DISCUSSION 3

Chemicals in Plastics: A deep dive into composition, recyclability and policy implications

28 June 2023 14:00 (UTC+2)

Chemicals and Waste Management
Community of Practice (CoP)

saicm

Green Forum

GREEN GROWTH Knowledge Partnership

Presenters

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SOLUTIONS TO PLASTIC POLLUTION

LOOK BACK

INC Process

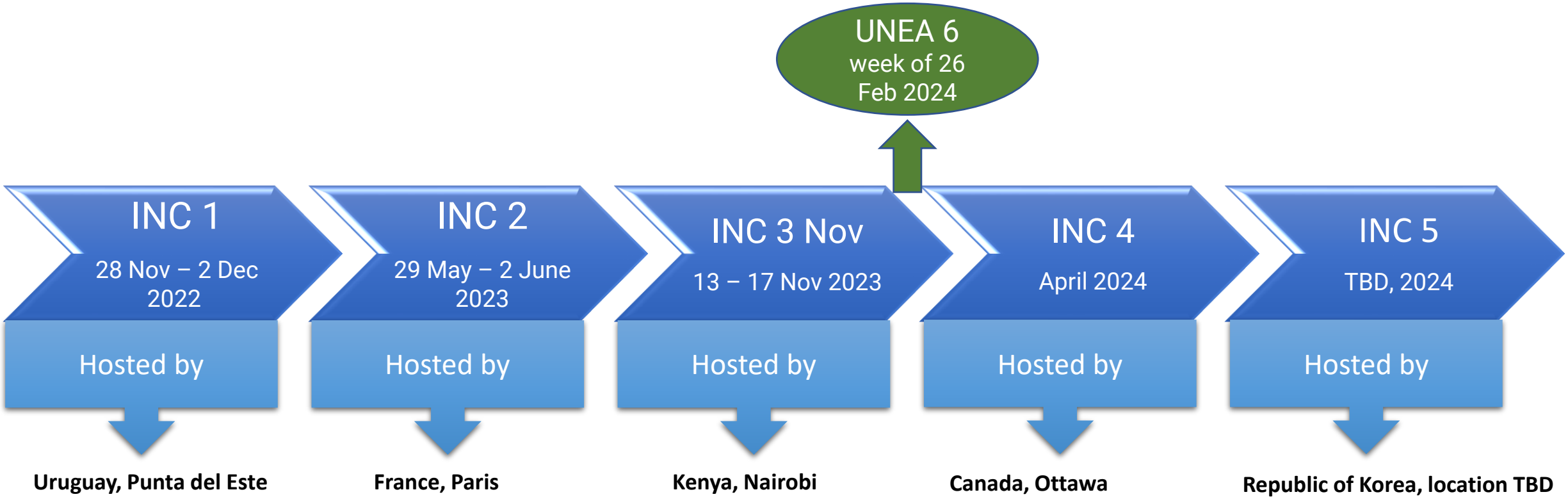
In March 2022, UNEA-5.2 adopted resolution 5/14 titled ”End plastic pollution: Towards an international legally binding instrument”

The resolution called for the development of and international legally binding instrument on plastic pollution, including in the marine environment.

The resolution specifies that the instrument:

i. Could include both binding and voluntary approaches;
ii. Be based on a comprehensive approach that addresses full life cycle of plastic;
iii. Take into account, among others, the Rio Declaration and national circumstances and capabilities.

Timeline for the INC process



INC-2: Making Paris count

- 29 May to 2 June 2023 in Paris, France.
- Over 1,600 in-person participants representing:

  - 167 States members of the Committee and the European Union

  - over 370 observer organizations including UN entities, international organizations and NGOS.
- Election of the Vice-chairs to the Bureau of the INC took place, including a Rapporteur.
- After lengthy discussions, the INC adopted an interpretive statement on the draft rules of procedure. The draft rules of procedure apply provisionally to the work of the INC.
- Substantive discussions took place through 2 contact groups focused on (i) possible objective(s) and substantive obligations and (ii) other focused on means of implementation and implementation measures.
- 12 thematic-side events took place.

All meeting documentation is available at: https://www.unep.org/events/conference/second-session-intergovernmental-negotiating-committee-develop-international
Full coverage of the meeting was provided by Earth Negotiations Bulletin: https://enb.iisd.org/plastic-pollution-marine-environment-negotiating-committee-inc2-summary

INC-2: Negotiations on a set of Control Measures

1. Primary plastic polymers
2. Problematic & avoidable plastic products
3. Chemicals & polymers of concern
4. Microplastics
5. Waste management
6. Design for circularity
7. Reduce, reuse, repair of plastic products & packaging
8. Safe, sustainable alternatives and substitutes
9. Release to water, soil and air
10. Existing plastic pollution
11. Just & inclusive transition
12. Human health

INC-2 also considered implementation aspects

Section II C – Means of implementation (financial assistance, capacity-building, technical assistance, technology transfer on mutually agreed terms)

Section II D – Implementation measures (NAPs, national reporting, compliance, assessment, monitoring & evaluation)

INC-2: What was the outcome of Paris?

INC-2 determined the **mandate for next steps to INC-3**:

- Chair, with the support of the Secretariat, to **prepare a zero-draft text of the international legally binding instrument** for consideration at INC-3:
  - guided by views expressed at INC-1 and INC-2;
  - range of views could be indicated in the draft text through options.
- Invite submissions from Observers by 15 August and Members of the Committee by 15 September on (a) elements not discussed at INC-2 and (b) on any potential areas for intersessional work. Submissions to be uploaded online.
- Requested the secretariat to prepare a synthesis report of submissions on (a) elements not discussed at INC-2, to be discussed at a 1-day preparatory meeting to be held back-to-back with INC-3.

Potential areas for intersessional work identified in the Contact Groups:

Contact Group 1

- Information on definitions, e.g. plastics, microplastics, circularity.
- Information on criteria, also consider different applications and sectoral requirements, including:
  - Chemical substances of concern in plastics,
  - Problematic and avoidable plastic polymers and products and related applications
  - Design e.g. for circularity, reuse
  - Substitutes and alternatives.
- Potential substances of concern in plastics, problematic and avoidable plastic polymers and products
- Potential sources of release of microplastics (applications and sectors).

