabilities of countries in assessing risks associated with industrial chemicals throughout their lifecycle and managing them safely.

→

National management scheme for PRTRs

A PRTR is a publicly accessible database or inventory of chemicals or pollutants released to air, water, and soil and transferred off-site for treatment. It brings together information about which chemicals are being released, where, how much, and by whom.

→

IOMC

INTER-ORGANIZATION PROGRAMME FOR THE SOUND MANAGEMENT OF CHEMICALS

A cooperative agreement among FAO, ILO, UNDP, UNEP, UNIDO, UNITAR, WHO, World Bank and OECD

The project is implemented by IOMC

The project is funded by The European Union

Photo: Industrial Chemicals (front of the building in Baltimore, USA) by Ketzirah Lesser and Art Drauglis (Flickr/Creative Commons)

Industrial chemicals management scheme

The objective is to strengthen the capabilities of countries in assessing risks associated with industrial chemicals throughout their lifecycle and managing them safely.

The aims of this scheme are the protection of human health and the environment from harmful effects of industrial chemicals, protecting biodiversity and contributing to a sustainable national development.

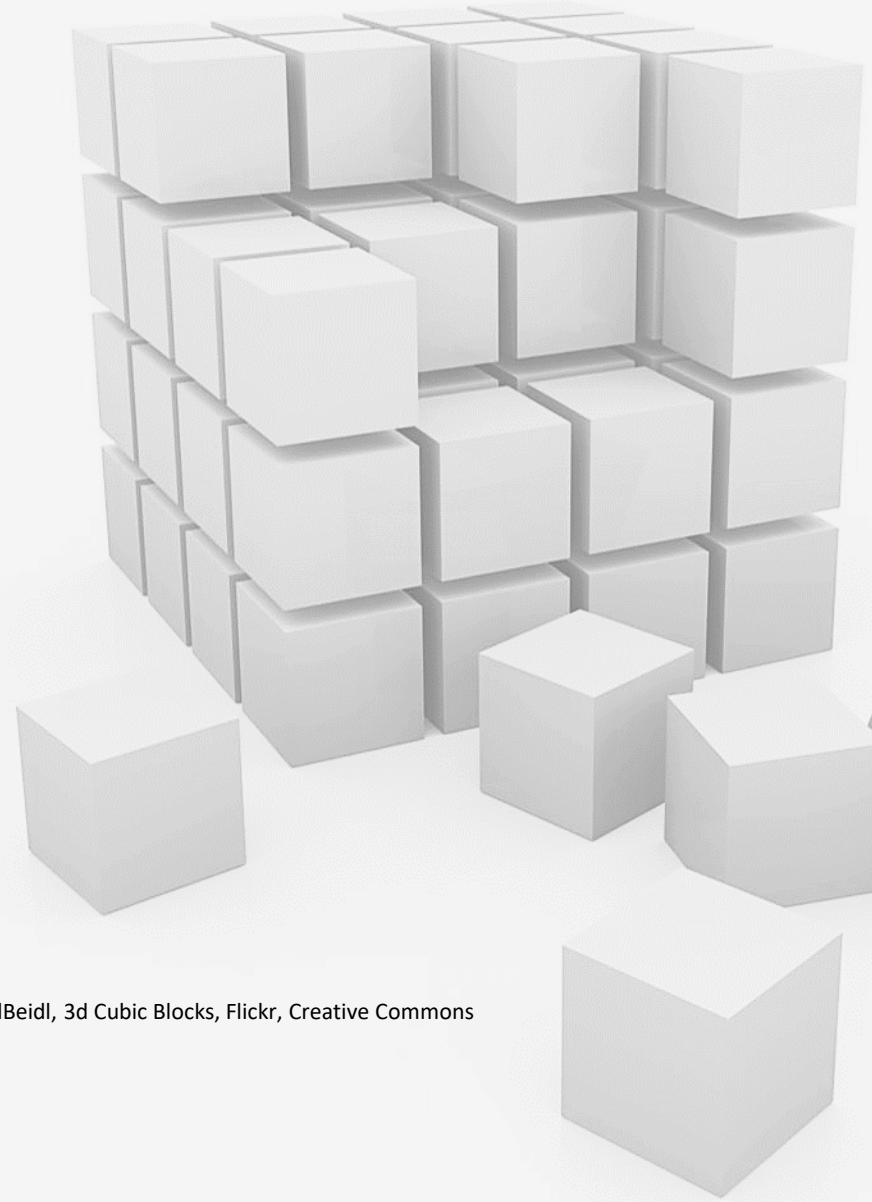
Why are efforts on managing industrial chemicals needed?

