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IN 2023 BY  
WILL STAHL-  
TIMMINS

# MINDEROO-MONACO COMMISSION ON PLASTICS AND HUMAN HEALTH



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THE MINDEROO-MONACO COMMISSION ON PLASTICS AND HUMAN HEALTH



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**PLASTIC -THE SIGNATURE  
MATERIAL OF OUR AGE**

**THE AGE OF DISPOSABLE LIVING**

# MINDEROO MONACO COMMISSION GOALS

To make the invisible visible

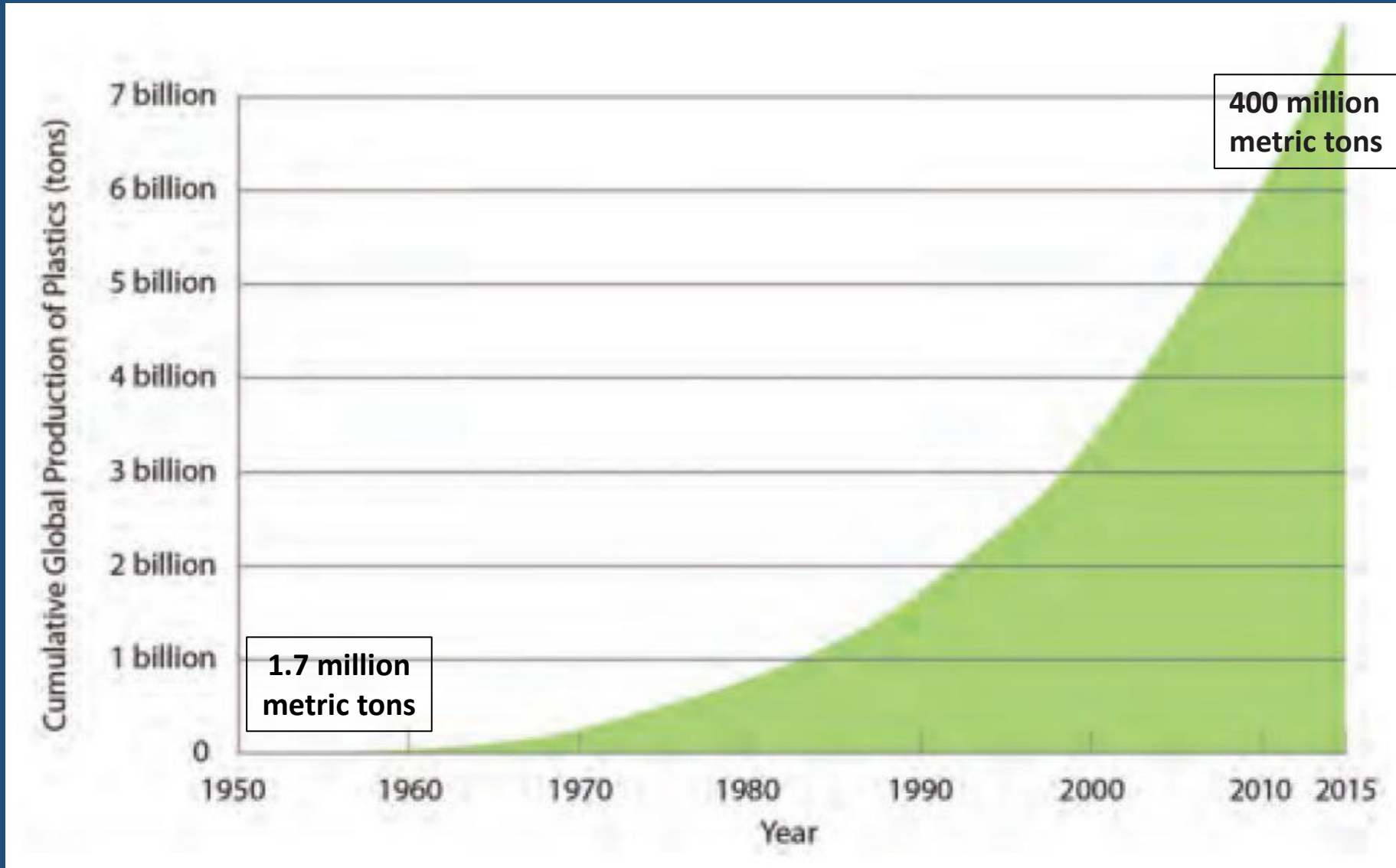
To count plastic's uncounted costs – to human health, the earth's environment, the global economy, and social justice