(*A longer list is included in the co-facilitators report)

Contact Group 2

- Potential role, responsibilities and composition of a science and technical body
- Potential scope of and guidance for National Action Plans
- Other MEA and instruments:
  - identify current provisions on cooperation and coordination that could be considered
  - consider how others provide for monitoring, and suggest best practice
- Options to define ‘technology transfer on mutually agreed terms
- Consider how a potential financing mechanism could work
- Options to mobilise & align private & innovative finance
- Map current funding and finance available
- Identify capacity building and training needs for each Member.

Chemicals in Plastics: A deep dive into composition, recyclability and policy implications. Chemicals and Waste Management Community of Practice (CoP). 28 June 2023

Chemicals in Plastic – Main Findings of UNEPs Technical Report

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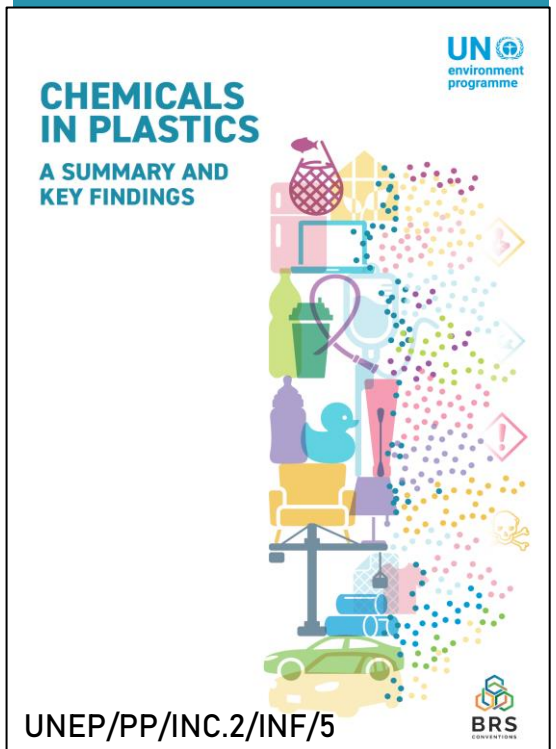


UNEP/PP/INC.2/INF/5

Chemicals in Plastics : A Technical Report - Main content

Describes the various chemicals-related issues of plastic pollution:

1) Chemicals of concern and impacted sectors that use plastics
2) Environmental fate and health effects of plastic-associated chemicals
3) Problems with the current state of chemical risk assessments
4) Options for addressing chemicals of concern in plastics
5) Strategies for substituting problematic chemicals
6) Managing existing plastic waste and plastics in a circular economy.

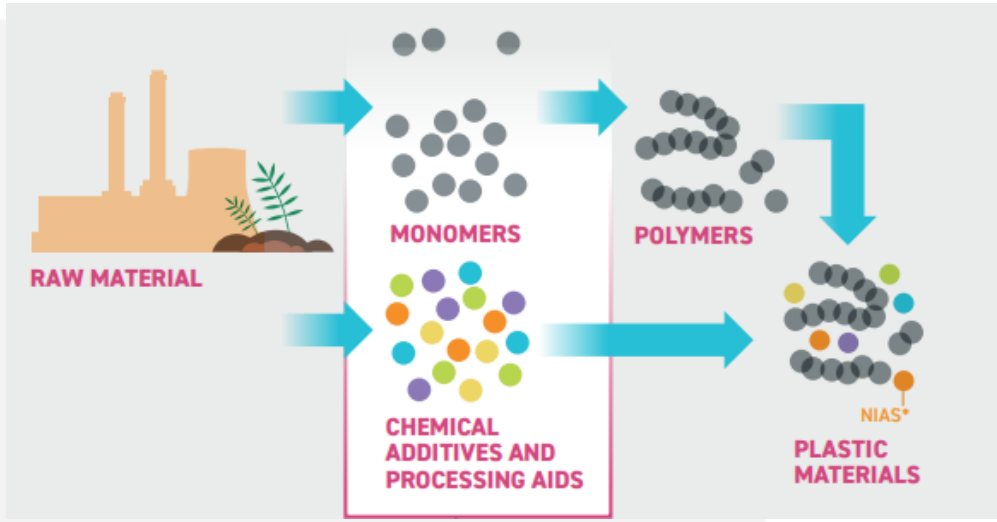
- Developed by UNEP in cooperation with the BRS Secretariat with lead authors from the International Panel on Chemical Pollution.

- The report is available with a summary and key findings : https://www.unep.org/resources/report/chemicals-plastics-technical-report

INF doc INC2: https://www.unep.org/events/conference/second-session-intergovernmental-negotiating-committee-develop-international/documents#OtherDocuments

ANATOMY OF PLASTICS

WHAT'S IN MY PLASTICS?



1. **MONOMERS AND POLYMERS**
constitute main building blocks of plastic material

2. **ADDITIVES**
bring desired functionality to the plastic material

3. **OTHER INTENTIONALLY ADDED SUBSTANCES**
such as starting materials and catalysts

4. **NON-INTENTIONALLY ADDED SUBSTANCES**
such as solvents, cleaning agents, or impurities from manufacturing or recycling

BREAKDOWN
most widely produced plastic additivies*
*Source: Geyer et al. 2017

Plasticizers
to make plastic softer and flexible
e.g. phthalates, chlorinated parafins

Fillers
that occupy space without changing functional properties
e.g. mica, talc or clay

Flame retardants
to reduce flammability and prevent spread of fire - e.g. brominated and chlorinated flame retardants

Other
including colorants, antioxidants, heat and light stabilizers, lubricants, biocides or antistatic agents

Chemicals in Plastics : A Technical Report - Methodology

- Overall an extensive literature review on major aspects of chemicals in plastics.

