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PLASTIC

A Threat to Human Health and the Environment

TOXIC CHEMICALS IN RECYCLED PLASTICS

TIPS TO REDUCE PLASTIC USE

TOWARDS A GLOBAL PLASTICS TREATY

Open dumpsite of plastic and e-waste at Pulau Indah, Malaysia.

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SAY NO TO PLASTIC

How Plastics Harm Human Health & the Planet

PLASTIC IS THE general common term for a wide range of synthetic or semi-synthetic materials used in a huge and growing range of products in our everyday lives, from disposable water bottles and packaging to toys, textiles and hundreds of other common items.

Although plastics have become ubiquitous, they are a threat to human and health and the environment. Plastics are made of chemicals sourced from fossil fuels, including natural gas and crude oil. Worldwide, more than 300 million tons of plastic is produced every year, and half of this is single-use plastics (e.g. water and soda bottles, plastic grocery bags, product packaging, straws, coffee cups, and more). Producing these plastics emits vast amounts of greenhouse gases that contribute to climate change and toxic chemicals that threaten our health.

From production to disposal, plastics wreak havoc on human, plant, and animal health and cause immense amounts of waste in our ecosystems, clogging our land, air, and waterways. Plastic pollution in particular poses a serious threat to all life on earth because of the toxic nature of the chemicals used and created during the production process and throughout the life cycle. Recent research reveals plastics are able to enter into the human bloodstream, permanently residing in our bodies until the day we die. (Earth Day, 2023)

Here's how plastic wreaks havoc on humans and the environment.

POLLUTES OUR ENVIRONMENT. Plastics don't break down, but they do break up, creating small plastic pieces (called microplastics or nanoplastics) that remain a permanent pollutant in the environment. Macro and microplastics impact out health and threaten oceans and wildlife. Every piece of plastic ever created remains a pollution problem – in the oceans and waterway, in landfills, and throughout the environment. Plastics that are burned create highly toxic air pollution and hazardous solid wastes that remain a toxic disposal problem.

About 500 billion plastic disposable cups are used every year globally. An estimated 1.3 billion plastic bottles are used each day across the world – that's about 1 million per minute. We use 5 trillion plastic bags per year – that's 160,000 a second! And based on extrapolated figures, there are 437 million to 8.3 billion plastic straws on the world's coastlines.

Single-use plastics like the ones noted above are manufactured to last forever, yet are often used for only a few minutes, before being thrown away – creating long-term pollution. For example, it takes up to 1,000 years for a plastic bag to break down. On average, a plastic shopping bag is used for just 12 minutes. Those 12 minutes of use results in 1,000 years of pollution!

Since 1950, over 8 billion tons of plastic has been produced. Only about 30% of this plastic is still in use – 12% has been incinerated, 9% has been recycled, and 79% has ended up in landfills and the environment. It is estimated that 75 to 199 million tons of plastic are currently in our oceans.

TOXIC & HARMFUL. Scientists have compiled a list of over 16,000 chemicals used in or associated with plastics production, use, and disposal and found that more than 4,000 of these are known to be hazardous to human health and the environment.

Plastic products and materials are made of polymers and chemical additives which are not bound to the plastics and may leach during use and disposal. Also, other toxic or potentially toxic substances, such as monomers, can also leach from plastics (for example, styrene, a known carcinogen, can leach from polystyrene). Many of these chemicals are released at different stages of the plastics life cycle. This is true also for bio-based plastics which can be as toxic as fossil fuel based ones.

Many chemicals released throughout the plastics life cycle are hazardous and have been shown to pose threats to human health and the environment. Evidence suggests that we are already seeing serious health and environmental problems from hazardous chemical exposures from plastics. (Endocrine Society)

MANY HEALTH IMPACTS. Many of the largest and most hazardous chemical families – including heavy metals, flame retardants, phthalates, bisphenols, and fluorinated compounds – are directly associated with plastics.

Plastics represent a tremendously diverse set of compounds, from the coatings and resins used in construction and industry, to the synthetic textiles making up our clothes, to the rubber granules

recycled from tyres which end up on football fields our children play on. We ingest or inhale these substances daily. Toxic chemicals such as phthalates and Bisphenol A (BPA) are present in plastic food packaging. These and many other chemicals in plastic have serious impacts on our health.

Plastic containing endocrine-disrupting chemicals (EDCs) is used extensively in packaging, construction, flooring, food production and packaging, cookware, health care, children's toys, leisure goods, furniture, home electronics, textiles, automobiles and cosmetics. Known EDCs that leach from plastics and threaten health include BPA and related chemicals, flame retardants, phthalates, per- and polyfluoroalkyl substances (PFAS), dioxins, UV-stabilizers, and toxic metals such as lead and cadmium. (Endocrine Society)

EDCs are chemicals that disturb the body's hormone systems and can cause cancer, diabetes, reproductive disorders, and neurological impairments of developing fetuses and children. EDC exposure is a universal problem. Testing of human samples consistently shows nearly all people have EDCs in their bodies (Endocrine Society).

MICROPLASTICS – A WORRYING THREAT. When plastic items break down, they shed microplastics, which are small fragments less than 5mm in diameter. And there are even smaller particles called nanoplastics (less than 1µm in diameter).

Microplastics have today infiltrated every aspect of our lives – from the air we breathe to the food we consume. They are in the environment and the human body. There are microplastics in bottled water, seafood and household dust. They have even been found in human organs and in the placentas of unborn babies.

