

化学物質と有害プラスチック に対するIPENの取り組み

IPEN works on chemicals and toxic plastics

IPEN (International POPs Elimination Network)
国際POPs（残留性有機汚染物質）廃絶ネットワーク

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概要 Outline



- IPENについて
Brief intro about IPEN
- IPENは有害化学物質、化学物質とプラスチックに取り組む
IPEN works on toxic chemicals; chemicals and plastics
- プラスチックの化学物質管理を求める声
Calls for chemical management in plastics
- 有害化学物質問題—生産とリサイクル；研究についての言及
Toxic chemical issues in – production and recycling; mention studies



IPENの使命 IPEN Mission

すべての人に有害物質のない未来を

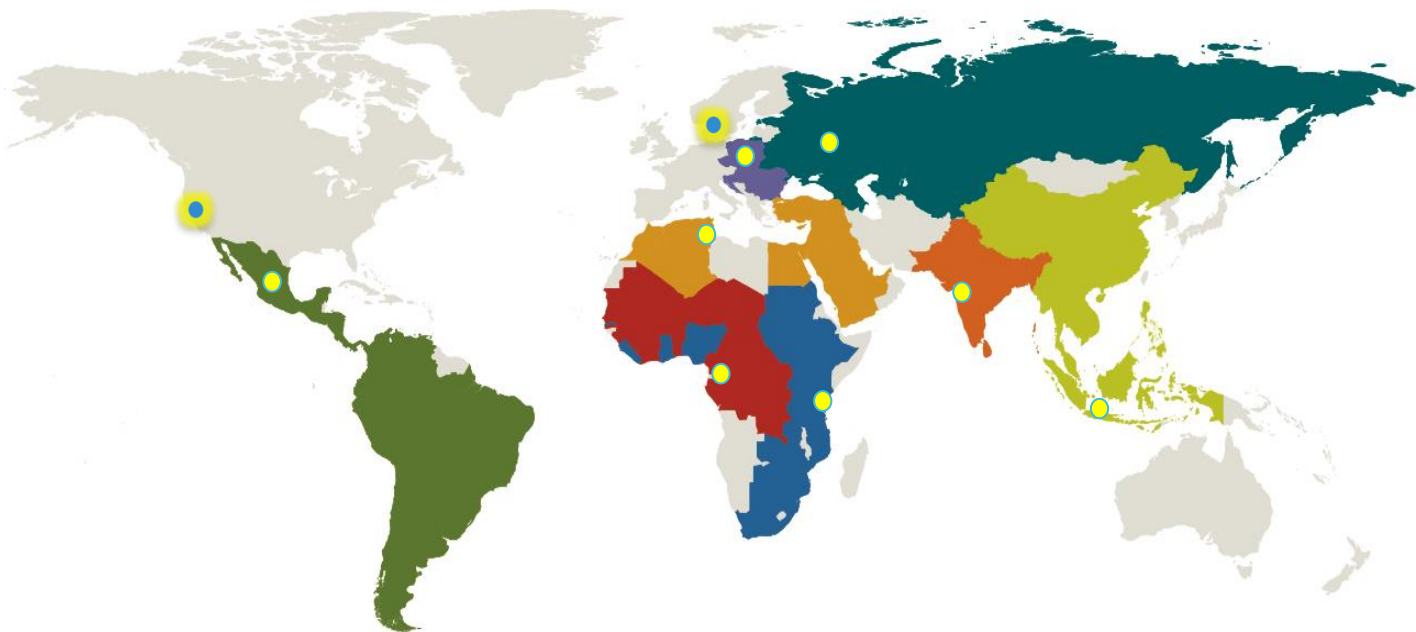
A toxics-free future for all

120カ国、600以上のNGOからなるグローバル・ネットワーク
グローバル&リージョナル・バランスの取れたリーダーシップ
2つのグローバルオフィス + 8つのIPENリージョナルハブ