- The authors of the report published two peer reviewed studies on chemicals in plastics and the databases of both reviews were combined for the technical report.

https://doi.org/10.1016/j.cogsc.2021.100513

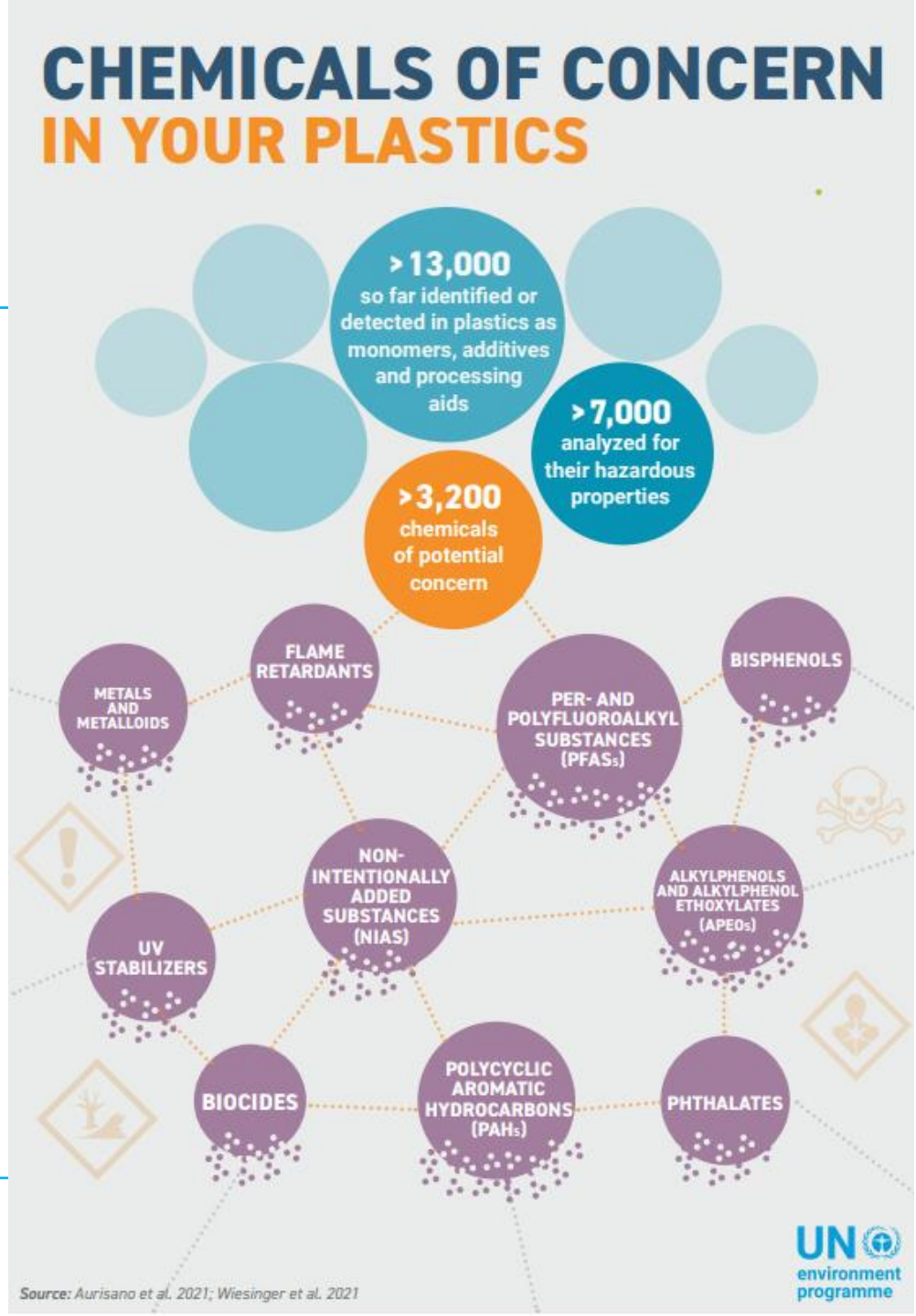
https://doi.org/10.1021/acs.est.1c00976

- The list of chemicals related to plastics is available on the report website: https://www.unep.org/resources/report/chemicals-plastics-technical-report

Chemicals in Plastics : A Technical Report - **Key Findings**

1- Chemicals are an integral part of plastics. Over 13,000 substances have been associated with plastics. >3200 are chemicals of potential concern.

2- Ten groups of chemicals are identified as being of concern due to their hazardous properties



Chemicals in Plastics: Close links to SAICM emerging policy issues

There are close links of the "chemical of concern in plastics" and SAICM emerging policy issues:

a. Chemicals in plastic are a relevant part of **Chemicals in Products** (CiP).

b. Many of the plastic additives of concern are **Endocrine Disrupting Chemicals**.

c. A range of plastic additives are "**Hazardous Substances in the Life Cycle of Electrical** and **Electronic Equipment** (HSLEEP)"

d. **PFASs** are chemicals of concern related to plastics and also an issue of concern under SAICM.

e. Plastic nano particles are a category of **Manufactured Nanoparticles** under SAICM. And plastics in the environment including oceans are degrading to nanoparticles over time.

Several of the issues identified by GCO-II which warrant urgent international concerted actions are related to chemicals in plastics (bisphenols, phthalates, intentional microplastics, PAHs, metalloids)

Therefore addressing chemicals of concern in plastics can address a wide range of SAICM & GCO-II issues of concern.