- Tens of thousands of more ‘industrial chemicals’ in use compared to e.g pesticides.
- Only a very small fraction of them have had their properties evaluated.
- Managing industrial chemicals is a challenge and inefficient regulation has costly implications for:
  - environment
  - human health
  - government budgets
  - continued growth of important global industry.

Benefits

- Protect human health and the environment
- Reduces cost of inaction:
  - Cost of environmental impacts
  - Cost of human health impacts
  - Costs to industry
- To Meet International Goals and Obligations

Building blocks of an industrial chemicals management system



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OECD
BETTER POLICIES FOR BETTER LIVES

Identify Scope

- **Which chemicals are present in the country** (whether produced or imported) and in what amounts ?

- Possible scope of chemicals to be considered:
  - **Level of resources**
    - low – high priority chemicals only (e.g. those covered by UN Conventions)
    - medium – add priority chemicals (e.g. hazardous chemicals based on GHS)
    - high – add all others above a certain volume threshold
  - **national priorities or specific sectors**

- **Expand scope as programme matures** or additional priorities identified to move towards systematic programme

Type of selection criteria for an inventory

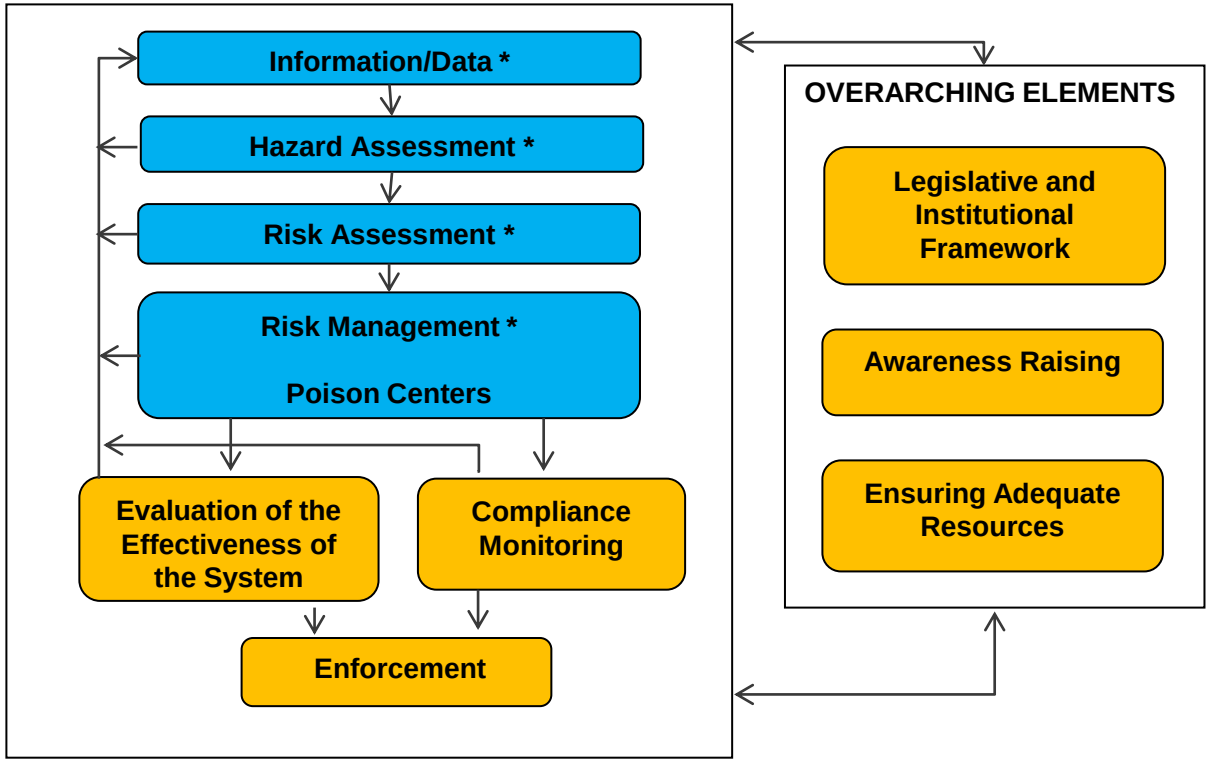
- **Volume of production/import** and/or
- **Hazard classification** (use of GHS available from others).

This information could be **requested from companies,** and some may be **available from customs** units in countries.

An **inventory does not need to be exhaustive database of information** on the chemical but **typically starts with a simple listing of the chemical identity** of those meeting **the inventory set up** (e.g., volume or hazard or other cut-off).