Global Network of 600+ NGOs in 120 countries

Global & Regionally balanced Leadership

2 Global Offices + 8 IPEN Regional Hubs



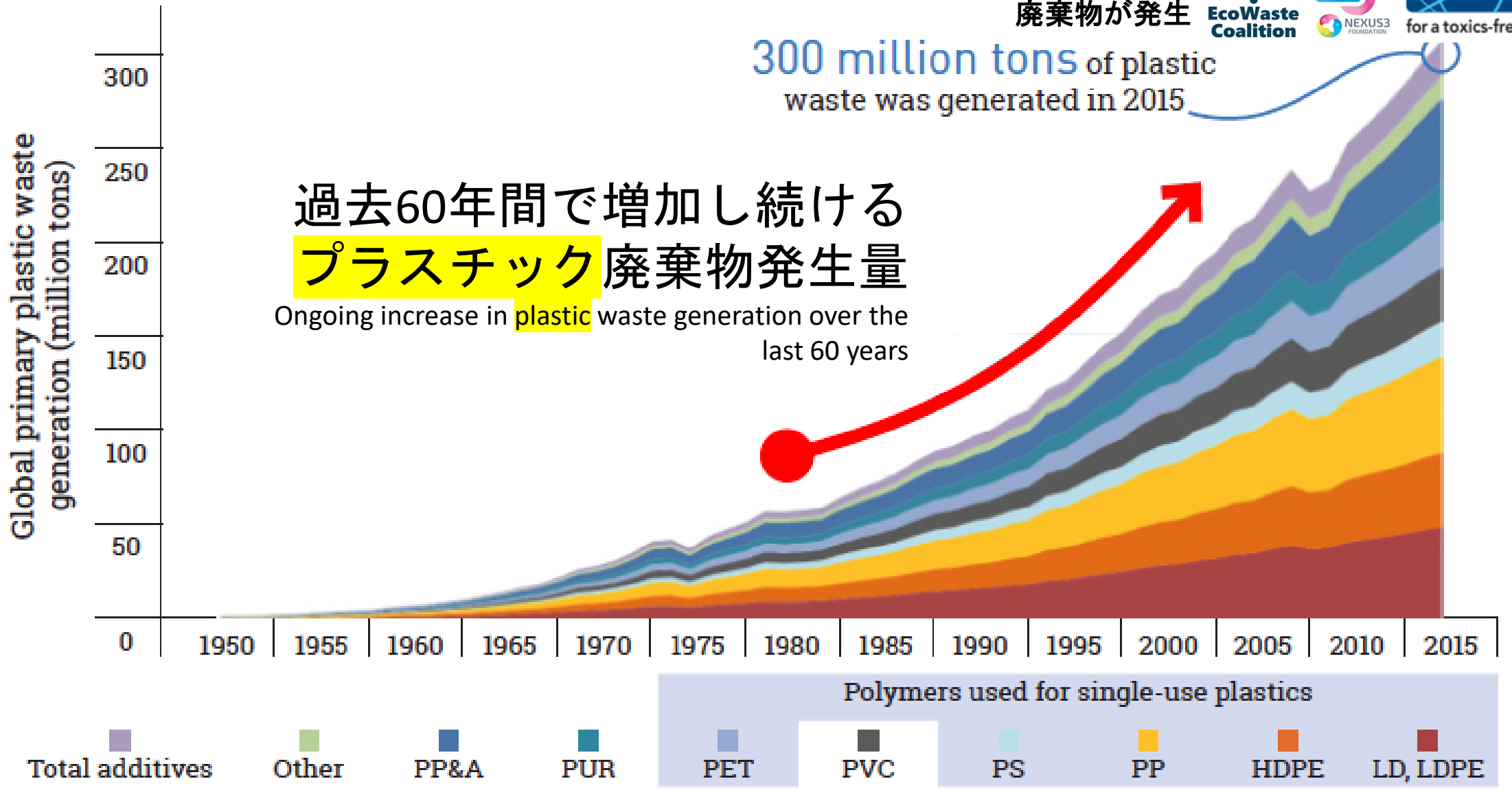
2015年には3億トンのプラスチック
廃棄物が発生



300 million tons of plastic
waste was generated in 2015

過去60年間で増加し続ける
プラスチック廃棄物発生量

Ongoing increase in plastic waste generation over the
last 60 years



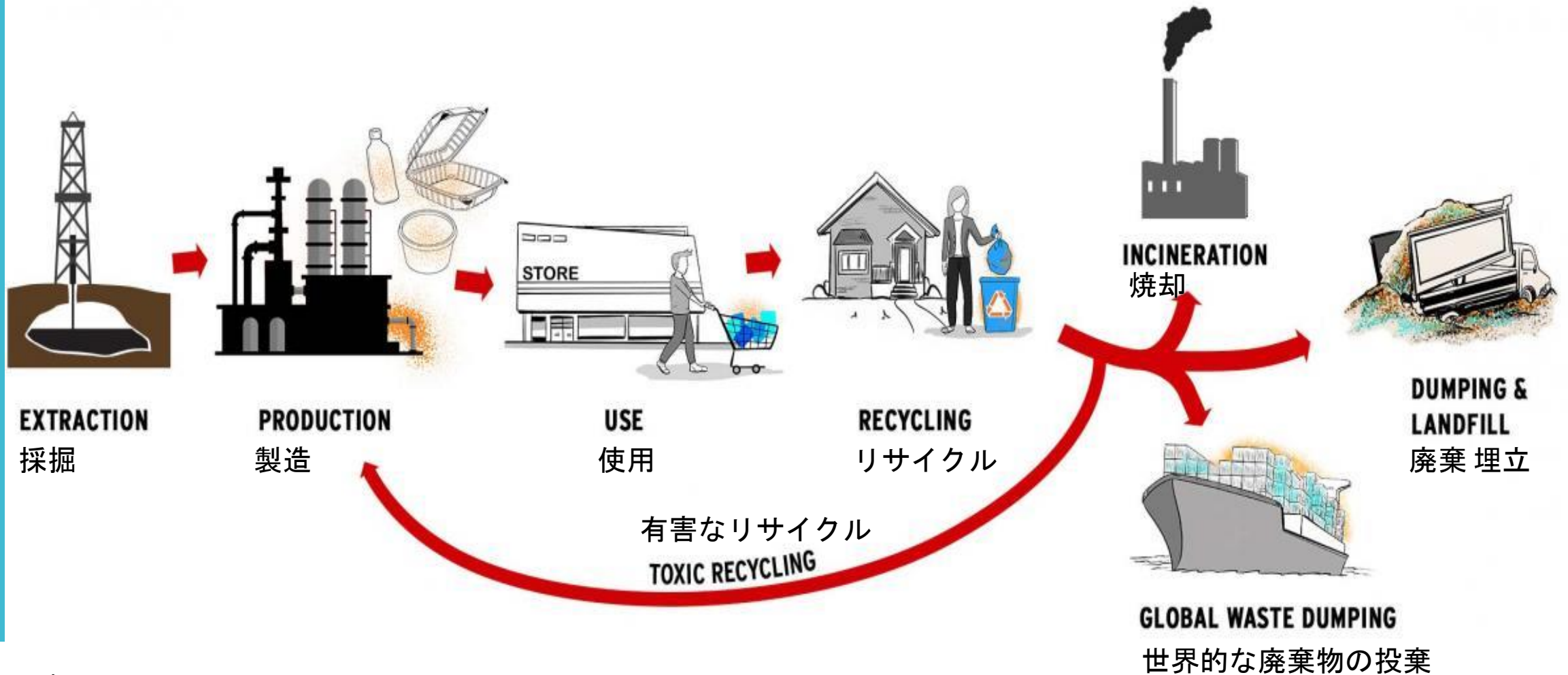
世界の主なプラスチック廃棄物発生量 (1950-2015年)