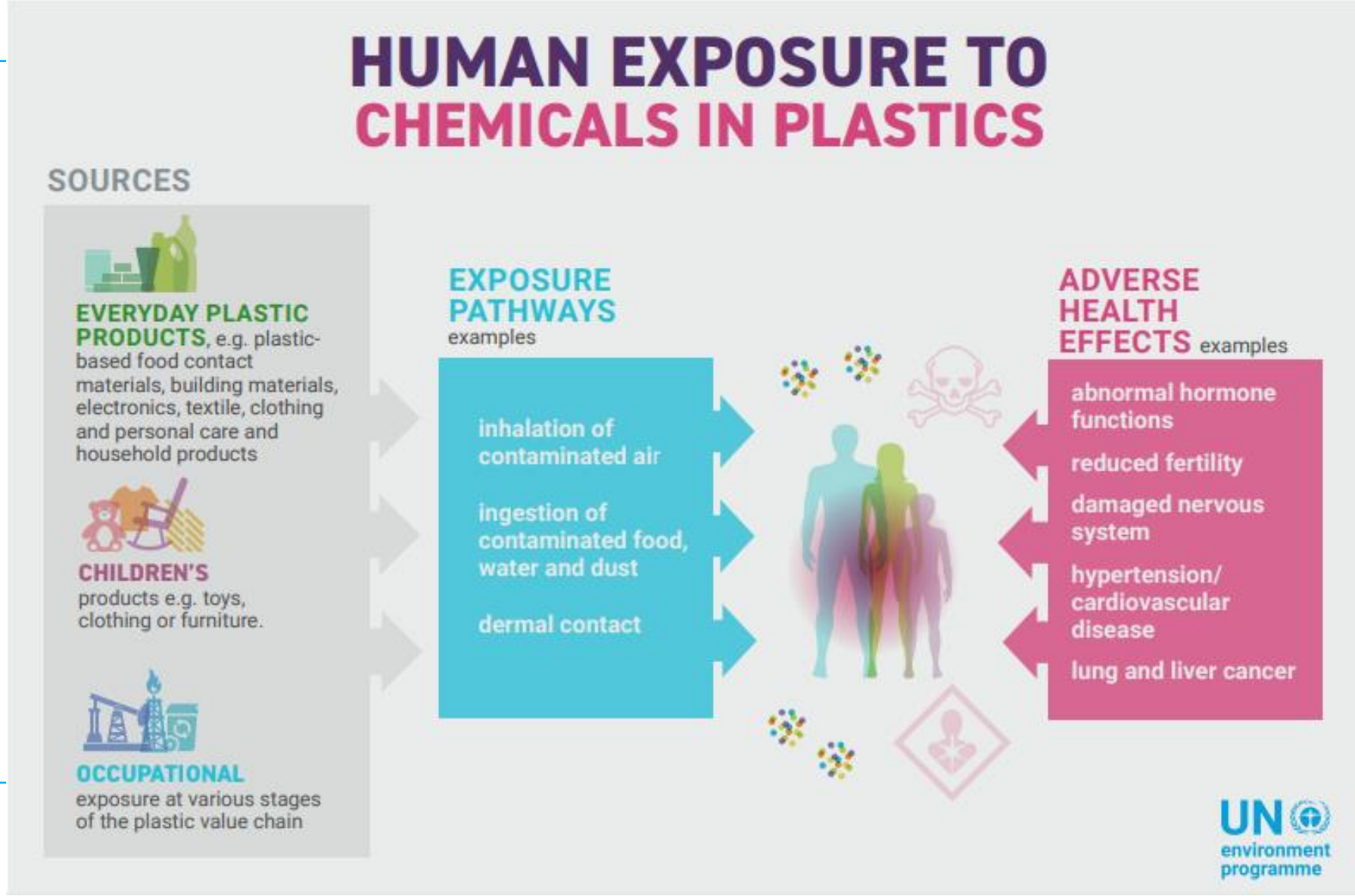
Chemicals in Plastics : A Technical Report - Key Findings

3. Chemicals of concern have been found in plastics across a wide range of sectors and products value chains.

Chemicals in Plastics : A Technical Report - Key Findings

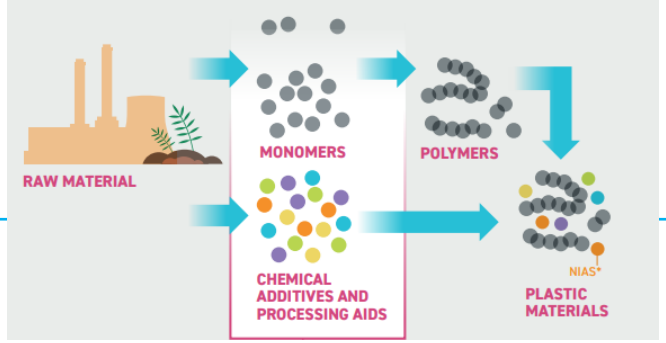
4. **Chemicals of concern in plastics can impact our health and environment**

5. Women and children are particularly susceptible to these hazardous chemicals. Men are not spared either.



Chemicals in Plastics : A Technical Report - Key Findings

6. **Chemicals of concern can be released from plastic along its entire life cycle.**



Chemicals in Plastics : A Technical Report - Key Findings

7. **Regulated plastic additives such as Persistent Organic Pollutants (POPs) listed in the Stockholm Convention can impact recyclability.**

Discussion Question 1

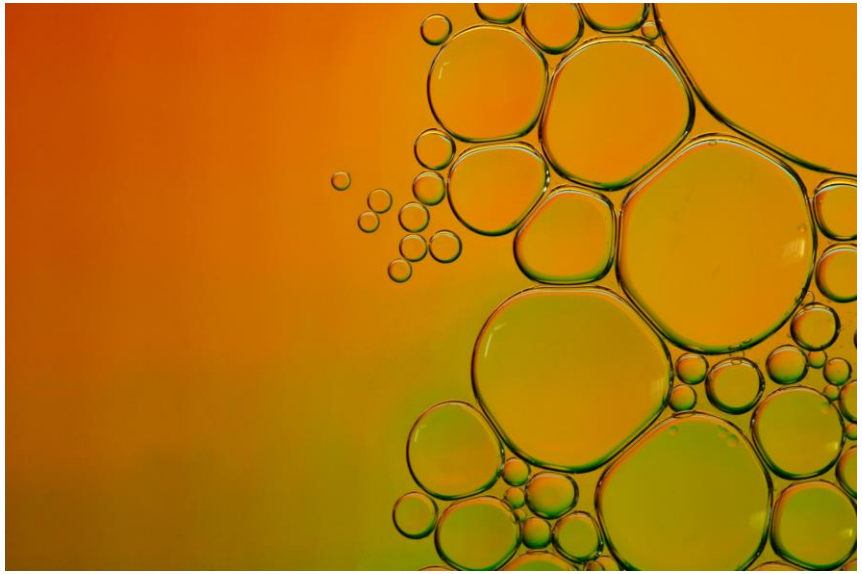
- **What are the most pressing issues for you related to chemicals in plastics?**

Implementing Sustainable Low and Non-Chemical Development in Small Islands Developing States (ISLANDS) and plastics

Melanie Ashton
Project Coordinator and Private Sector Engagement Specialist, ISLANDS CCKM,
Green Growth Knowledge Partnership (GGKP)

Supported by | Led by | In partnership with

ISLANDS Objectives



- Prevent future build-up of **chemicals** entering SIDS.
- Safely manage and dispose of existing hazardous **chemicals, products, and materials.**
- Manage **products** entering SIDS throughout their lifecycle.
- Facilitate SIDS-SIDS learning and sharing of knowledge.

ISLANDS

ISLANDS Objectives: Inherent links to plastics

- Chemicals are building up in (including in) **plastics products** entering SIDS.
- Safe management and disposal of existing hazardous products **includes plastics** that are hazardous because of the **chemicals they contain.**
- Managing products through their life cycle includes **chemicals in plastics** – if we don't these plastics cannot be safely recycled.