To count these previously unseen costs across the entire plastic life cycle

To protect human health, prevent disease, and save lives. Plastic is not just an environmental problem.



# PLASTIC PRODUCTION IS INCREASING EXPONENTIALLY



8 trillion metric tons (Gigatons) produced since 1950

98-99% made from fossil carbon – coal, oil, gas

Production is energy-intensive -3.7% of greenhouse gas Emissions. Air pollution.

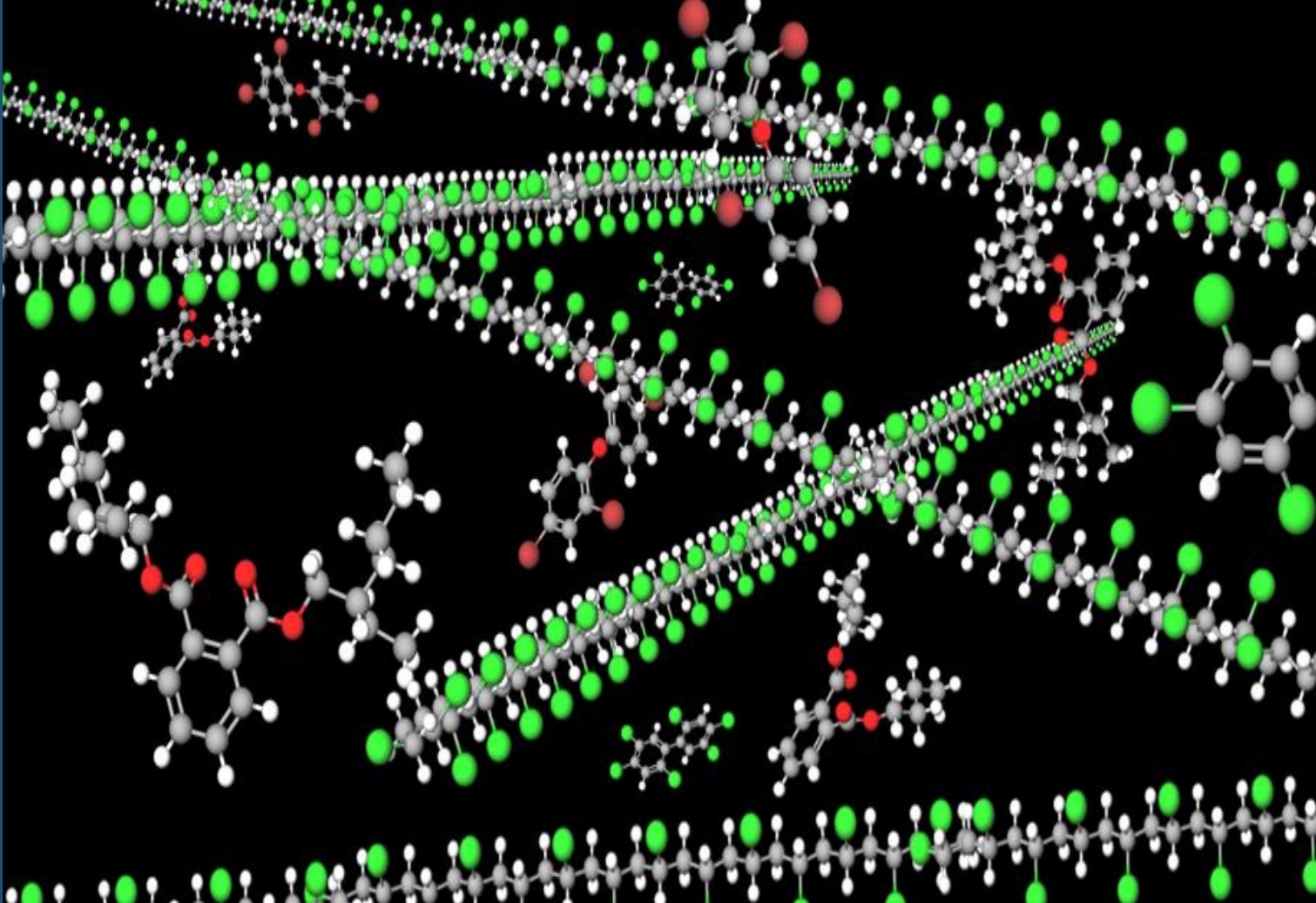
Production is accelerating. Half of all plastic has been made since 2002. On track to double again by 2050