As you **move to assessment or management, additional information can be collected** in a step-wise manner.

Core industrial chemicals management scheme



There is a need to establish a legal framework for managing chemicals, institutional and collaboration frameworks, budget and clear definition of industry role

Management Scheme Elements

Key technical elements

- Information/data
- Hazard assessment
- Exposure assessment
- Risk characterisation
- Risk management
- Poison centres

Additional technical elements

- Import permits
- Notification/Registration of Chemicals
- Reporting of mixtures or articles
- Authorisation of Production/Use
- Licensing of suppliers

Key functional elements

New

- Legal and Institutional Framework
- Evaluation
- Awareness raising
- Adequate resources
- Compliance monitoring
- Enforcement of obligations

Additional functional elements

- Training customs officials & inspectors
- Education/training of the public and workers

Technical element key for producing countries

- Hazard data generation

Hazard assessment

Process to determine the possible **adverse effects of a chemical** to which an organism, system, or (sub) population could be exposed.

Hazard is the **inherent property** of a chemical that has the potential to cause adverse effects when an organism, system, or (sub) population is exposed to that chemical.

Hazard assessment can be done at varying levels, ranging from an initial or "screening" assessment to a comprehensive/detailed assessment.

Two steps:

1. *Hazard identification*
2. *Hazard characterisation*

Use hazard identification (classification) and hazard characterisation from **other countries** (e.g. main trading partner) as well as from **international organisations**.

Exposure assessment

Exposure assessment is the **estimation or measurement** of exposure to the chemical under investigation during its **life cycle.**

The exposure assessment for the life cycle of a chemical is the main activity in **risk assessment** and needs input from all sectors involved in industrial chemicals management.

Human health:

- Exposure to a chemical via environmental media (air, water and soil), food or products
- Exposure at different life stages or for different segments of the population (e.g. occupational)
- Exposure for different routes (oral, dermal, inhalation), duration and magnitude of exposure.

Environnement:

- Characterising which ecological receptors can be exposed (e.g. birds, mammals, fish, vegetation etc.),
- The pathways of exposure, and the duration and magnitude of exposure.

Risk characterisation

Decision making process involving :

- hazards
- exposures from a chemical and
- the socio-economic aspects (political, social, economic, and technical factors)

Enables the implementation of the **appropriate regulatory response** to that substance.

Precaution can be applied in risk management when there are threats of serious or irreversible damage to man or the environment.

1. Risk evaluation, socio-economic analysis and risk communication

2. Exposure control

3. Risk monitoring

Poison centres

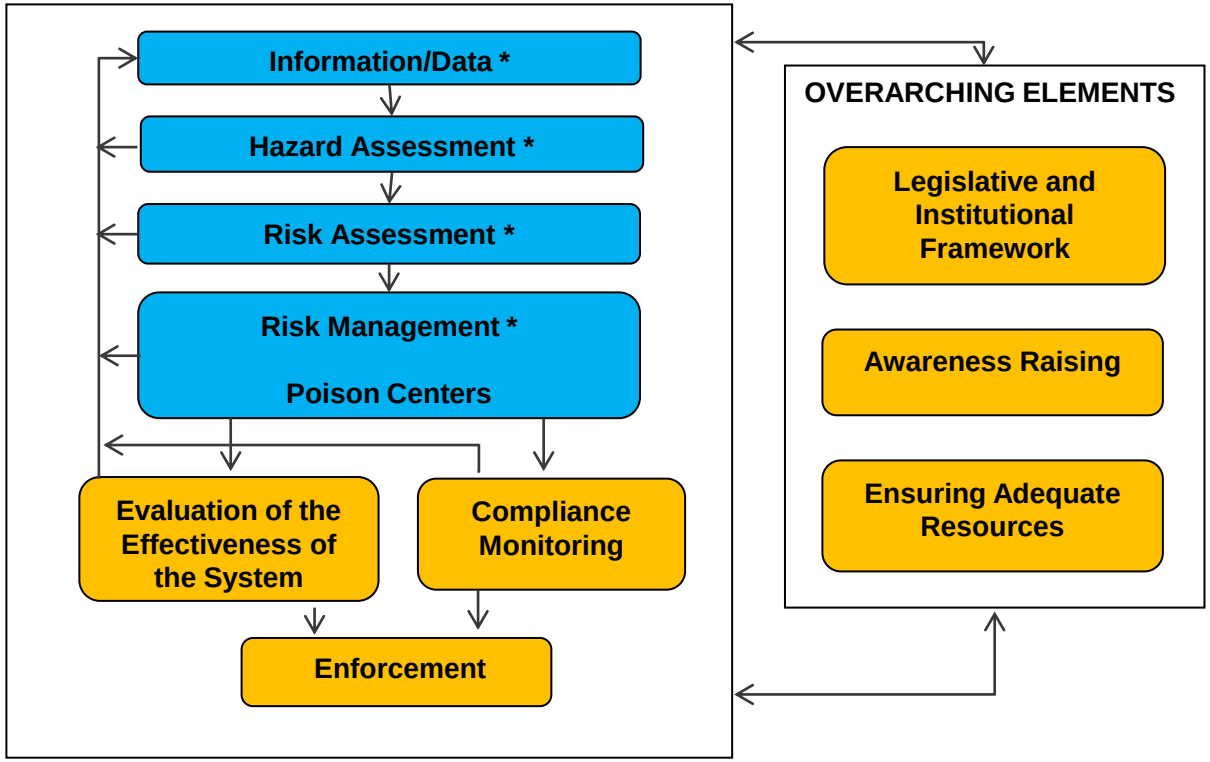
Specialized unit advises on, and assists with:

- the prevention,
- diagnosis and
- management of poisoning.

In poison centres, data on toxic exposures to chemicals and on chemical incidents can be collected.

1. Setting up one poison centre for the country using external resources to set it up. Require industry and hospitals to report poisonings to the poison centre once a year. Use a template for reporting.
2. Information transfer on poisonings from the poison centre to the framework, information on poisoning, the chemical causing the poisoning and the supplier of the chemical once a year. Store the information, for example in a standalone computer or a National Database if available, for dissemination and use.
3. Assessment of the information on poisoning for evaluation of the effectiveness of the system once a year.

Core industrial chemicals management scheme



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Additional functional elements

- Training customs officials & inspectors
- Education/training of the public and workers

Technical element key for producing countries

- Hazard data generation

Legislative and Institutional Framework

Most countries have multiple **laws and regulations** to govern the **use, production** and **disposal of chemicals**.

The governance of the sector is determined by the way countries organize themselves **legally**, **financially** and **institutionally**.

A review of existing legal and institutional frameworks for chemicals management can help identify gaps or duplication, ensure continuity, and enable an efficient use of resources.

Legislation can generally be grouped into two main categories:

- statutes enacted by the national legislating body (laws), and
- all subordinated enactments (regulations).

Laws should ideally be kept as basic as possible, to facilitate approval by national legislative bodies and leave flexibility in implementation.

Regulations give an operational effect to the law; they are better suited for defining technical details and requirements likely to be changed, as laws can be difficult to amend over time.

Coming soon

- Inventories
- Waste
- Illegal pesticides

BEST AVAILABLE TECHNIQUES

Best Available Techniques

- Key policy tool to prevent and control the emission of industrial pollutants,
- To ensure the protection of human health and the environment.

- The state-of-the-art and proved techniques for preventing and controlling industrial emissions and the wider environmental impact caused by industrial installations
- One of the key elements for setting emission limit values (ELVs) and other permit conditions
- The advanced processes, facilities or methods of operation which indicate the practical suitability of a particular measure for limiting discharges
- Allows establishment of environmental permits that are based on technological and economical evidence and on a participatory approach by the stakeholders
- Help achieving a high level of human health and environmental protection.

Best Available Techniques

1. Designing a BAT policy
2. Establishing BAT
3. Evaluating a BAT policy by measuring its effectiveness
4. Building a national BAT-based system
5. Value chain approaches to determining BAT for industrial installations

Designing a BAT policy

Policies to prevent and control industrial emissions often propose a technology-based approach (BAT or similar concept).

For prevention and control of emissions to air and water in other countries with existing BAT policies (general legislation supported by specific legislation). For the prevention and control of emissions to soil/land however, there is only general legislation.

To set up a BAT policy, your country could:

- Integrate the BAT concept into national legislation on reduction and prevention of industrial emissions to air, water and soil.

Establishing BAT

Pre-requisites:

- Select relevant industries for the BAT-based environmental permitting process,
- Set-up multi-stakeholder groups to determine BAT, representing the government, industry and NGOs.

1. Collect information on pollution prevention and control techniques, emission and consumption levels
2. Evaluate techniques and data collected
3. Adopt or adjust the BAT determined by other countries and made available in their BAT Reference Documents to your needs as appropriate.