IF PLASTIC PESTICIDE CONTAINERS ARE RECYCLED, THE TOXIC PESTICIDES CAN END UP IN THE RECYCLED MATERIAL. ALSO, THE PROCESS OF PLASTIC RECYCLING CAN CREATE NEW TOXIC SUBSTANCES, ADDING EVEN MORE CHEMICALS TO RECYCLED PLASTIC.

The findings and statistics are worrying. Microplastics have been found in everything from salt and honey to apples, cucumbers, and potatoes. The average litre of bottled water contains almost a quarter of a million nanoplastic fragments. The average person could be eating up to 5 grams of plastic a week.

Microplastics pose potential health risks that include inflammation, oxidative stress, and cell damage. They have also been linked to liver damage, respiratory issues, and endocrine disruption. And recent studies have linked them to a greater risk of heart attack and stroke.

PLASTIC WASTE EXPORTS POSE HEALTH RISKS. Wealthy countries have been exporting plastic trash to developing countries in the guise of recycling. Much of the plastic being produced is single-use and of little or no recycling value. Plastic waste from developed countries – including materials deemed "recyclable" – have been shipped and dumped in developing countries like Malaysia.

It was reported that the US, Canada, and the European Union have offloaded hundreds of millions of tons of plastic wastes to other countries, where much of it may be landfilled, burned, or littered into the environment. Most developing nations do not have adequate facilities to manage the influx of plastic, forcing local workers to pile up the trash or incinerate it. This has considerable health impacts, as the waste often contains toxins that can alter neurodevelopment, endocrine, and reproductive functions.

When the waste is burned, the toxic fumes cause respiratory problems and other ailments in the neighbouring communities. Since such practices are situated around the most vulnerable communities, they suffer the most from breathing difficulties, asthma, skin problems, various kinds of cancers and other chronic illnesses.

RECYCLED PLASTICS CONTAIN HAZARDOUS CHEMICALS. Plastics are made with toxic chemicals. When plastic is recycled, these chemicals end up in the recycled material. Recycled

THE AVERAGE LITRE OF BOTTLED WATER CONTAINS ALMOST A QUARTER OF A MILLION NANOPLASTIC FRAGMENTS. THE AVERAGE PERSON COULD BE EATING UP TO 5 GRAMS OF PLASTIC A WEEK.

plastics can also contain chemical contaminants from the way the original plastics are used. For example, if plastic pesticide containers are recycled, the toxic pesticides can end up in the recycled material. Also, the process of plastic recycling can create new toxic substances, adding even more chemicals to recycled plastic.

Recently published data from 13 countries, including Malaysia, identified nearly 500 chemicals in recycled plastic pellets, including pesticides, industrial chemicals, PCBs and other toxic substances. CAP was among public interest groups in 123 countries that submitted recycled plastic samples for testing in the IPEN-led test project.

The tests were conducted by a group of scientists in Sweden, Germany and Denmark. The result: A total of 123 chemicals were detected in two samples of plastic pellets (i.e. recycled plastics) from Malaysia that were analysed. The pellets were acquired from plastic recycling companies in Penang. The new data adds to the increasing evidence that plastic recycling is a vector for the spread of toxic chemicals and therefore should not be considered a useful tool in the struggle to end the health and environmental threats from plastics.

Workers in plastic recycling facilities, consumers who use recycled plastic products, waste workers who handle recycled plastics, and communities near recycling and waste operations are all at risk from exposure to toxic chemicals.

Currently, there are no international requirements to monitor chemicals in recycled plastics or make the chemical content of plastic materials and products publicly available and accessible. This means that the spread of chemicals from recycled plastics is currently untraceable and uncontrollable.

TIME TO PUT THE BRAKES ON PLASTIC PRODUCTION

Recycling is not the solution to the toxic plastic problem. We can't recycle our way out of the plastics crisis. As the US National Resources Council says, recycling doesn't solve the fact that plastics are made from and contain toxic chemicals and non-renewable source material, as well as shedding microplastics. (https://www.nrdc.org/…/what-you-need-know-about-plastic…) Studies by IPEN and others (https://www.greenpeace.org/usa/reports/forever-toxic/) have found that recycling of plastics containing hazardous chemicals creates a toxic loop that reintroduces harmful legacy chemicals into new products.

In 2022, countries agreed to start negotiating a Global Plastics Treaty to reduce plastic pollution to protect people and the environment. The new Plastics Treaty will be an important instrument to address toxic chemicals in plastics in many ways. Final negotiations for this legally-binding treaty are scheduled for November 2024 in Busan, South Korea. Let's hope that this will be a truly people- and planet-oriented treaty.

CAP supports strong action on plastics to protect people's health and preserve the planet for future generations. We hope the treaty will contain strong provisions that call for the elimination of toxic chemicals throughout the full life cycle of plastics; and that it will make information on chemicals in plastics mandatory and publicly available. Meanwhile, the public is advised to limit plastic use as much as possible. By changing some of our habits as consumers – as well as supporting policy changes at the local and even international levels – we can all be part of the solution.

PLASTIC DOES NOT GO AWAY

PLASTICS CAN TAKE hundreds of years to decompose, causing extensive and lasting damage to ecosystems due to plastic pollution. To best understand what plastic pollution is, one must understand what plastic is: a material made from carbon (fossil fuels) and chemicals. Plastics are not safe, inert materials per se, but rather a complex group of mixtures of tens of thousands of chemicals, many of which are toxic. Over 10,000 chemicals in plastics have been identified, and data on more than 2,400 of these chemicals has identified them as substances of concern (there is incomplete or no hazard data on hundreds of other plastic chemicals).