35-40% of current production is single-use plastic

Less than 10% is recycled

6 trillion metric tons (Gigatons) pollute the global environment

# PLASTICS ARE COMPLEX

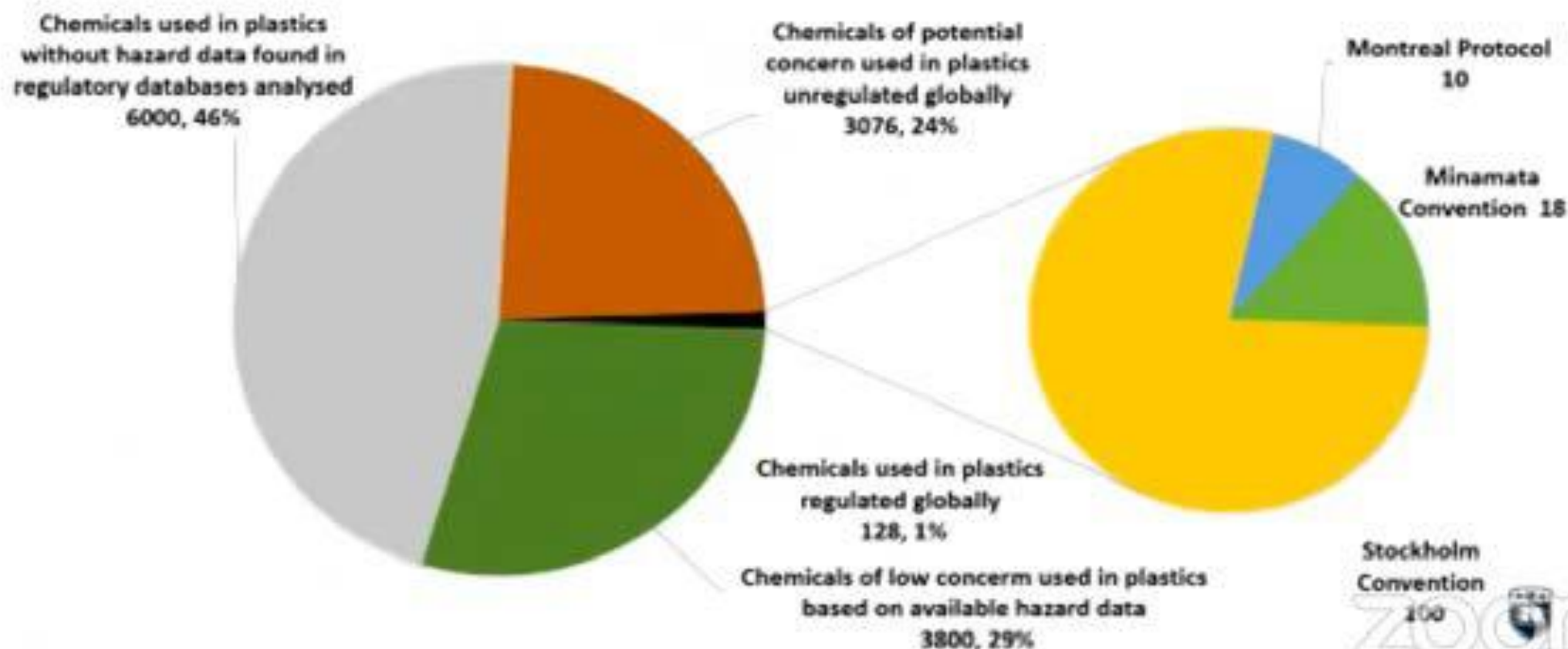


Polymer backbone

10,500+ added chemicals

- Plasticizers
- Flame retardants
- UV stabilizers
- Antioxidants
- Processing aids
  - Catalysts
  - Solvents
- Unreacted monomers
- Non-intentionally added substances (NIAS)
- Additives include carcinogens, neurotoxicants, endocrine disruptors
- Most additives have never been tested for toxicity
- **Chemicals leach out of plastics to enter the environment and to enter people**

# Number of chemicals of potential concern IN PLASTICS



Room C Geneva

Plastics Treaty and the BRS CoP



HAC to End Plastic Pollution  
103 subscribers

Subscribed

2



Share

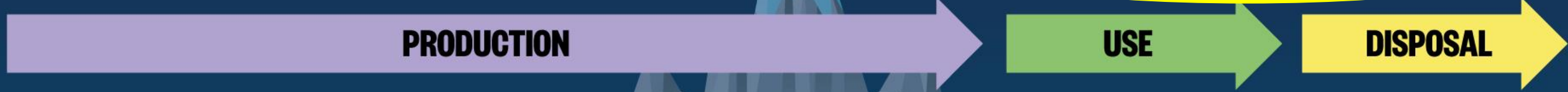
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# HEALTH IMPACTS OF PLASTIC

Plastic causes disease, disability, and premature death at every stage of its life cycle



PLASTICS' HAZARDS TO HUMAN HEALTH ARE MUCH MORE THAN BEACH LITTER AND MICROPLASTICS



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# HEALTH IMPACTS OF PLASTIC PRODUCTION