ISLANDS

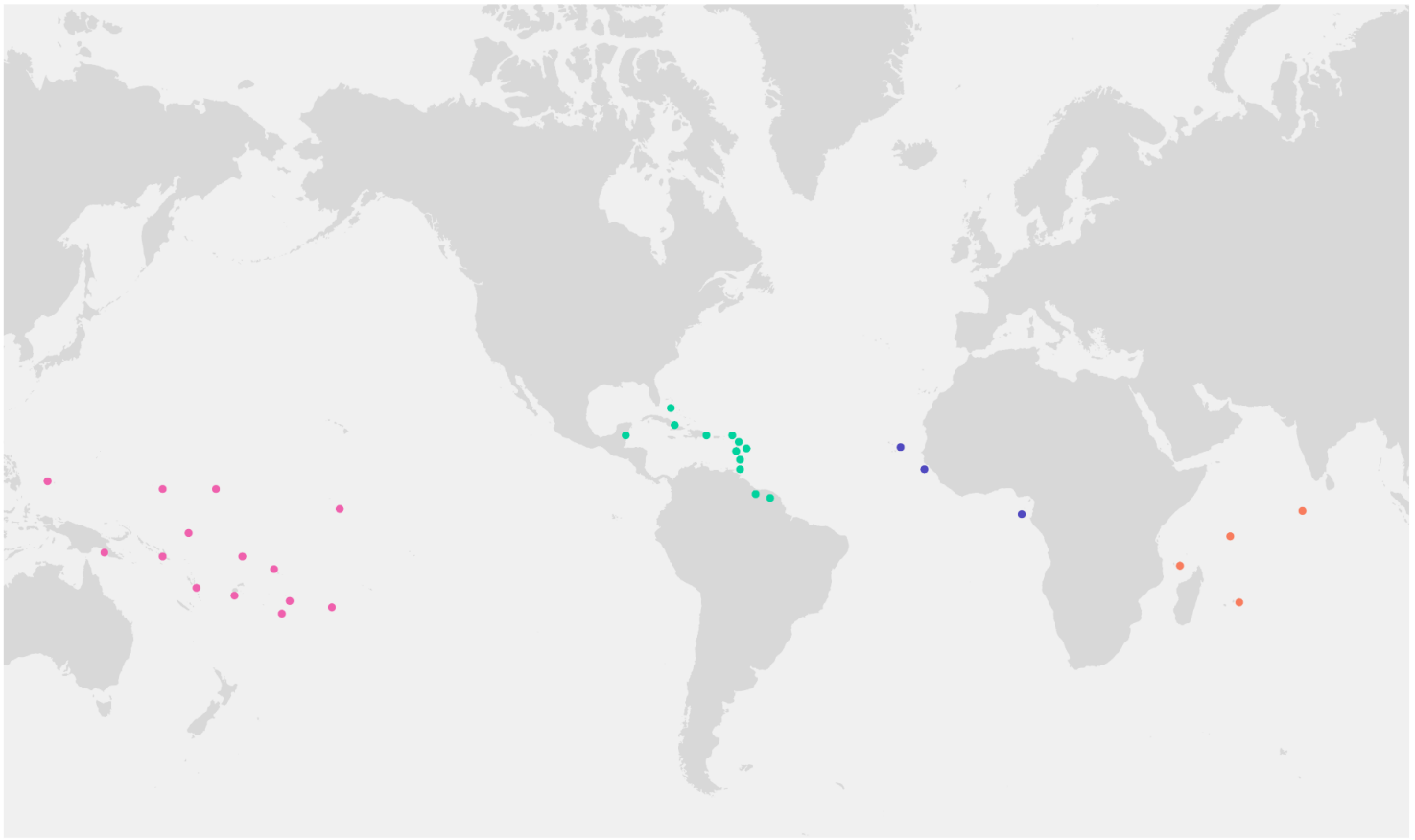
ISLANDS Projected Global Environment Benefits

ISLANDS

Global Environmental Benefits

gefislands.org

ISLANDS Regions



ISLANDS Pacific Ocean

ISLANDS Caribbean

ISLANDS Atlantic Ocean

ISLANDS Indian Ocean

Working in 33 countries in the **Atlantic, Caribbean, Indian Ocean** and the **Pacific** regions

ISLANDS Regions

ISLANDS Atlantic Ocean

- Cabo Verde
- Guinea-Bissau
- Sao Tome and Principe

ISLANDS Caribbean

- Antigua and Barbuda
- Bahamas
- Barbados
- Belize
- Cuba
- Dominica
- Dominican Republic
- Guyana
- Saint Kitts and Nevis
- Saint Lucia
- Suriname
- Trinidad and Tobago

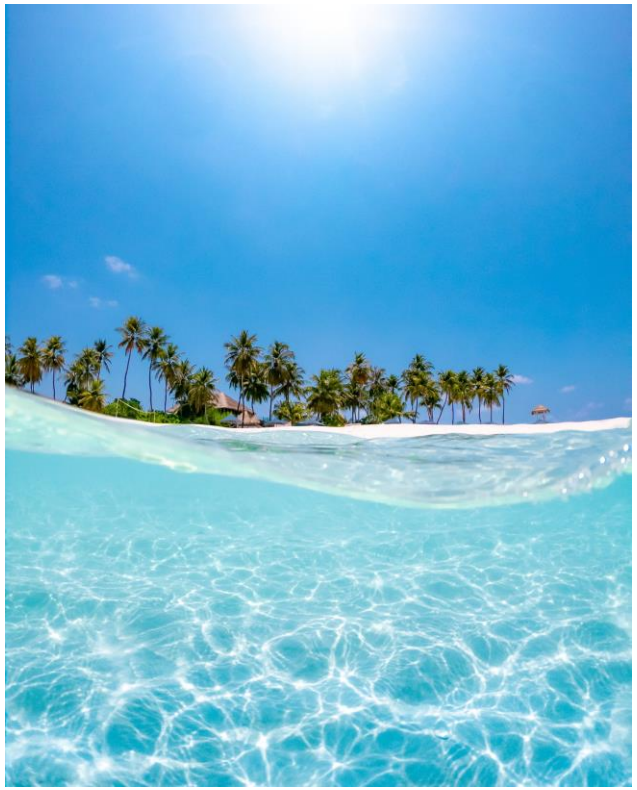
ISLANDS Indian Ocean

- Comoros
- Maldives
- Mauritius
- Seychelles

ISLANDS Pacific Ocean

- Cook Islands
- Fiji
- Micronesia (Federated States of)
- Marshall Islands
- Kiribati
- Nauru
- Niue
- Palau
- Papua New Guinea
- Samoa
- Solomon Islands
- Tonga
- Tuvalu
- Vanuatu