4 REASONS WHY PLASTIC TAKES YEARS TO DECOMPOSE

1. THE RESILIENT NATURE OF PLASTIC: The key to plastic's resilience lies in its molecular structure. Plastics are composed of long chains of synthetic polymers derived from petrochemicals. These polymers are designed to withstand physical, chemical, and biological degradation, ensuring the material's longevity and stability. While this durability is advantageous for product use, it poses significant challenges for waste management and environmental preservation.

2. FRAGMENTATION AND MICROPLASTICS: While plastics do not decompose quickly, they do undergo physical degradation processes such as photodegradation and mechanical abrasion. Photodegradation occurs when plastics are exposed to sunlight, causing the bonds in the polymers to break down over time. This process leads to the formation of smaller plastic fragments, or microplastics. Mechanical abrasion, caused by wind, water, and physical forces, further breaks down these fragments. However, these processes do not eliminate the plastic; they merely transform it into smaller pieces that continue to persist in the environment.

3. ENVIRONMENTAL CONDITIONS AND DECOMPOSITION RATES: The rate at which plastics decompose is influenced by environmental conditions. In landfills, where many plastics end up, the lack of sunlight, oxygen, and microbial activity slows the degradation process even further. In aquatic environments, where plastics are often exposed to UV radiation and physical forces, the breakdown into microplastics may occur more quickly, but the complete decomposition of these fragments still takes hundreds of years. The presence of certain additives, such as UV stabilisers, can also slow down the degradation process by protecting the plastic from sunlight.

THE DURABILITY THAT MAKES PLASTIC A VERSATILE MATERIAL ALSO ENSURES ITS PERSISTENCE IN THE ENVIRONMENT, LEADING TO POLLUTION THAT CAN LAST FOR CENTURIES.

4. LACK OF NATURAL DECOMPOSITION PATHWAYS: Unlike organic materials, which can be broken down by microorganisms into simpler substances that can be reabsorbed into the ecosystem, plastics do not have natural decomposers. Bacteria and fungi that decompose organic matter cannot effectively break down the synthetic polymers in plastics. As a result, plastics persist in the environment for centuries, gradually fragmenting into smaller pieces known as microplastics but not fully decomposing.

The decomposition of plastic is a lengthy and intricate process, taking hundreds of years, with profound environmental implications. The durability that makes plastic a versatile material also ensures its persistence in the environment, leading to pollution that can last for centuries.

By understanding the factors that contribute to the persistence of plastics, we can better address this environmental issue through concerted efforts in reducing plastic use, improving waste management, and advancing sustainable alternatives.

The future of our planet depends on our ability to mitigate the impact of plastic pollution and move towards more sustainable practices. A global process to create a Plastics Treaty is underway, to address the plastic pollution crisis, including the health and environmental threats from toxic chemicals throughout the plastics life cycle. We call for a robust treaty that protects health and the environment from plastic pollution.

PERSISTENT PLASTIC POLLUTION

ECOSYSTEM UNDER SIEGE: WILDLIFE, SOIL AND CLIMATE AT RISK

PLASTIC POLLUTION HAS become a pervasive environmental issue with dire consequences for wildlife, soil, groundwater, and ultimately, climate change. The durability and widespread use of plastics mean they persist in the environment for centuries, causing harm at multiple levels.

The effects of plastic waste on wildlife are profound and multifaceted. Animals often mistake plastic debris for food, leading to ingestion

that can cause internal injuries, blockages, and even death. For instance, sea turtles often consume plastic bags, mistaking them for jellyfish. Furthermore, toxic chemicals leach out from plastic waste or plastic pellets as these materials degrade on beaches or in the water. Marine animals consume the chemicals when they mistake microplastics for food.

A 2020 study on "Microplastics: an emerging threat to food security and human health" noted the significant threats to aquatic life from the leaching of toxic chemicals from microplastics to marine food sources. It also indicated that the potential reduction of seafood species populations from chemicals in microplastics could threaten seafood availability, especially in regions dependent on fishing for food.

Entanglement is another critical issue. Marine creatures such as seals, dolphins, and birds can become entangled in discarded fishing nets, plastic rings, and other debris, leading to injury, drowning, or impaired mobility. These physical harms are compounded by the chemical pollutants that plastics release. Plastics often contain toxic additives like bisphenol A (BPA) and phthalates, which leach into the water and are absorbed by marine organisms, disrupting their endocrine systems and affecting reproduction and development.

Plastics also have a profound impact on terrestrial environments. When plastic waste is improperly disposed of on land, it degrades slowly, leaching toxic chemicals into the soil. These chemicals, including BPA and phthalates, can alter soil composition and harm microorganisms essential for soil health. The presence of microplastics in the soil can also hinder plant growth by affecting water retention and nutrient availability.

As plastics degrade, they can infiltrate groundwater systems, carrying harmful substances with them. Groundwater contamination is a significant concern because it affects drinking water supplies for both humans and animals. The leaching of toxic chemicals from plastics into groundwater can lead to serious health issues, including endocrine disruption, reproductive harm, and increased cancer risk.

The production, use, and disposal of plastics contribute to climate change in several ways. Most plastics are made from fossil fuels, and the extraction and processing of these materials release significant amounts of greenhouse gases. For example, the production of polyethylene, one of the most common plastics, involves the release of carbon dioxide (CO2) and methane (CH4), both potent greenhouse gases.