Global primary plastics waste generation, 1950- 2015

Credit: [Bellona](#)/Adapted from Geyer, Jambeck, and Law, 2017

プラスチックのライフサイクル：川上から川下まで

Plastic life cycle: from upstream to downstream



プラスチック中の懸念化学物質

Chemicals of concern in plastics



Chemicals used in plastics without hazard data found in regulatory databases analysed 6000, 46%

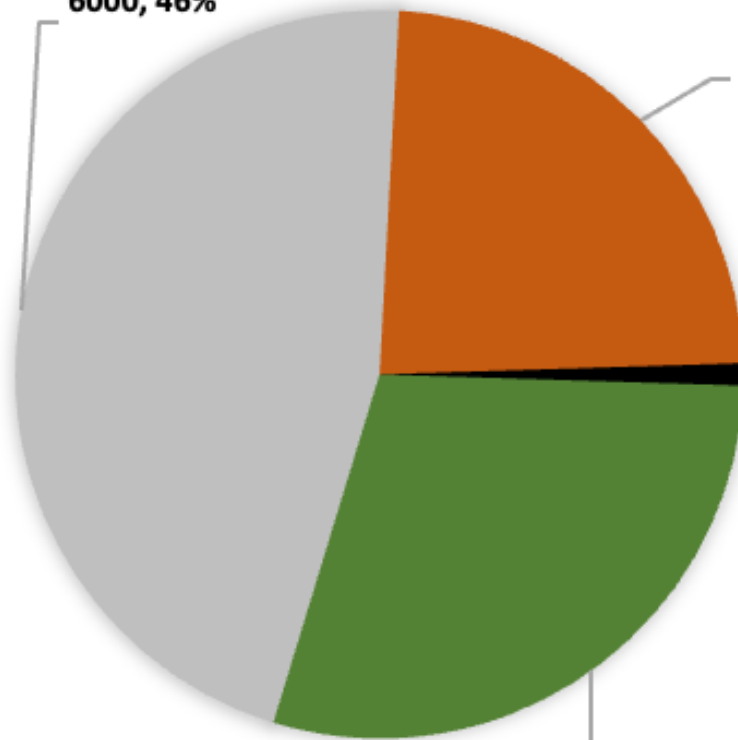
プラスチックに使われる化学物質で、ハザードデータがないもの 6000, 46%

Chemicals of potential concern used in plastics unregulated globally 3076, 24%

プラスチックに使われる化学物質で潜在的懸念はあるが世界的に規制されていないもの 3076, 24%

Montreal Protocol 10
モントリオール議定書 10

Minamata Convention 18
水俣条約 18



Chemicals used in plastics regulated globally 128, 1%

プラスチックに使われる化学物質で世界的に規制されているもの 128, 1%

Stockholm Convention 100

ストックホルム条約 100

プラスチックに使われる化学物質で低懸念とされているもの 3800, 29%

Chemicals of low concern used in plastics based on available hazard data 3800, 29%





プラスチック：
ライフサイクルを通じた人
の健康への有害なばく露

Plastics:

Toxic exposures to human health
throughout the life cycle

グローバル・サウス・データ:有害プラスチック化学物質

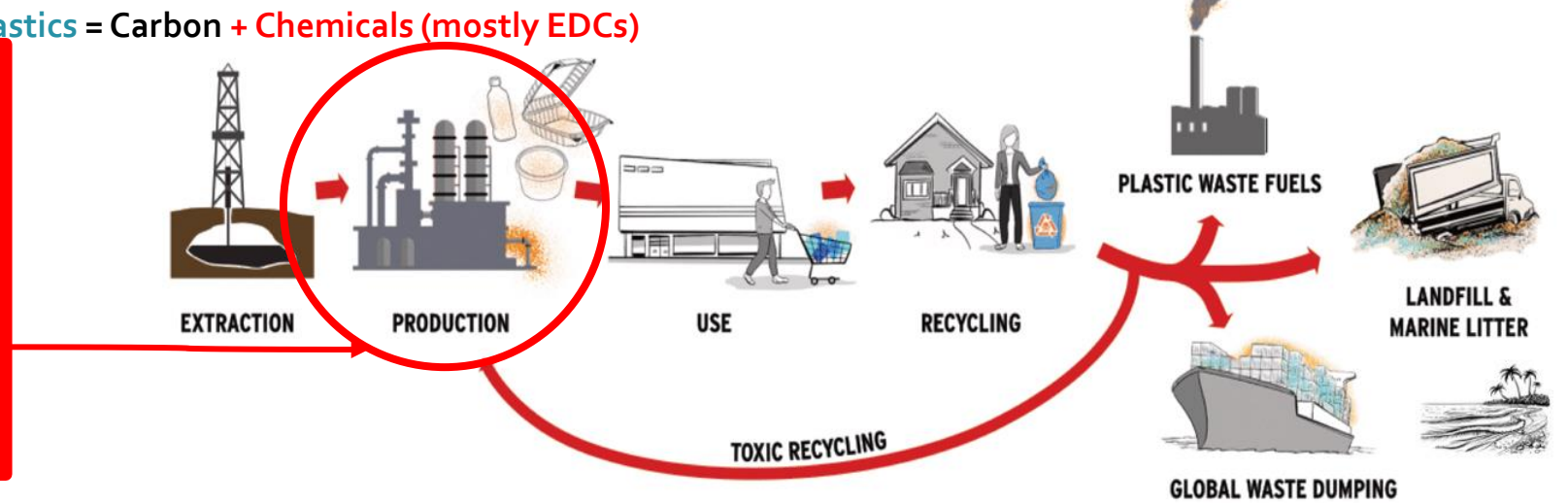
Global South Data: Hazardous plastic chemicals