Evaluating a BAT policy

- Conduct a qualitative evaluation by gathering data on different stakeholders' views on the environmental, economic and human health impacts of the policy, e.g. through a survey
- Evaluate the effectiveness of your national BAT policy by assessing the policy's
  - impact on emission trends
  - mass or percentage of industrial emissions

  assessed against the policy's defined objectives and a business as usual scenario

Building a national BAT-based system

To identify and establish BAT, BAT-associated emission levels (BAT-AELs) and other environmental performance levels (BAT-AEPLs), as well as BAT-based permit conditions, including emission limit values for your country:

Set up a multi-stakeholder Technical Working Group (TWG) for each industrial sector to evaluate and adopt existing the BREF documents and environmental permits from other countries

These approaches can be applied to both new and existing industries.

Value chain approaches

- Green chemistry

Identifying alternative chemicals and technologies that are economically competitive and offer advantages for industry and consumers, and (of course) are environmentally advantageous.

- Resource efficiency

Maximizing for resource efficiency can achieve cost savings and reduce emissions for your country.

- Circular economy

Identifying alternative materials and technologies that can contribute to waste reduction and recycle, the use of secondary and reusable materials and energy efficiency throughout the whole value chain.

- Decarbonisation

Considering BAT through decarbonisation and greenhouse gas (GHG) reduction lens may result in the identification of further potential for the reduction of GHG emissions, not only at the industrial installation, but also throughout the value chain.

OECD WORK ON WASTE

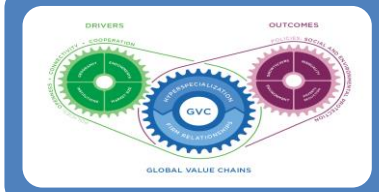
Circular Economy: Key Areas of Work in EPOC

Global Plastics Outlook

- Projections of plastics production and waste generation to 2050
- Analysis of markets for recovered plastics
- Issues at interface of waste and chemicals management policies
- Trends in green innovation for plastics

Macro-economic consequences of circular economy transition

- GDP and structure of the economy
- Jobs, trade and climate change



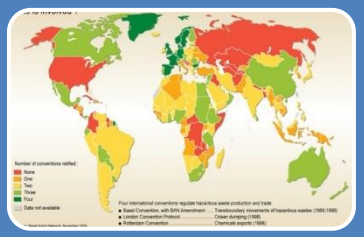
Resource efficient value chains

- New business models for the circular economy
- The role of digitalisation
- Information systems and labelling

Policies for the circular economy

- Economic instruments
- Extended producer responsibility
- Policies to address single use plastics

Circular Economy: Key Areas of Work in EPOC



Transboundary movements of waste

- Legally binding Decision
- TMW database updates and monitoring reports

In-country support

- Support for development of circular economy strategies and policies
- DG REFORM supported

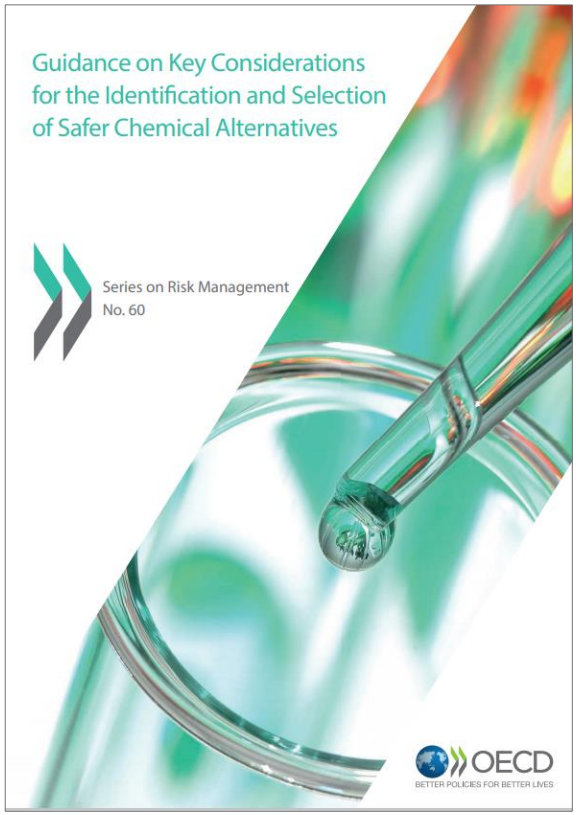
If you wish to have more information on OECD work on waste
https://www.oecd.org/env/waste/
Peter.borkey@oecd.org

SAFER CHEMICAL ALTERNATIVES

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

Goals of the guidance:

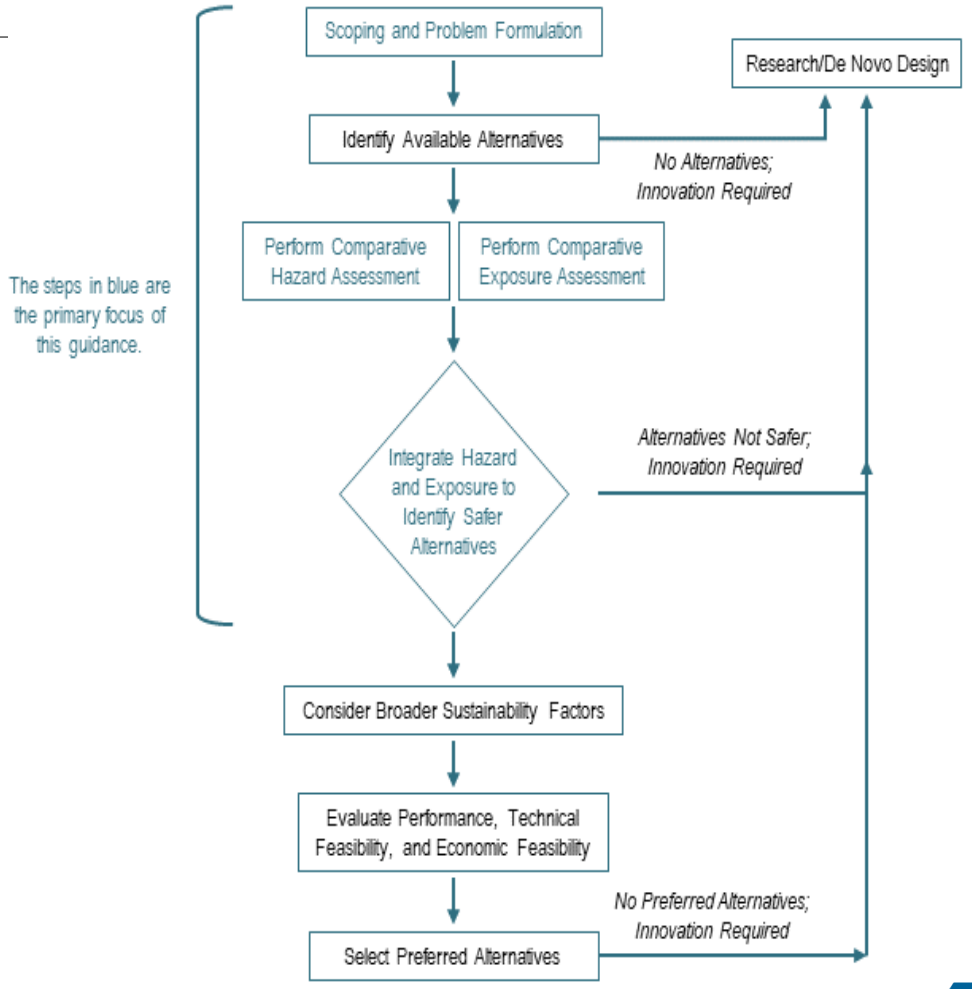
- Define “safer” chemicals in the context of alternatives assessments
- Advance a consistent understanding of the minimum requirements needed to determine whether an alternative is safer



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

Guidance Overview

- Purpose and Key Principles;
- Minimum Criteria and Recommended Assessment Practices for Safer to Support Substitution Processes;
- Self-Assessment Checklist;
- Beyond Safer to More Sustainable Substitution.