Furthermore, as plastics degrade, they continue to emit greenhouse gases. In 2018, a team of researchers from the University of Hawaii revealed through their study that plastics exposed to sunlight release methane and ethylene, exacerbating global warming. The incineration of plastic waste also releases CO2 and other harmful pollutants into the atmosphere, contributing to air pollution and climate change.

Plastic pollution in oceans can indirectly affect the climate by disrupting marine ecosystems that play a crucial role in carbon sequestration. Marine organisms like plankton absorb CO2 during photosynthesis, and when they die, they sink to the ocean floor, sequestering carbon. The ingestion of microplastics by these organisms can impair their health and reduce their ability to sequester carbon effectively, weakening a natural buffer against climate change.

Open burning and incinerating plastic wastes emits dioxin and other toxic chemicals into the air and generates highly hazardous ash and residues that are typically dumped or landfilled, contributing to the environmental dispersal of highly toxic chemicals. Toxic plastic additives in solid waste leach out and contaminate surrounding food chains and waterways.

The key solution to address the impact of plastics is to scale down production and prohibit the use and addition of hazardous chemicals.

WHY YOU SHOULD BE WORRIED ABOUT BPA

BISPHENOL A (BPA) is a asynthetic chemical used in a wide range of products such as epoxy paints and glue, lining of food cans, and thermal paper receipts. BPA is also used as a building block in polycarbonate plastics which can be used to make food containers and baby bottles, despite BPA being a known endocrine disrupting chemical (EDC).

Concerns about BPA's impact on health have been raised, particularly regarding its effects on foetuses, infants, and children. Studies have indicated that exposure to BPA can affect brain development and the prostate gland in foetuses, infants, and children.

Exposure to BPA has also been linked to behavioural changes in children. These can include altered responses to environmental stimuli, increased anxiety, and hyperactivity. Such behavioural effects are thought to result from BPA's interference with normal brain development during critical growth periods.

Additionally, BPA exposure has been associated with various other neurological effects. It can interfere with neurotransmitter function and synaptic plasticity, which are crucial for learning and memory. Long-term exposure to BPA may increase the risk of developing neurodevelopmental disorders.

Studies have also suggested that BPA exposure may contribute to the development of cardiovascular diseases, type 2 diabetes, and hypertension. BPA's ability to interfere with endocrine function can lead to metabolic changes that increase the risk of these conditions. For example, BPA has been found to affect the regulation of blood pressure and insulin resistance, which are critical factors in cardiovascular and metabolic health.

BPA IS RESTRICTED IN SOME COUNTRIES, INCLUDING MALAYSIA

Health and environmental concerns have led many countries to restrict use of BPA in baby bottles and other items in contact with children's food or placed into the children's mouths

In Malaysia, according to provision Regulation 27A of the Food Regulations 1985:

(1) No person shall import, manufacture or advertise for sale or sell any feeding bottles containing Bisphenol A (BPA).

(2) The words "BPA free" may be labelled on the feeding bottles or on the packages of the feeding bottles which do not contain Bisphenol A (BPA).

In the European Union, BPA was banned from use in baby bottles in 2011, based on the evidence that a baby's metabolic system is more vulnerable than the metabolic system of adults. The EU also imposed a maximum limit of BPA migration from food contact materials into food. Moreover, BPA was listed as a "substance of very high concern" (SVHC) because of its endocrine disrupting properties both for human health and the environment.

In China, BPA has been restricted from polycarbonate baby feeding bottles and other infant feeding bottles since 2011. In Indonesia, the allowable concentration of BPA in food contact materials should not be higher than 600 µg/kg.

BPA IN CHILDREN'S PRODUCTS

BPA was found to be present in children's products in various countries, including Malaysia, in an IPEN study.

78% of samples contained BPA: 76 out of 98 samples analysed contained BPA above the limit of quantification (LOQ). The samples collected from Bangladesh, Bhutan, Malaysia, Sri Lanka, Tanzania, China, Indonesia and Russia included different baby feeding bottles and other items in contact with food or children's mouths marked to be made of polycarbonate, polypropylene, a combination of the two materials, or silicone. BPA was detected in all 9 Malaysian samples of polycarbonate bottles tested. The amount of BPA detected in the Malaysian samples ranged from 0.3- 5.8 parts per billion (ppb).

Misleading labelling: 14 out of 23 (61%) products labelled "BPA-free" or "0% BPA" were found to be misleading because they contained BPA. One baby feeding bottle ("Minitree regular neck feeding bottle"), made in China and purchased in Malaysia, containing 2.6 ppb BPA was labelled "BPA-free", violating Malaysia's prohibition.

Regulatory gaps in some regions result in insufficient oversight regarding the accuracy of "BPA-free" claims. In certain cases, manufacturers might deliberately mislabel products to cater to consumer demand for safer, non-toxic products.

LEGISLATION VIOLATIONS

The importance of adherence to legislation cannot be overstated. Strict adherence to national and international regulations helps protect consumers, especially vulnerable populations like infants, from harmful substances. Ensuring that products meet regulatory standards maintains market integrity and trust. Misleading labels and regulatory violations can undermine consumer confidence and pose significant health risks.

Legal status of other samples: Two baby feeding bottles made in India, both non-compliant with Indian legislation, are marketed in Bhutan. Use of BPA in baby feeding bottles is prohibited according to IS 14625:2015 by the Bureau of Indian Standards (2015).