ISLANDS – Role of CCKM



- ISLANDS **Coordination, Communication and Knowledge Management** (CCKM)
- **Develop** - Best practice examples for recycling from SIDS key sectors is developed (in e- waste recycling, end of life vehicles, and used oil)
- **Foster, facilitate and negotiate** – Opportunities for private sector collaboration with SIDS for chemical and waste management
- **Synthesize, develop, package, manage and share** – Knowledge on chemicals and waste management in SIDS

ISLANDS

ISLANDS Knowledge focused on thematic areas

Themes relating to chemicals in plastics:

- **End-of-life vehicles (ELV):** Contain POPs contaminated plastics in the dashboard and steering wheel. ISLANDS is providing best practice information on managing POPs chemicals in plastics.

- **E-waste**: Includes hazardous/POPs containing plastics . ISLANDS is providing best practice examples and knowledge on e-waste management (to increase the amount of e-waste safely dismantled and recycled from SIDS).

- **Plastics:** Tide Turners app (targeted at young people) – empowers young people to change the way they use plastic at home and in their lives

ISLANDS

ISLANDS Unique challenges

SIDS are **import-dependent** as opposed to manufacturing economies.

They don't use less plastic, but they don't manufacture it.

There are few SIDS with **recycling infrastructure**.

Recyclable waste must be **shipped to recycling markets**.

More often than not, the **cost of shipping** is too high, and plastic is sent to landfills/dumpsites.

ISLANDS CCKM developing a **partnership with shippers** to change this.

Facing a rising tide, of plastic waste, much of this plastic contains **hazardous chemicals**.

ISLANDS

Opportunity – Join us and our communities

Green Forum

Green Forum Community of Practice (CoPs):

- Plastics
- ELVs
- E-waste
- Used oil
- Mercury
- Gender

Learn more at: gefislands.org

ISLANDS

Discussion Question 2

- **What challenges are you finding in managing plastics containing hazardous chemicals – specifically end-of-life vehicles and management of e-waste?**

Chemicals in Plastics: A deep dive into composition, recyclability and policy implications. Chemicals and Waste Management Community of Practice (CoP). 28 June 2023

Chemicals in Plastic – A Technical Report: Options for Solutions

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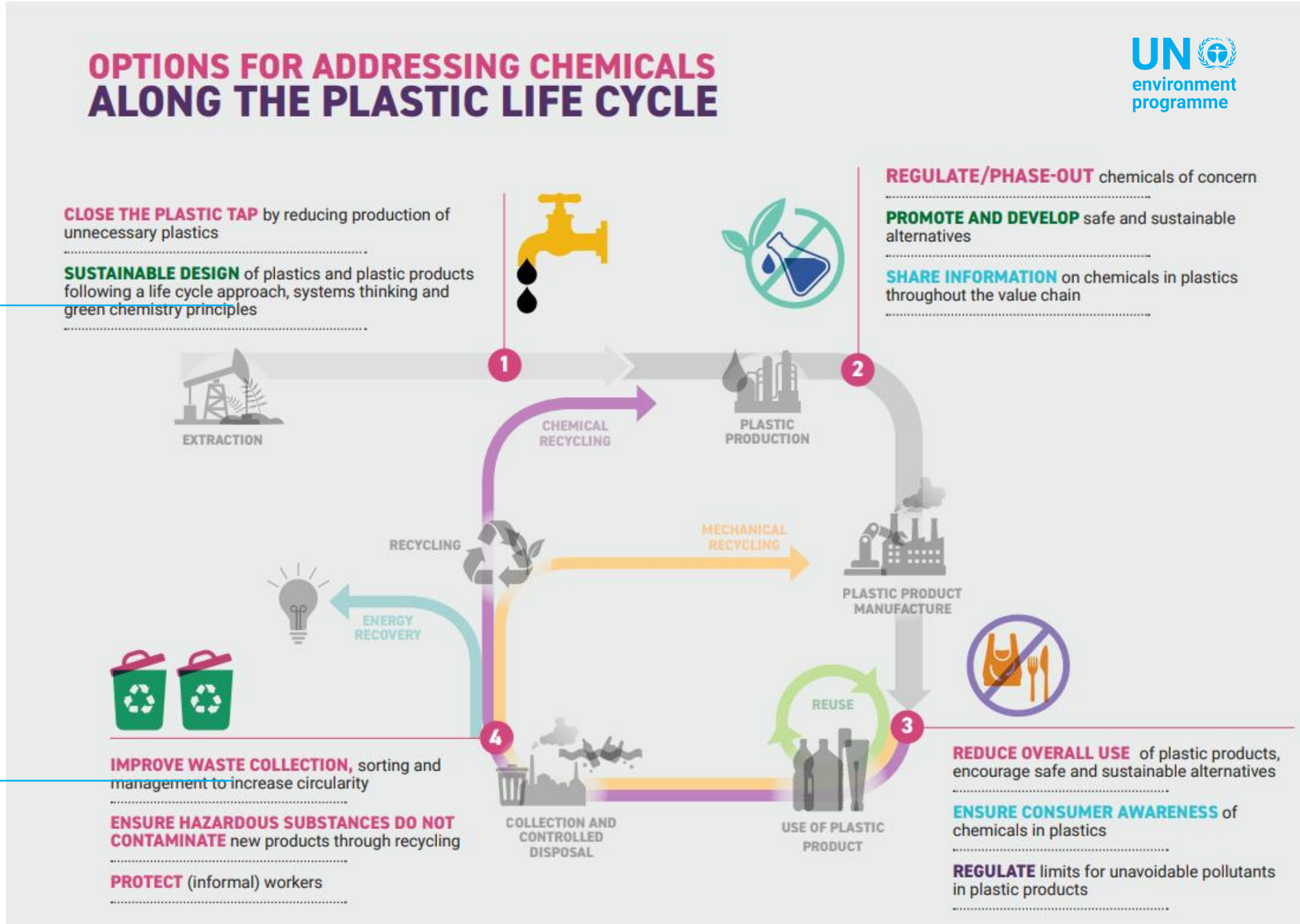
https://www.researchgate.net/profile/Roland-Weber-2
https://scholar.google.com/citations?user=-Cexto4AAAAJ&hl=en