プラスチック = 炭素 + 化学物質 (主にEDC (内分泌かく乱化学物質))

Plastics = Carbon + Chemicals (mostly EDCs)

- 1 >16 000 plastic chemicals, 25% of which classified hazardous
- 2 No plastic chemical classified as "safe"
- 3 Evidence-based classification and prioritization of chemicals and polymers of concern is possible
- 4 January 2024: State-of-the-science report



新素材・製品中のEDCs

EDCs in new materials & products

リサイクル素材・製品中のEDCs

EDCS in recycled materials & products

ダイオキシン排出

Dioxin releases

PLASTIC PELLETS FOUND ON BEACHES ALL OVER THE WORLD CONTAIN TOXIC CHEMICALS
December 2021
Lead authors: Therese Karlsson, Ph.D., Sara Broecker, Ph.D., Mona Alidoust, MSc, Prof. Hirotshige Takada, Ph.D.
IPEN for a toxics-free future

HOW PLASTICS POISON THE CIRCULAR ECONOMY
DATA FROM CHINA, INDONESIA AND RUSSIA AND OTHERS REVEAL THE DANGERS
Executive Summary
February 2022
IPEN for a toxics-free future

TOXIC PLASTICS: A HEALTH THREAT TO THE CIRCULAR ECONOMY
THE STATE OF THE PLASTICS MARKET WITH LESSONS FROM CHINA, INDONESIA & RUSSIA
February 2022
32% Japan
17% Middle East & Africa
Sweden Sverige
IPEN for a toxics-free future

BROMINATED FLAME RETARDANTS IN PLASTIC PRODUCTS FROM CHINA, INDONESIA, AND RUSSIA
February 2022
ARNIKA
IPEN for a toxics-free future

REFUSE-DERIVED FUEL IN INDONESIA
March 2022
NEXUS3
IPEN for a toxics-free future

REPORT: PLASTIC WASTE POISONS INDONESIA'S FOOD CHAIN
November 2019
NEXUS3, ARNIKA, ecoton, IPEN for a toxics-free future

再循環／リサイクルされたプラスチック玩具が 子どもたちをダイオキシンにさらす

Re-circulated/recycled plastic toys expose children to dioxin



リサイクルされたBFR（臭素化難燃剤）プラスチックは、舐めたりすることで子どもの日常的なダイオキシン摂取に寄与している
Recycled BFR plastics contribute to daily dioxin intake in children through
mouthing habits

<https://doi.org/10.1016/j.chemosphere.2020.126579>

安全で循環型のプラスチックは存在するの？

Do safe and circular plastic exist?



for a toxics-free future



Contents lists available at ScienceDirect

Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere



Detection of high PBDD/Fs levels and dioxin-like activity in toys using a combination of GC-HRMS, rat-based and human-based DR CALUX® reporter gene assays

Clémence Budin^{a,b,*}, Jindrich Petrlik^c, Jitka Strakova^c, Stephan Hamm^d, Bjorn Beeler^e, Peter Behnisch^b, Harrie Besselink^b, Bart van der Burg^a, Abraham Brouwer^{a,b}

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^b BioDetection Systems B.V., Science Park 406, 1098XH, Amsterdam, the Netherlands

^c Arnika – Toxics and Waste Programme, Delnicka 13, Prague, Czech Republic

^d Mas Jmünsteranalytical solutions gmbh, Wilhelm-Schickard-Strasse 5, 48149, Münster, Germany

^e IPEN, Gothenburg, Sweden

HIGHLIGHTS

- We determined DR CALUX and DR_{human} CALUX REP values for PBDD/Fs.
- In sampled plastic toys, we measured high levels of PBDD/Fs using GC-HRMS.
- GC-HRMS-based TEQ calculated using PCDD/F TEF were up to 3821 pg TEQ/g.
- Bioassay equivalents up to 2550 pg TEQ/g were measured by DR CALUX® bioassays.

Environment International 178 (2023) 108079



Contents lists available at ScienceDirect

Environment International

journal homepage: www.elsevier.com/locate/envint



Full length article

Global survey of dioxin- and thyroid hormone-like activities in consumer products and toys

Peter Behnisch^{a,*}, Jindrich Petrlik^{b,c}, Clemence Budin^a, Harrie Besselink^a, Emiel Felzel^a, Jitka Strakova^{b,c}, Lee Bell^c, Gilbert Kuepou^d, Semia Gharbi^e, Fernando Bejarano^f, Génon K. Jensen^g, Joseph DiGangi^c, Yuyun Ismawati^h, Olga Speranskayaⁱ, Mao Da^j, Jana Pulkrabova^k, Tomas Crambliko^k, Karolina Brabcova^b, Abraham Brouwer^{a,l,*}

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^e Association d'Education Environnementale pour les Futures Générations (AEEFG), 2070 Tunis, Tunisia

^f Red de Acción sobre Plaguicidas y Alternativas en México (RAPAM), 56120 San Juanito, Texcoco, Estado de México, México

^g The Health and Environment Alliance (HEAL), 1040 Brussels, Belgium

^h Nexus3 Foundation, 80223 Denpasar, Indonesia

ⁱ HEISupport, Von-Ruckteschell-Weg 16, 85221 Dachau, Germany

^j Shenzhen Zero Waste, 518000 Shenzhen, China

^k University of Chemistry and Technology, Prague, Faculty of Food and Biochemical Technology, Department of Food Analysis and Nutrition, Technicka 3, 166 28 Prague

^l Czech Republic

¹ VU University Amsterdam, Faculty of Sciences, Department of Animal Ecology, De Boelelaan 1085, 1081 HV Amsterdam, the Netherlands

プラスチック・リサイクルに関する科学的根拠

Scientific evidence on plastic recycling

- データが示し、科学者が実証している：安全で循環可能なプラスチックは存在しない
Data shows and scientists have illustrated: Safe and circular plastics do not exist
- プラスチックは川上から川下まで、循環型経済を毒する
Plastics poison the circular economy from the upstream stage to the downstream stage
- 科学者に安全で循環可能なプラスチック素材は何かと尋ねると.....
Ask a scientist what plastic material is safe and circular...