The legal status of BPA in various products depends on regional regulations. Samples containing BPA above the LOQ may still be legal if they comply with specific threshold concentrations set by different regions. Items not covered by BPA regulations, like certain toys or industrial products, remain legal regardless of BPA content. Additionally, regions without specific BPA legislation allow products with BPA above the LOQ to be legally sold, highlighting the need for more comprehensive global regulations.

HIGHEST BPA CONCENTRATIONS

Extractable BPA: This refers to the amount of BPA that can be extracted from a product under specific conditions. The highest recorded extractable BPA concentration was 50,292 ng/L, found in a sample from China. This high concentration indicates significant levels of BPA present in the product, which could pose health risks if the product is used or consumed.

Leached BPA: This measures the amount of BPA that has migrated from a product into another medium, such as food or drink. The highest leached BPA concentration found was 12 µg/kg in a baby bottle from Bangladesh. This level of BPA leaching is concerning, especially for products intended for infants, as prolonged exposure to BPA can have adverse health effects.

BAN BISPHENOLS AS A GROUP

It is shocking that so many products were mislabelled as BPA-free. Concerned parents are being tricked into buying products that can harm their babies.

We need strict rules and enforcement for labelling toxic chemicals in consumer products. It is concerning to find BPA, a toxic chemical with no safe exposure level, in products specifically designed for children.

We need to advocate and make sure that all bisphenol chemicals are banned as a group, to avoid regrettable substitution of one toxic chemical with another. Exposing our children to endocrine disrupters such as BPA will affect their development and so it should be avoided at all costs.

UNDERSTANDING

PFAS

Environmental Persistence and Human Health Concerns

WHAT IS PFAS AND WHERE IS IT USED?

PFAS, or per - and polyfluoroalkyl substances, are a large group of over 4,700 synthetic organic substances that are widely used in consumer and professional products. This category includes chemicals such as perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS), some of which have been in commercial use since the 1940s.

PFAS are highly stable compounds that don't interact much with other chemicals, making them useful for creating products that resist oils, stains, water, and heat. Due to these properties, PFAS are commonly found in waterproof rain gear, food packaging, firefighting foams, non-stick cookware, and protective coatings for carpets and fabrics. However, many of these uses are not essential and have safer alternatives. All PFAS contain strong chemical bonds which give them high stability and the nickname "Forever Chemicals".

PFAS are persistent in the environment and accumulate over time. They have been detected in air, soil, water (including drinking water sources), and household dust. Studies show that PFAS are released at every stage of their life cycle – during production, use, and disposal. Once released, they can travel long distances and have been found far from their origin. They are a significant health concern because they do not break down easily, remaining in the environment and human body for extended periods.

Additionally, humans are continuously exposed to PFAS mainly through ingestion of contaminated food or water, as well as dust, indoor environments, personal care and consumer products. Human biomonitoring studies have detected PFAS in breast milk, urine, and blood because PFAS binds to proteins rather than fats, persisting in the body and accumulating in the blood, liver, and kidneys.

PFAS have been shown to be associated with a range of negative health impacts, including negative impacts on fertility, fetal development and thyroid hormone function. The accurate functioning of thyroid hormones is important in several stages of life; it is, for example, a vital factor for the development of the fetal and neonatal brain during pregnancy and a critical factor for menopausal symptoms during post-menopausal age.

In Malaysia, PFAS contamination is a concern, especially in coastal waters. A 2011 study found high levels of PFAS near the causeway connecting Singapore and the Malay Peninsula across the Johor Strait, where an industrial wastewater treatment plant discharged its effluent. In 2017, another study suggested that Malaysia might be a source of PFAS pollution in the South China Sea.

ACCORDING TO A STUDY, OVER 8,000 SYNTHETIC CHEMICALS ARE USED TO PRODUCE GARMENTS, MANY OF WHICH ARE CLASSIFIED BY THE WHO AS MODERATELY TO EXTREMELY HAZARDOUS AND ARE LINKED TO CANCERS, BIRTH DEFECTS, AND REPRODUCTIVE PROBLEMS.

Additionally, a new study has been conducted to investigate the concentration of PFAs in Malaysian food. Approximately 18 endocrine-disrupting chemicals (EDCs), including PFAS, bisphenol, and paraben, were extracted from 9 different types of food samples to determine their concentrations, which were then used to assess health risks. The food categories are canned food, canned drinks, dairy products, fruits, vegetables, fish, seafood, commercial eggs, and conventional eggs. The samples, all of Malaysian origin, were randomly collected from several retail grocery stores and markets in the Selangor area between August and October 2021.

The results from the sample analysis revealed that free-range chicken eggs had the highest mean concentration of total PFAS (7.19 ng/g), followed by canned foods (5.18 ng/g), fish (1.87 ng/g), fruits (0.75 ng/g), seafood (0.73 ng/g), and dairy product (0.62 ng/g), while PFAS were not detected in canned drinks, vegetables, as well as commercial egg samples. Nearly every canned food sample contained PFAS, with concentrations 4-20 times higher than those in other food samples.

These results underscore the need for further investigation into the sources of PFAS contamination in food and the potential health risks posed to consumers. The study also calls for stricter regulations and monitoring to limit exposure to these harmful chemicals in the Malaysian food supply.