## OCCUPATIONAL HAZARDS TO FRACKING WORKERS & FENCELINE COMMUNITIES



# HEALTH IMPACTS OF PLASTIC

Plastic causes disease, disability, and premature death at every stage of its life cycle

## PRODUCTION

## USE

## DISPOSAL

### PLASTIC WORKERS

#### Coal mining

Traumatic injury Cave-ins Lung cancer  
Coal workers' pneumoconiosis  
Silicosis Cardiovascular disease

#### Production Cracking, polymerization, compounding

Hepatic angiosarcoma  
Brain cancer Mesothelioma  
Decreased fertility/sterility  
Breast cancer Lung cancer  
Neurotoxic injury  
Leukemia Lymphoma

#### Synthetic textile manufacture

Bladder cancer Lung cancer  
Interstitial lung disease  
Mesothelioma

#### Oil and gas extraction Conventional and fracking

Traumatic injury Fire Explosion  
Silicosis Cardiovascular disease  
Lung cancer COPD

#### Fossil fuel transport

Burns Injuries Traumatic death

#### Recycling and waste disposal

Cardiovascular disease  
Heavy metal poisoning Cancers  
Neuropathy Lung disease



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# HEALTH IMPACTS OF PLASTIC PRODUCTION

## OCCUPATIONAL HAZARDS TO PETROCHEMICAL WORKERS & FENCELINE COMMUNITIES

# HEALTH IMPACTS OF PLASTIC

Plastic causes disease, disability, and premature death at every stage of its life cycle