**Safe & Circular
Plastics**

**DO NOT
Exist**

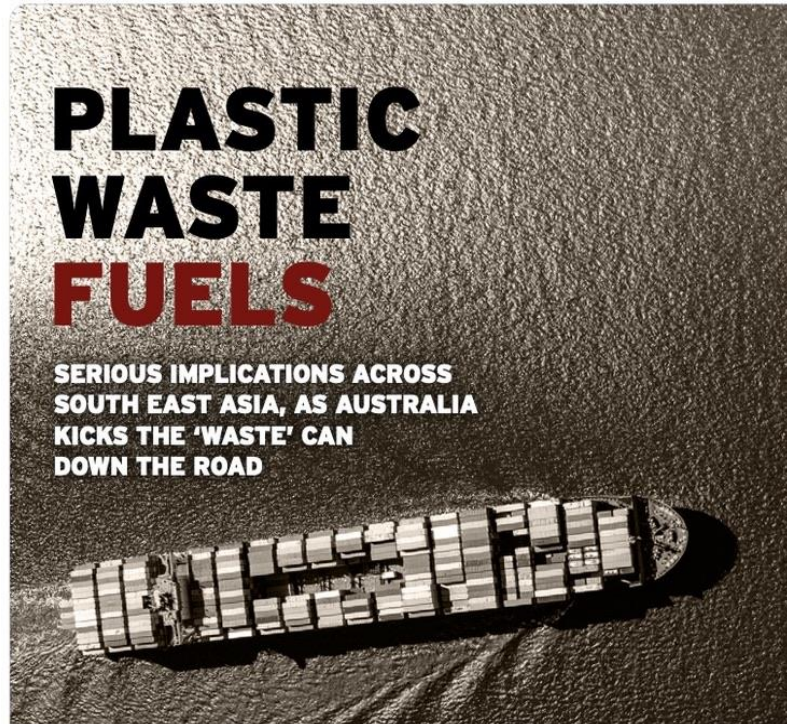




MALAYSIA: REPACKAGED WASTE IMPORTS

CASE STUDY OF PROCESSED
ENGINEERED FUEL

March 2022



PLASTIC WASTE FUELS

SERIOUS IMPLICATIONS ACROSS
SOUTH EAST ASIA, AS AUSTRALIA
KICKS THE 'WASTE' CAN
DOWN THE ROAD



Executive Summary
March 2022



PROCESS ENGINEERED FUEL - FUEL PRODUCT OR PLASTIC WASTE EXPORT IN DISGUISE?

NATIONAL REPORT ON PEF IMPORTATION
AND USE IN THE PHILIPPINES

March 2022





PLASTIC WASTE POISONING FOOD AND THREATENING COMMUNITIES IN AFRICA, ASIA, CENTRAL & EASTERN EUROPE AND LATIN AMERICA

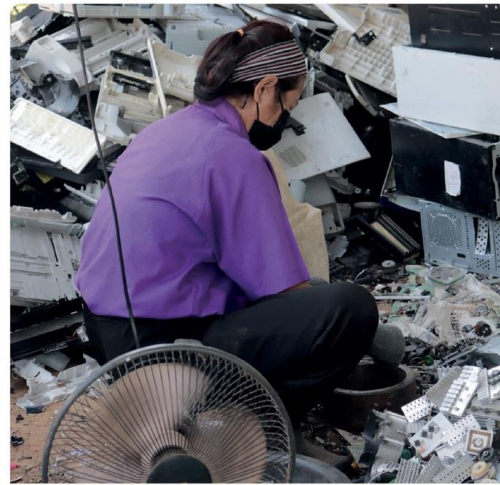
June 2021



PLASTIC WASTE MANAGEMENT HAZARDS

WASTE-TO-ENERGY, CHEMICAL RECYCLING, AND PLASTIC FUELS

Lee Bell
Professor Hideshige Takada



ENVIRONMENTAL, FOOD AND HUMAN BODY BURDEN OF DECHLORANE PLUS IN A WASTE RECYCLING AREA IN THAILAND: NO ROOM FOR EXEMPTIONS