IPEN'S STUDY FINDINGS ON PFAS IN CLOTHING

The use of fluorinated organic compounds (PFAS) is widespread across many industrial and domestic applications, including textiles. In fact, PFAS use in the textile sector accounts for about 50% of the total global use. Textile manufacturers utilise the oil- and water-resistant properties of PFAS to produce stain- and rain-proof materials.

According to a study, over 8,000 synthetic chemicals are used to produce garments, many of which are classified by the WHO as moderately to extremely hazardous and are linked to cancers, birth defects, and reproductive problems. Among these chemicals are perfluorinated chemicals (PFCs), the same materials used in Teflon cooking products, which give fabrics a no-iron quality.

International Pollutants Elimination Network (IPEN), with Arnika which is a Czech non-profit organization that has been uniting people striving for a better environment and along with other contributors have collaborated on a study investigating toxins found in clothing.

In this study, jackets and other clothing sold as water- or stain-resistant were purchased from 13 countries in Asia, Africa, Europe, and North America. A total of 16 items of clothing were tested, including aprons, T-shirts, swimsuits, a raincoat, a hijab, and trousers. Testing showed that 11 of the 16 samples (68.8%) contained PFAS or had Extractable Organic Fluorines (EOF) levels indicating the presence of PFAS.

Clearly, a wide range of PFAS is frequently used in textiles, as shown by the studies that identified several PFAS in textile products. These include fluorotelomer alcohols (FTOHs), fluorotelomer (met) acrylates (FTACs/FMACs), perfluoroalkyl carboxylic acids (PFCAs), fluorotelomer carboxylic acids (FTCAs), perfluoroalkane sulfonic acids (PFSAs), fluorotelomer sulfonic acids (FTSAs), and PFAS derivatives (e.g., sulfonamide, sulfonamidoethanol). The use of PFAS in textiles and outdoor wear increases both environmental pollution and human exposure, as PFAS are emitted to the environment at every stage of the textile product's life cycle (i.e., during production, use, and final disposal).

BAN PFAS CHEMICALS AS A CLASS

As PFAS have been associated with a wide range of negative environmental and health effects, their wide usage creates a challenge in relation to the circular economy. When PFAS-treated products are recycled, PFAS can spread uncontrollably and contaminate new products, extending the toxic legacy of these chemicals and undermining the ability to transition to a clean circular economy.

We need to stop the global PFAS contamination and avert a global human rights disaster. To safeguard the health of workers, women, and children, CAP together with other public interest groups propose that countries address PFAS chemicals as a class and ban them altogether. This will reduce the prospect of replacing one toxic type of PFAS with another.

BROMINATED FLAME RETARDANTS

FIREPROOF OR HARMFUL?

WHAT ARE BROMINATED FLAME RETARDANTS?

BROMINATED FLAME RETARDANTS (BFRs) are chemicals used to make materials less flammable by interfering with the combustion process. BFRs have been widely used in plastic and foam products for a long time, including in furniture upholstery, car seats and plastics, electronics, and building insulation.

BFRs are a subclass of the over 175 different types of flame retardant chemicals in common use on the world market. Common brominated flame retardants include Polybrominated Diphenyl Ethers (PBDEs), tetrabromobis phenol A (TBBPA) and hexabromocyclododecane (HBCD).

Flame retardant use has increased over the last two decades with increased use of plastics and polymers in electronics and construction. PBDEs and the other brominated flame retardants are commonly used in a wide variety of applications, including the plastic housings of televisions, computers, mobile phones and other small consumer appliances such as toasters and hair dryers. They are also used in wires, cables and printed circuit boards.

SOME FLAME RETARDANT CHEMICALS ARE AMONG THE MOST TOXIC CHEMICALS KNOWN AND HAVE BEEN BANNED GLOBALLY, BUT REPLACEMENT CHEMICALS OFTEN MAY BE JUST AS HAZARDOUS.

The massive production and use of BFRs was first prompted by demand from the furniture industry in the 1970s, as a response to frequent fires started by cigarettes in beds, sofas, and other furniture. This solution focused on chemical fire retardants, rather than measures to increase fire safety of cigarettes and lead to the development of related fire safety standards, often mandated by governments. The chemical industry promoted this approach, which led to massive sales of their flame retardant chemicals, even though studies showed that flame retardant chemicals added to furniture would provide little or no fire protection but would expose consumers to daily doses of harmful chemicals.

People can come in contact with flame retardants in a variety of ways. Chemicals can leach from products into the air and then attach to dust, food, and water, which can be ingested. Young children who crawl and play on the floor are especially at risk from their normal hand-to-mouth behavior.

Scientific evidence over more than two decades demonstrate links between exposure to BFRs and a range of human health concerns, including endocrine and thyroid disruption, immunotoxicity, reproductive toxicity, cancer, and adverse effects on fetal and child development and behavior.

Some flame retardant chemicals are among the most toxic chemicals known and have been banned globally, but replacement chemicals often may be just as hazardous.

These replacement chemicals are unregulated not because they are safe but because there is typically little or no hazard data on these poisonous (so-called "regrettable") substitutes.

IPEN'S STUDY ON BFR IN CONSUMER PRODUCTS

IPEN (International Pollutants Elimination Network) conducted two studies on BFRs in consumer products made from recycled e-waste plastics in China, Indonesia, Russia and also in 11 Arabic and African countries namely Burkina Faso, Cameroon, Egypt, Ethiopia, Gabon, Jordan, Kenya, Morocco, Syria, Tanzania, and Tunisia.