**PRODUCTION**

**USE**

**DISPOSAL**

## FENCELINE COMMUNITIES

**Production**  
Cracking, polymerization, compounding

Leukemia Lymphoma

Asthma COPD

Cardiovascular disease

**Fracking**

Premature birth Low birth weight Childhood leukemia

Cardiovascular disease Vehicular injuries

Asthma COPD Mental health problems

**Fossil fuel transport**

Burns Injuries Traumatic death

**Recycling and waste disposal**

Cardiovascular disease

Heavy metal poisoning Cancers

Neuropathy Lung disease



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**HEALTH IMPACTS OF  
PLASTIC PRODUCTION**

**HAZARDS TO  
PLASTIC USERS**



# HEALTH

## IMPACTS EVERYDAY EXPOSURE

### Plastic chemicals:

Bisphenol-A

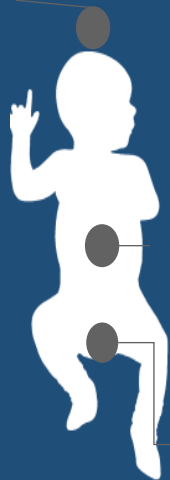
Phthalates

Flame retardants

PFAS

Micro- & nanoplastics?

Miscarriage



**IQ loss**

Decreased  
cognitive  
development

**Impaired fine  
motor  
development**

Decreased birth  
weight

Shortened  
Anogenital  
distance



Hypertension

Obesity

**Changed  
pubertal  
timing**

**Altered  
thyroid  
function**



Hypertension/  
Cardiovascular  
disease

**Breast cancer**

Obesity

Insulin resistance/  
Type 2 diabetes

Liver cancer

Endometriosis

Polycystic ovary  
syndrome



**Decreased sperm  
concentration  
& quality**

# INFANTS IN THE WOMB AND YOUNG CHILDREN ARE EXQUISITELY VULNERABLE TO PLASTIC CHEMICALS



- Toxic chemicals in plastic can cause damage to infants and children at even the lowest levels detectable – levels far below those that harm adults
- Prenatal exposure in the womb during pregnancy is especially dangerous
- Plastic chemicals can cause brain damage, birth defects and cancer.
- The brain damage caused by plastic chemicals can result in autism, ADHD and decreased intelligence (IQ loss)
- There are no safe exposure “thresholds” in prenatal life
- These effects can last lifelong
- **Exposure prevention is the only effective treatment**

# MINDEROO-MONACO COMMISSION ON PLASTICS AND HUMAN HEALTH



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An isometric illustration of an industrial landscape. In the background, there are grey, jagged mountains. A blue river flows through the center of the scene. On the left bank, there are industrial buildings, a crane, and a power plant with smokestacks. On the right bank, there are more industrial buildings, a residential area with houses, and a large fire with smoke rising from it. The ground is shown in cross-section with various colored layers representing soil and rock. The sky is a dark blue gradient.