April 2023



CHEMICAL RECYCLING: A DANGEROUS DECEPTION

WHY CHEMICAL RECYCLING WON'T SOLVE THE PLASTIC POLLUTION PROBLEM

October 2023

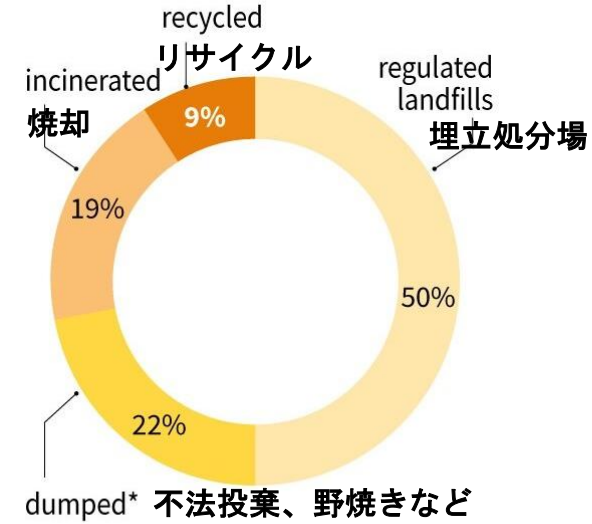




プラスチック廃棄物

Plastic waste

353 million tonnes produced in 2019
2019年には
3億5300万トン

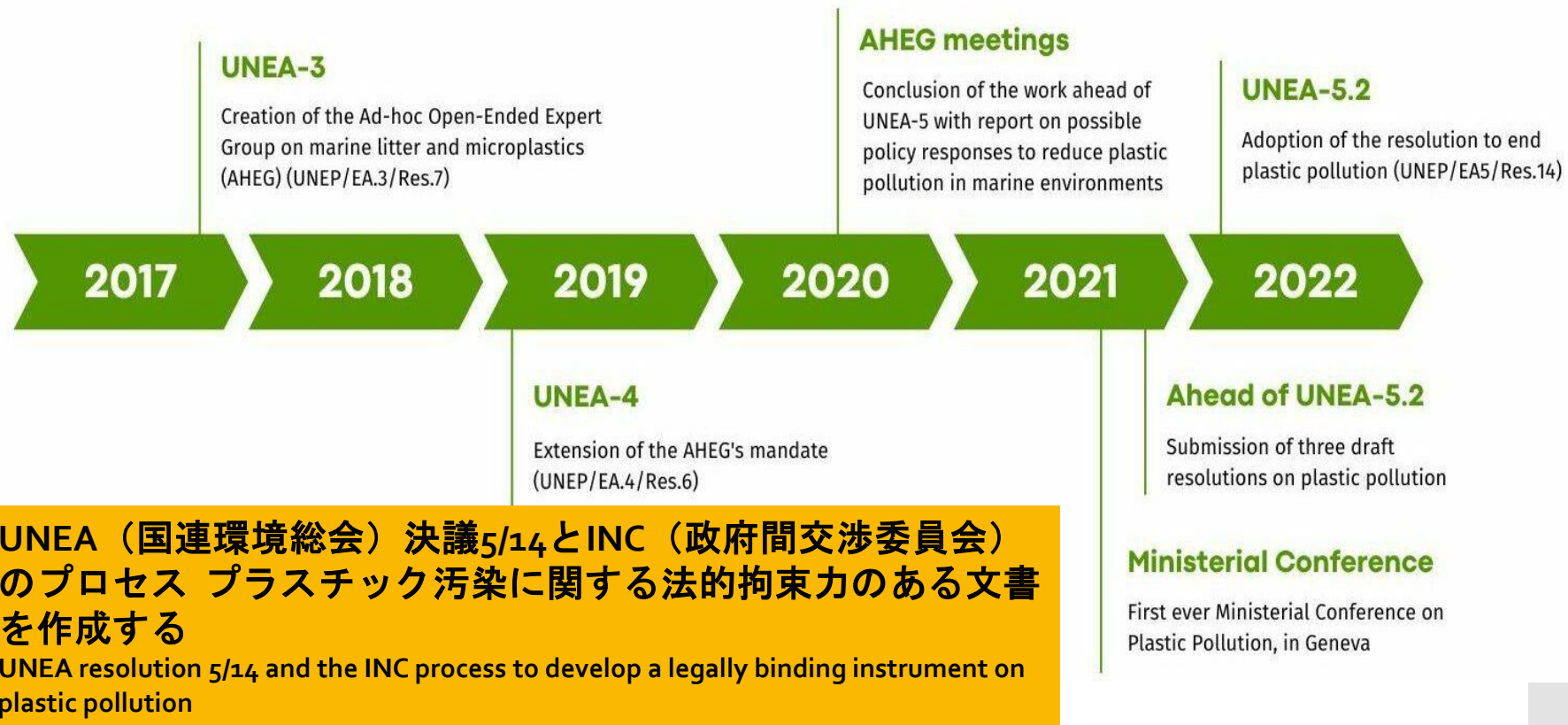


*in unregulated landfills, burned in open pits or leaked into the environment

水道の蛇口を閉める時だ！
It's time to turn the tap off!