The studies aimed to determine whether recycled e-waste plastic children's toys, hair accessories, office supplies and kitchen utensils sold on Chinese, Indonesian, Russian, African and Arabic markets contained BFRs. The objective of this study was to assess whether brominated flame retardants found in

e-waste are carried over into new consumer products available on the market as a result of plastic recycling.

Throughout October-December 2020, 455 samples of consumer products, made of recycled ("black" plastics), were purchased at markets and stores in China, Indonesia and Russia. Black plastic items were selected since electronic casings are typically black, generating black plastics when recycled. Products like toys and other common consumer products that are not required to meet any fire standards were deliberately chosen, so that it could be assumed that any BFRs present were not added to the product but rather followed as a consequence of recycling of plastics containing BFRs.

Children's toys, hair accessories, kitchen utensils and office supplies were of primary interest, because they are used by children and women of reproductive age, who are especially sensitive to BFR exposures. Toys are often in contact with children's mouths, kitchen utensils are in contact with food, and hair accessories and office supplies are in contact with women's skin.

In the study from China, Indonesia, and Russia, 73 of the 455 samples were sent for lab testing for flame retardants, and all samples tested positive for one or more globally banned BFR. In the study from African and Arabic countries, 83 samples were sent for lab testing, with 80 testing positive for banned BFRs.

The data showed that some of the sampled children's products and consumer products obtained in African and Arabic countries contained levels of brominated dioxins on a scale normally found in a variety of hazardous wastes, including in waste incineration processes.

Some of the highest total levels of the sum of PBDEs were detected in a toy car from Jordan, in a cup for pens and pencils (office supply) from Tanzania, and a head dresser (hair accessory) from Morocco.

The findings of children's toys contaminated with PBDEs are alarming because children's developing bodies and brains may be especially vulnerable to the toxic effects from BFRs. Developmental neurotoxicity and endocrine disruption are part of the PBDEs' properties that adversely affect children (Costa and Giordano 2007). PBDE exposure during prenatal and natal development is associated with poorer attention control in children, hyperactivity and behavioural problems.

Hair beauty accessories, kitchen utensils, and to some extent also office supplies are typically used by women. Exposures to BFRs are in particular critical during pregnancy as PBDEs and TBBPA can cross the placental barrier to a developing foetus (Mitro, Johnson et al. 2015) and have been detected in breast milk (Tang and Zhai 2017).

PREVENT USE OF BFRs

In order to achieve a non-toxic circular economy, it is crucial to apply a class-based approach that prevents use of poisonous substitutes to banned BFRs that are potentially just as harmful, although not yet regulated. A class-based approach to phase out all BFRs is the only adequate response to prevent further harm to human health and the environment.

THE FINDINGS OF CHILDREN'S TOYS CONTAMINATED WITH PBDEs ARE ALARMING BECAUSE CHILDREN'S DEVELOPING BODIES AND BRAINS MAY BE ESPECIALLY VULNERABLE TO THE TOXIC EFFECTS FROM BFRs.

TOXIC CHEMICALS IN RECYCLED PLASTIC PELLETS

RECENTLY PUBLISHED DATA from thirteen countries including Malaysia identified nearly 500 chemicals in recycled plastic pellets, including pesticides, industrial chemicals, PCBs, and other toxic substances. In pellets from Malaysia, a total of 123 chemicals were detected in two samples that were analyzed. The data is especially relevant now as government officials from Malaysia will be participating in the Global Plastics Treaty negotiations in Ottawa, Canada later this month.

As a participating organisation of the International Pollutants Elimination Network (IPEN), a global network of public interest groups working for a toxics-free future, the Consumers' Association of Penang (CAP) acquired recycled plastics (called plastic pellets) from recycling company in Penang and had them analyzed for toxic chemicals. The testing was conducted by a group of scientists in Sweden, Germany and Denmark and the data was recently published.

In the first sample from Malaysia, a total 107 chemicals were detected whilst in the second

NEW DATA SHOWS RECYCLED PLASTIC PELLETS FROM MALAYSIA CONTAIN HUNDREDS OF TOXIC CHEMICALS.

CAP's President Mohideen Abdul Kader highlighting the issue at a press meet.

sample a total of 111 chemicals were detected. 95 of these chemicals were present in both samples. Out of the 30 chemicals detected at the highest concentration, it is noted that half were traces from various stages of the production of different types of plastics. These 30 chemicals also included several bioactive substances, including pesticides such as chlorpyrifos, and pharmaceuticals. In addition, they included three Polycyclic Aromatic Hydrocarbons (PAHs).

At the Global Plastic Treaty talks, some countries favour approaches that would rely on plastic recycling as a significant tool for resolving the plastics crisis. But the new data adds to the increasing evidence that plastic recycling is a vector for the spread of toxic chemicals and therefore should not be considered a useful tool in the struggle to end the health and environmental threats from plastics. Chemicals found in recycled plastics may already be making us more susceptible to cancer, heart disease, reproductive disorders, diabetes, obesity, and other serious health conditions.

Plastics are made with toxic chemicals, so when plastic is recycled these chemicals end up in the recycled material. An effective Plastics Treaty needs to address the health and environmental threat from plastic chemicals and include approaches to control plastic production. We cannot recycle our way out of the toxic plastic problem.

Many previous reports have found that plastic recycling is a vector for spreading toxic chemicals. Plastics are made with 16,000 chemicals, at least 25% of which are known to be toxic, and for most of the remaining chemicals there is no information on their human health or environmental impacts. Recycled plastics can also contain chemical contaminants from the way the original plastics are used. For example, if plastic pesticide containers are recycled, the toxic pesticides can end up in the recycled material.