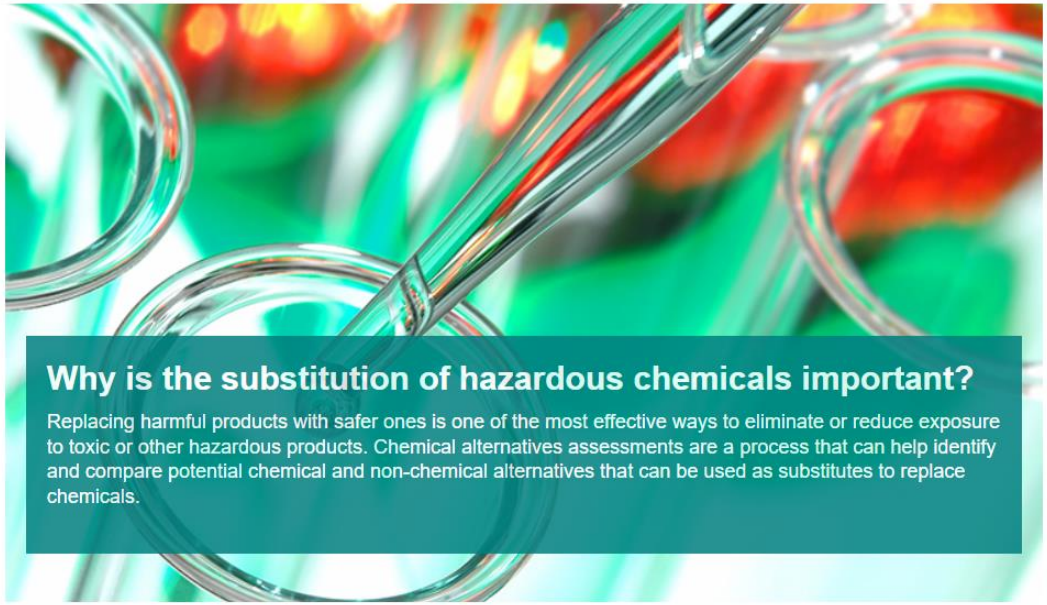
Key Principles

- Safer alternative definition: A chemical, product, or technology that is preferable, in terms of both hazard and potential for exposure to humans and the environment, than the existing option.
- Minimum set of requirements should be seen as the baseline level in a spectrum of an increasingly comprehensive set of criteria and assessment practices
- To support more comprehensive approaches, criteria and recommended practices for going beyond the minimum have been suggested as a supplement to minimum requirement

Spectrum of Safer Criteria for the Selection of Alternatives to Priority Substances

OECD Webpage and Toolbox on Substitution

Alternatives assessment and substitution of harmful chemicals



Latest report

Key Considerations Identification and Selection of Safer Chemicals Alternatives

What's an Alternatives Assessment?

As interest in the substitution of harmful chemicals continues to grow in industry, NGOs and the public sector, organisations are seeking guidance on the conduction of alternatives assessment and for the selection of appropriate methods and tools. The OECD is responding to this need by developing guidance documents, sharing experiences through workshops and by collecting available resources.

OECD Substitution and Alternatives Toolbox

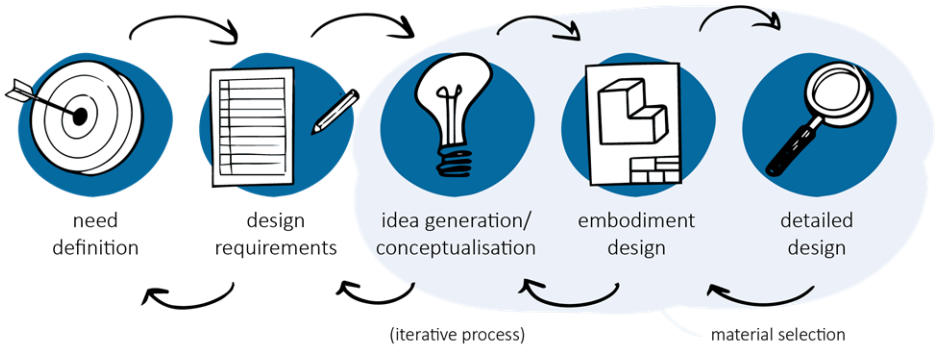
SAAToolbox

- **Repository of key resources to support AA and Substitution**

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

Work on Development of Considerations for Sustainable Design of Plastics From Chemicals Perspective

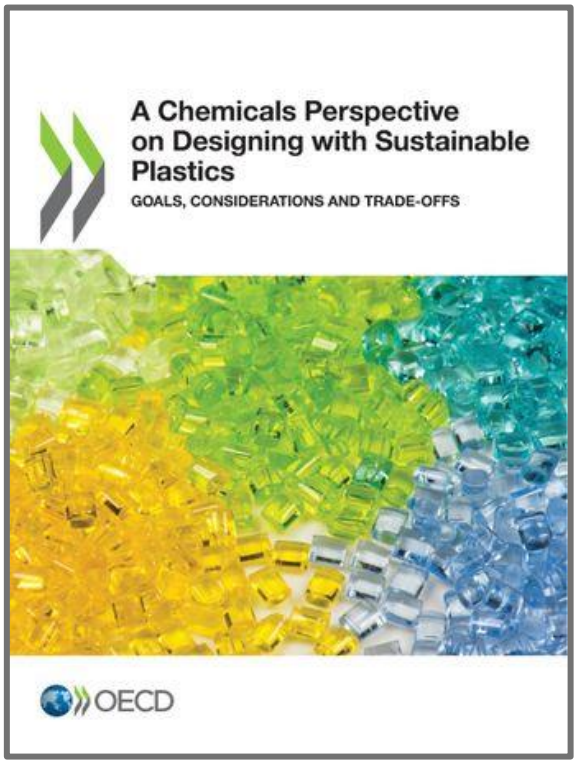
- Conducted case studies to inform the considerations development
  - plastic packaging (biscuit wrappers & detergent bottles) and construction material (insulation & flooring)
- Draw more general learnings from the case studies to inform the development of a considerations document