プラスチック汚染をなくすための国際条約に向けて

Toward an International Treaty to End Plastic Pollution



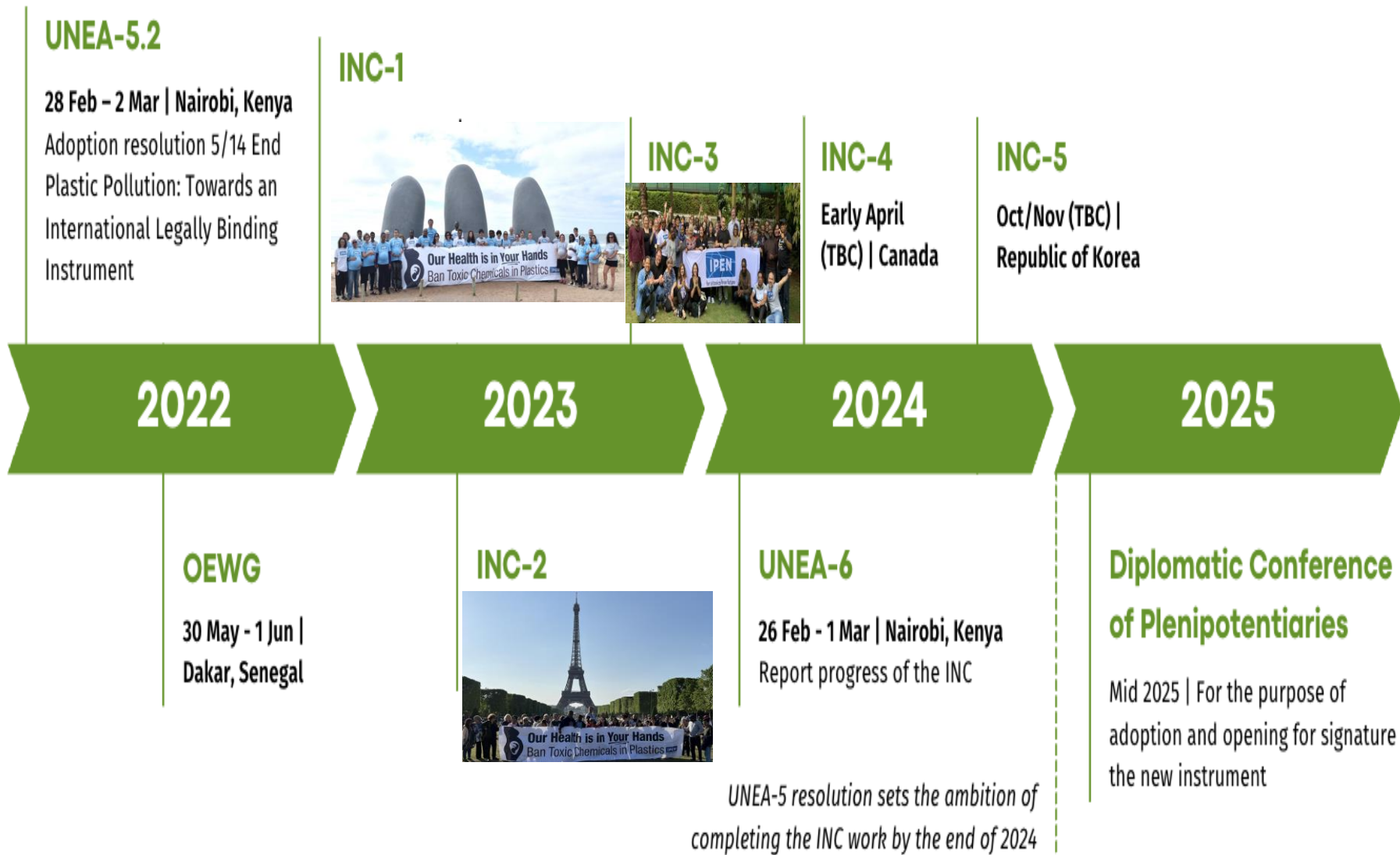
決議にはこうある：

- プラスチックの全ライフサイクルに対応する包括的なアプローチに基づくこと
- 拘束力のあるアプローチと自主的なアプローチの両方を含むべき
- リオ宣言と各国の状況や能力を考慮に入れる

Resolution specifies:

- Based on a comprehensive approach that addresses the full life cycle of plastic
- Could include both binding and voluntary approaches,
- Taking into account the Rio Declaration and national circumstances and capabilities.

世界的プラスチック チック交渉 The Global Plastics Negotiations



プラスチック条約のポイント

Key points of Plastic Treaty



- **プラスチック条約は地球規模で健康を守る条約である**
The Plastics Treaty is a **Global Health Treaty**
- **プラスチック汚染は採取段階から使用後まで続く**
Plastic pollution starts from the extraction stage to the end of life
- **プラスチックは、そのライフサイクル全体を通じて人の健康に危険をもたらす**
Plastics pose hazards to human health throughout the life cycle of plastics
- **安全で循環可能なプラスチックは存在しない**
No safe and circular plastics exist
- **陸上環境でのプラスチック分解は海洋環境の6倍遅い**
Plastic degradation in **terrestrial environment 6x slower than in marine environment**

UNITED NATIONS

EP

UNEP/PP/OEWG/1/INF/1



Distr.: General
10 May 2022



United Nations
Environment
Programme

Original: English

Ad hoc open-ended working group to prepare for the work of the intergovernmental negotiating committee to develop an international legally binding instrument on plastic pollution, including in the marine environment

Dakar, Senegal, 30 May – 1 June 2022

UNEA Resolution 5/14 entitled “End plastic pollution: Towards an international legally binding instrument”

INCは何を検討するの？
(決議第3項)
What will the INC consider?
(para 3 of the resolution)

以下の項目を含めてプラスチックの持続可能な生産と消費を促進する：

- プロダクトデザイン
- 環境に配慮した廃棄物管理
- 資源効率と循環経済のアプローチを通じて

Promote sustainable production and consumption of plastics, including:

- *product design*
- *environmentally sound waste management*
- *through resource efficiency and circular economy approaches.*

技術的および能力的な実施手段 Technical and capacity means of implementation.

実施を支援するための資金メカニズム、専用の多国間基金の検討。データ、モニタリング、報告、実施と効果を評価する手段

Finance mechanism to support the implementation, consideration of a dedicated multilateral fund. Data, monitoring and reporting, means of assessing implementation and effectiveness.

コンプライアンスへの対処 Address Compliance

各国の国内行動計画の検討 Consider National Action Plans

科学的、社会経済的な情報と評価 Scientific and socio-economic information and assessment.

プラスチック汚染に関する条約交渉...

Negotiating a treaty on plastic pollution...



循環は愚かであるUNEPトップ・レポート 廃棄物管理／サーキュラリティに焦点（EU／HACに対抗）

Circularity is Stupid: UNEP Tap Report

Focused on Waste Management/Circularity (Counter to EU/HAC)

コインの裏側を暴く...
Exposing the other side of the coin...



加盟国の政策決定を無視するUNEP

- ケミカル・リサイクル
- セメント窯

UNEP ignoring Member State Policy Decision Outcomes

- Chemical Recycling
- Cement Kilns

INC-3に登録した化石燃料・化学産業のロビイストは143名で、INC-2から36%増加
143 fossil fuel and chemical industry lobbyists registered for INC-3, a 36% increase from INC-2