Chemicals in Plastics: A Technical Report

Options and key levers



Intergovernmental Negotiating Committee (INC) on Plastic Pollution

- Explicit consideration of chemicals in plastics at INC2 UNEP/PP/INC.2/4

"Potential options for elements towards an international legally binding instrument, based on a comprehensive approach that addresses the full life cycle of plastics as called for by United Nations Environment Assembly resolution 5/14"

3. **Possible core obligation: banning, phasing out and/or reducing the production, consumption and use of chemicals and polymers of concern**

> ***Comment:*** *Plastic production is associated with the use of chemical additives. Around a quarter of the over 10,000 unique chemicals used in plastics are of potential concern to human health and safety. These chemicals are either added during the production process or are unintentionally added by-products, breakdown products or contaminants.[7] Banning or, where that is not feasible, reducing the use of hazardous chemicals and polymers of concern in plastics has the potential to protect human health and the environment. The reduction and elimination of hazardous chemicals and polymers of concern can, in conjunction with other measures, contribute to enhancing the recyclability of plastics and thereby to widening the scope of the plastic circular economy.*

12. The committee may wish to consider including some or all of the following potential options for control measures and voluntary approaches:

(a) Options for regulating chemicals and polymers of concern:

(i) **Ban, phase out, reduce or control** specific polymers and chemicals of concern, or groups of chemicals, **based on criteria identified** to determine polymers and chemicals of concern (list, phase-out date and criteria could be included in an annex to the instrument).

(ii) **Apply import and export requirements** for listed polymers and chemicals to parties and non-parties on a non-discriminatory basis.

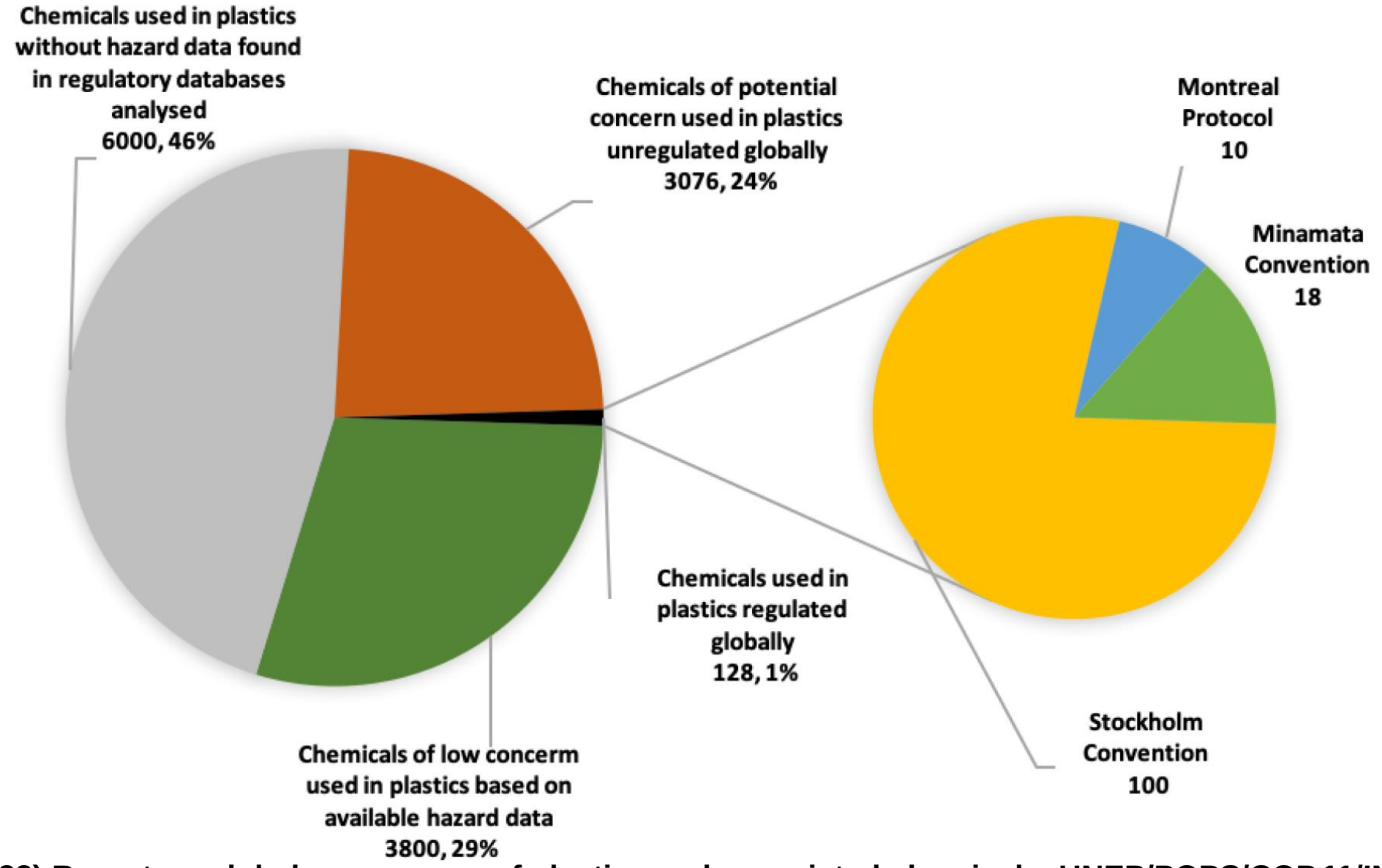
(iii) **Apply import and export requirements to parties and non-parties** on a non-discriminatory basis.

(b) Options for increasing transparency:

(i) Track types and volumes of polymers and chemicals applied in production, including through disclosure requirements for plastics throughout the supply chain, and plastic production, use and additives, consistent with national laws.

(ii) Increase transparency through marking (digital watermarks, tracers) and harmonized product labelling, material safety data sheets, product passports and publicly available databases.