## The Health Costs of Plastics

Maureen Cropper  
Economist, University of Maryland



# THE HEALTH COSTS OF PLASTIC

ALL COSTS IN 2015 PPP US DOLLARS

## PRODUCTION Global damages

Total:  
**\$592**  
billion

### Accidents & injuries, 2015

10,400 deaths → \$11.55 billion

### Particulates & gases, 2015

18,700 deaths → \$23.33 billion

### Exposure to benzene and formaldehyde, 2015

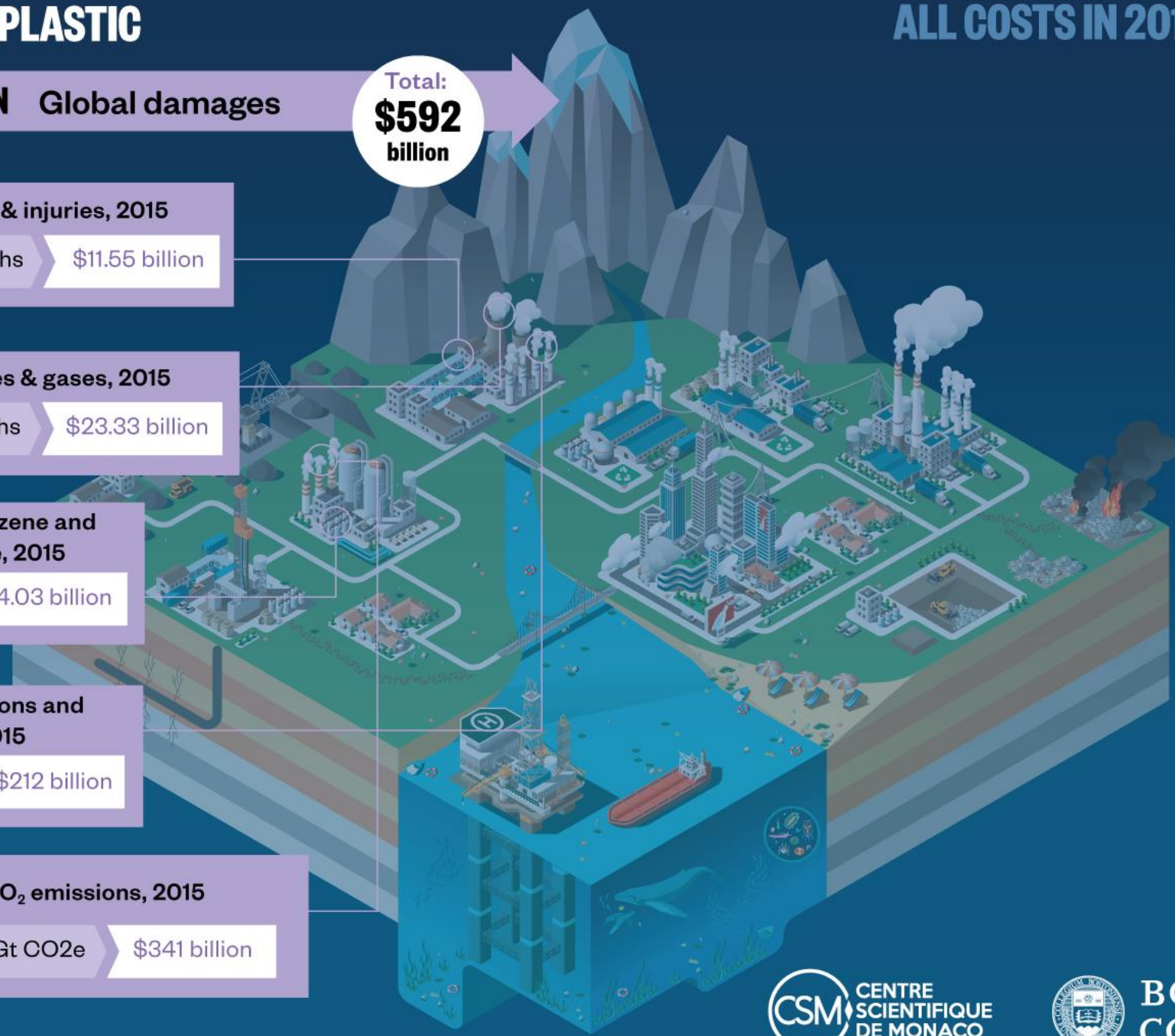
2,700 deaths → \$4.03 billion

### Upstream emissions and disposal, 2015

159,000 deaths → \$212 billion

### CO<sub>2</sub> emissions, 2015

1.96 Gt CO<sub>2</sub>e → \$341 billion



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## USE Damages to USA

Total:  
**\$920**  
billion

### Exposure to DEHP, age 55-64, 2013

90,762 deaths → \$490 billion

### Exposure to PBDE, 2010

Intellectual damage → \$202 billion

### Exposure to BPA, 2020

Coronary heart disease → \$166 billion

Stroke → \$62.4 Billion

Inhalation of plastic particles

Ingestion of plastics through the food chain

# SOCIAL AND ENVIRONMENTAL JUSTICE

Vulnerable people, such as workers and fenceline communities, are disproportionately affected by:



# SOCIAL AND ENVIRONMENTAL JUSTICE

Black plume rises over East Palestine, Ohio, as a result of a controlled detonation of a portion of the derailed Norfolk Southern train, Feb. 6, 2023



Photo credit: Gene J. Puskar

Informal waste pickers - transit storage site in Ogun State, Nigeria



Photo credit: Adetoun Mustapha and Korede Otu.