IPENの取り組み：全体会議とコンタクトグループ

IPEN Adapted & Engaged: Plenary & Contact Groups

プラスチック
汚染との闘い
Fighting plastic
pollution



ステークホルダーの役割

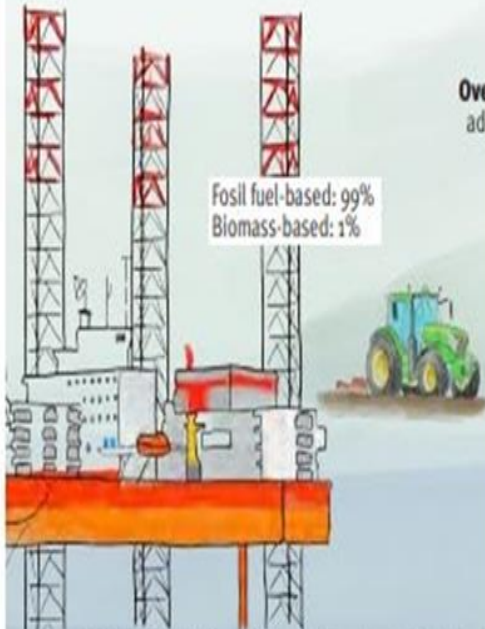
Role of Stakeholders

The plastics life cycle

1. Extraction & conversion

Key stakeholders:

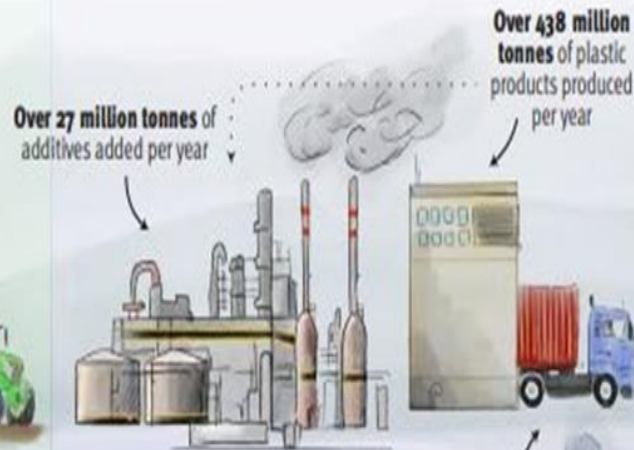
Raw material producers
Monomer producers
Polymer producers



2. Manufactur-

Key stakeholders:

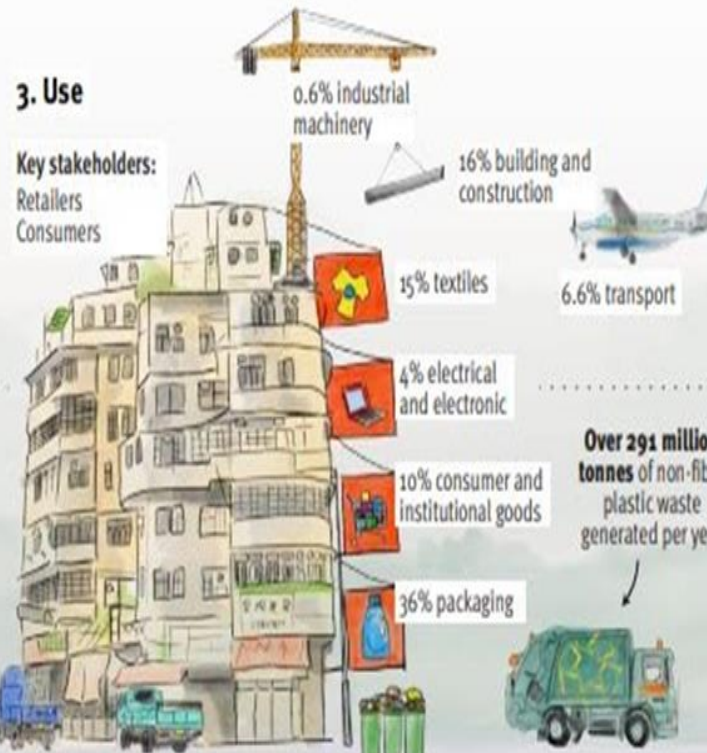
Plastic processors
Plastic producers
Brands



3. Use

Key stakeholders:

Retailers
Consumers



4. End of life

Key stakeholders:

Formal waste sector
Informal waste sector



Plastic lost during transport

プラスチック
条約INC-3で
何が起きたか
What Happened at
INC-3 for a Plastics
Treaty

ゼロドラフト Zero Draft

コンタクトグループ₁は、パートIとパートIIに取り組んだ
Contact Group 1 addressed Part I and Part II,

コンタクトグループ₂は、パートIIIとIVに焦点を当てた
Contact Group 2 focused on Part III and IV, and

コンタクトグループ₃では、原則、範囲、定義など、これまでのセッションで取り上げられなかった要素を扱った
Contact Group 3 dealt with elements not covered in previous sessions including, principles, scope and definition.

会期間の作業
Intersessional work

プラスチック 条約INC-3で 何が起きたか What Happened at INC-3 for a Plastics Treaty

- 加盟国は、ゼロ草案のさまざまな条項に介入した。これらのコメントは、各条項に対する選択肢を含む1つの統合テキストにまとめられた。INC-4で使用される統合版は、12月31日までにINC事務局からオンラインで入手可能となる
Member states made interventions on the different provisions in the Zero Draft. The comments were compiled to one consolidated text with options for the different provisions. The consolidated version to be used for INC-4 will be made available online by the INC secretariat by the 31st December;
- 会期間作業に関する合意が得られなかったため、4月のINC4までの会期間の作業は行われなかったことになった。化学物質に関する会期間作業についてはほぼ合意できていたので残念である
There was a lack of agreement on intersessional work. Thus, there will be no intersessional work until after INC-4, despite being very close to agreement on intersessional work on chemicals
- エクアドルのルイス・バヤス大使が新議長に選出された
The election of a new chair, Ambassador Luis Vayas from Ecuador

提言 Recommendations



プラスチックの世界的規制を導入する

Adopt global controls on plastics



プラスチックや懸念される化学物質の生産量を削減する

Reduce the productions of plastic and chemicals of concern



有害なプラスチック化学物質を排除

Eliminate hazardous plastic chemicals





for a toxics-free future