Current global governance of plastics associated chemicals by Chemical Conventions (Stockholm, Minamata and Montreal Protocol)



BRS (2023) Report on global governance of plastics and associated chemicals. UNEP/POPS/COP.11/INF/59

UN environment programme

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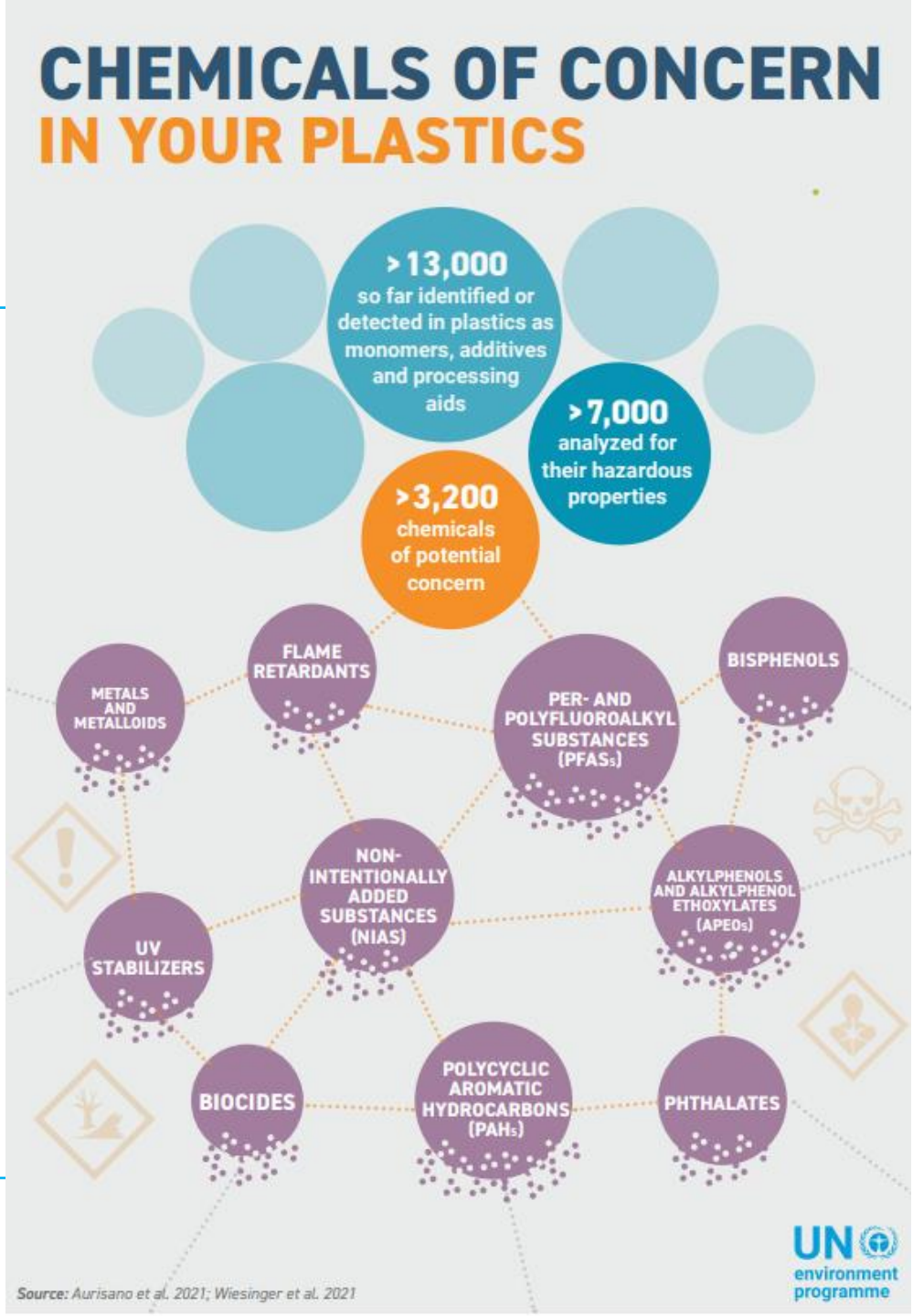


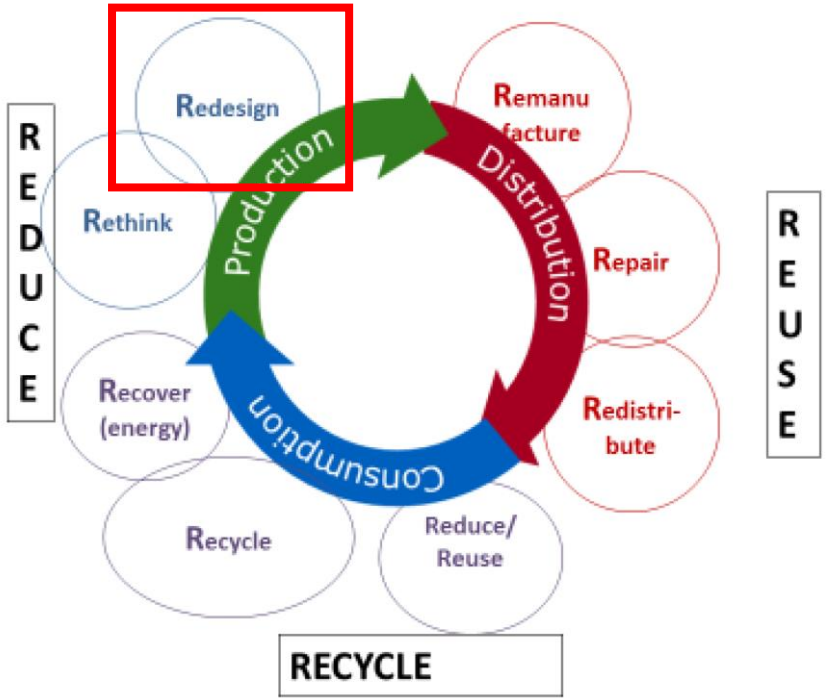
Chemicals in Plastics: Solutions

Identify Chemical of Concern	Select Priority Uses	Identify Alternatives	Characterize Alternatives	Compare Alternatives	Score Alternatives	Phase-in Sustainable Alternatives

Source Ken Geiser (Lowell Center for Sustainable Production)

Substitute chemicals of concern and assess alternatives to avoid regrettable substitution (phase-in most sustainable alternatives).

Adopt Green and Sustainable Chemistry in this process to enable a circular economy for chemicals in plastic.



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Discussion Question 3

- **What kind of incentives and regulatory frames can be created such that supply chain actors can transfer information regarding chemicals in plastics throughout the plastics lifecycle?** (E.g. from plastic manufacturers to businesses and consumers that use plastics and finally to waste managers that have to deal with (problematic) plastic waste)

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Green Forum info@thegreenforum.org

Chemicals and Waste Management Community of Practice

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