4 Case Studies

- Plastic packaging (biscuit wrappers & detergent bottles)
  - Drafted by Partners for Innovation
- Construction material (insulation & flooring)
  - Drafted by Healthy Building Network
- Start from the premise that plastic material will be used.
- Identify the key considerations regarding environmental/health sustainability that should be examined along the product life cycle when chemicals are selected at the design stage & potential trade-offs
- Developed in the context of the information gathered for the case studies to exemplify the sustainable design process and to highlight key considerations.
  - To make actual decisions about material selection other factors would also need to be considered and the analysis could be further informed by elements such as life cycle assessment comparing alternatives and a full review of regulatory restrictions.

A Chemicals Perspective on Designing with Sustainable Plastics



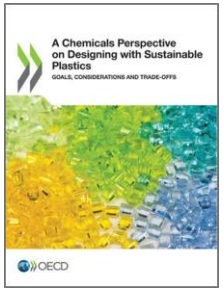
- Enable the creation of inherently sustainable plastic products by integrating sustainable chemistry thinking in the design process

- 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.

Published 7 December, 2021

oe.cd/chemicals-plastics

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

Focused on embedding sustainable chemistry thinking at the design stage

- 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.

Draft Developed by Partners for Innovation

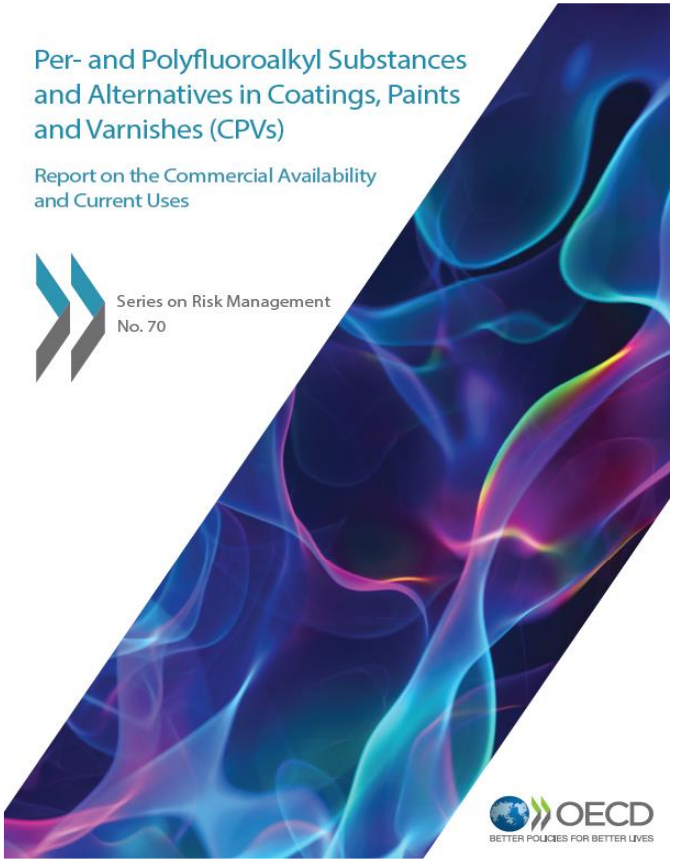
Recent work on sustainable plastics design from a chemicals perspective

Policy Approaches and Economic/Technical/Regulatory Considerations

- Workshop 12/13 May 2022 on Flexible Food Grade Packaging – Economic, Regulatory or Technical Barriers to Sustainable Design from a Chemicals Perspective – How Can Policy Makers Help?

- 2 background reports:
  - Government policies and regulations that impact sustainable design of flexible food grade packaging;
  - For flexible food grade packaging, document barriers to sustainable design of plastics from the perspective of various industry actors along the value chain.

PFASs and Alternatives in Coatings, Paints and Varnishes - Commercial Availability and Current Uses



This report:

- Looks at the commercial availability & current uses of PFASs and non-PFAS alternatives in CPVs;

- 3 applications examined more closely:
  - coatings for cables and wiring,
  - the front and backsheets of solar panels and
  - household and architectural paints.

- suggests policy recommendations and areas that may be considered for further work.

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www.iomctoolbox.org

THANK YOU

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