Single use plastic waste clogging open drains in Makoko, Lagos, Nigeria



Photo credit: Adetoun Mustapha and Korede Otu.

# THE TIME HAS COME WHEN WE MUST ACT

- There is much about plastic and its hazards that we still do not know, and more research is needed
- But we now know very clearly that plastics' harms to human health and the global environment are extremely serious.
- And we know that in the absence of urgent intervention these harms will get much worse.
- **We cannot use lack of complete knowledge about plastics' harms as an excuse for inaction.**

# COMMISSION KEY RECOMMENDATIONS

- Our strongest recommendation is that the world's nations must urgently develop and implement a strong, comprehensive, and legally binding Global Plastics Treaty, pursuant to the resolution of the 2022 United Nations Environment Assembly (UNEA)

# COMMISSION KEY RECOMMENDATIONS

- Protection of human health, end especially the health of vulnerable and at-risk populations, must be an over-arching goal of the Global Plastic Treaty. **Plastic is not just an environmental problem.**
- A global cap on plastic production needs to be a key component of the Global Plastic Treaty. The great power of a global cap is that it will reduce the volume of plastics and plastic waste at its root source. Implementation of this cap needs to be guided by targets and timetables and supported by national commitments.

# COMMISSION SPECIFIC RECOMMENDATIONS

- The Treaty needs to ban or severely restrict manufacture of unnecessary, single-use plastics
- **The Treaty needs to include plastic-associated chemicals and all plastic additives – not only polymers. Set health-protective standards. Require pre-market testing. Reduce chemical complexity. Increase transparency.**
- The Treaty needs to mandate Extended Producer Responsibility (EPR) for all plastic products
- The Treaty needs to explore listing some plastic polymers and plastic-associated chemicals as POPs under the Stockholm Convention
- The Treaty needs to **address the disproportionate impacts** of plastics on vulnerable and at-risk populations
- The Treaty needs to strengthen restrictions on transnational export of plastic waste through interface with the Basel and London Conventions
- **Treaty implementation will require establishment of a Permanent Science Policy Advisory Body**



# PERMANENT SCIENCE ADVISORY BODY

- **Purpose**: Provide scientifically rigorous, unbiased advice to Treat implementation
- **Expertise**: Transdisciplinary (natural, economic and social sciences), Regional & Indigenous Knowledge
- **Identify Priorities**: Effectiveness of Solutions, Assess Tradeoffs & Safer Alternatives
- **Other functions**:
  - Track trends in global plastic production
  - Coordinate & assist EPR legislation/policy frameworks
  - Advice on strategies for waste recovery, recycling & disposal
  - Examine health & environmental costs
  - Support robust environmental monitoring & human health biomonitoring

# SOCIAL JUSTICE RECOMMENDATIONS

- Reduce plastic production at source
- Hold producers accountable
- Equitable, inclusive community participation
- Transparency, right to know
- Full estimation of economic and social costs
- Equitable siting
- Site safety measures
- Affordable, accessible benign alternatives
- Restrict toxic plastic imports
- Ban open burning
- Acknowledge and address societal roles



# THE GOOD NEWS

We can fix the plastics' crisis.  
We know how to do it

In high-income and some mid-income countries, we have controlled air and water pollution – and **done so cost-effectively** – through laws, regulations, monitoring, enforcement and incentives

This experience provides a roadmap and toolkit for addressing the global plastics crisis

The impediments to controlling the plastics' crisis are not technical

They are legal, economic, and political

It is our generation's moral and ethical duty to overcome these impediments and to act courageously to **protect our children's health** and **preserve our Common Home**

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THANK YOU