Also, the process of plastic recycling can create new toxic substances, adding even more chemicals to recycled plastic. This means that workers in plastic recycling facilities, consumers who use recycled plastic products, waste workers who handle recycled plastics, and communities near recycling and waste operations are all at risk from exposures to a stew of toxic chemicals.

Currently, there are no international requirements to monitor chemicals in recycled plastics or make the chemical content of plastic materials and products publicly available and accessible. This means that the spread of chemicals from recycled plastics is currently untraceable and uncontrollable. International controls are needed due to the extensive international trade in chemicals, plastics, and plastic waste.

The new Plastics Treaty will be an important instrument to address toxic chemicals in plastics in many ways. To do so, it is important that the Treaty contains strong, legally binding control provisions that call for: the elimination of toxic chemicals throughout the full life cycle of plastics; mandatory, publicly available, and accessible disclosure of information on chemicals; and, measures to control plastic production volumes.

THE RISING THREAT OF MICROPLASTICS TO HUMAN HEALTH AND MARINE ECOSYSTEMS

AS GLOBAL PLASTIC production rises and improper waste management becomes more prevalent, plastic litter is increasingly common in the environment. Plastic waste, when exposed to environmental elements, breaks down into smaller particles known as microplastics through processes such as photodegradation, mechanical impact, and weathering (Haque & Fan, 2023).

While the issue of macroplastics is well-known, a growing concern has emerged around microplastics – particles smaller than 5 mm, primarily made of polyethylene, polypropylene and other polymers (Carr et al., 2016) – which pose a different set of challenges. These microplastics can either be intentionally produced for certain products or result from the fragmentation of larger plastic items. Their persistence in the environment is concerning, as they not only threaten ecosystems but may also pose serious health risks.

Microplastics have been detected in human tissues and organs, entering the body through ingestion and inhalation, and causing physical blockages and chemical exposure that can lead to harmful effects.

TYPES AND PROPERTIES OF MICROPLASTICS

In terms of their origin, microplastics can be divided into two main categories: primary and secondary microplastics. Primary microplastics are synthetic plastic pellets, nurdles, beads, fibres, powders, and pellets, which are commonly used as raw materials in the production of plastic products, such as resins, and industrial items like cosmetics and textiles. In contrast, secondary microplastics are formed when larger plastic debris breaks down through processes such as weathering, photolysis, abrasion, and even microbial decomposition (Sulaiman et al., 2023). The key difference between these two categories lies in how they enter the environment. Primary microplastics are released into the environment in their manufactured form, while secondary microplastics are formed by weathering and wear of macroplastics, into smaller particles directly in the environment (Cverenkárová et al., 2021).

Unlike macroplastics, microplastics are more challenging to detect due to their diminutive size and heightened durability. These characteristics make microplastics particularly hazardous, as their

HUMAN EXPOSURE TO MICROPLASTICS OCCURS PREDOMINANTLY THROUGH THE CONSUMPTION OF CONTAMINATED FOOD AND WATER, WITH SEAFOOD PRODUCTS BEING A NOTABLE SOURCE.

small size enables them to infiltrate the digestive systems of organisms with ease, posing a far greater threat than their larger counterparts. The diversity of microplastics in the environment further complicates detection, as they come in various shapes, including fibres, fragments, pellets, films, microbeads, and foams. These various forms arise from different transformation processes, each of which alters their physicochemical properties over time (Rushdi et al., 2023).

Additionally, microplastics come in a wide range of colours, just like their size and shape, which is crucial for understanding their interaction with aquatic organisms. Certain species may ingest microplastics based on colour preferences, mistaking them for food. Furthermore, colour can serve as an indicator of contamination levels, with yellow and black microplastics being the most polluted by persistent organic pollutants, while transparent and white microplastics are more frequently consumed by marine animals (Cverenkárová et al., 2021).

MICROPLASTIC POLLUTION IN MALAYSIA'S MARINE ECOSYSTEM

The occurrence of microplastic pollution, particularly in aquatic environments, is a growing global concern. In Malaysia, significant contributions to microplastic pollution in the marine ecosystem have been linked to the dumping of personal care and cosmetic products, with approximately 0.199 trillion microplastics entering marine waters (Sulaiman et al., 2023).

Universiti Putra Malaysia's Assoc. Prof. Dr Sarva Mangala Praveena Appalanaidu has revealed that facial scrubs, toothpaste, liquid soap, shower gel, and cosmetics are potential sources of microplastics. These particles enter water bodies through wastewater discharge and runoff, raising concerns about their accumulation in the food chain and potential health implications for marine life and humans.

The penetration of microplastics into water bodies, driven by hydrodynamic forces and adhesion effects, leads to their widespread uptake by aquatic life, posing a significant threat to the environment (Sulaiman et al., 2023). Microplastics have been reported at various levels of the food chain, including in zooplankton, chaetognatha, ichthyoplankton, copepods, and salps at lower trophic levels, as well as in higher trophic levels such as polychaetes, crustaceans, echinoderms, bivalves, fish, seabirds, and mammals (Cverenkárová et al., 2021).

This widespread contamination of microplastics is further exacerbated by plastics used in fishing and fish farming, which release toxic substances into the water. As organisms ingest these microplastics, they accumulate in their tissues, potentially harming their health and disrupting the broader ecosystem, demonstrating the compounded effects of microplastic pollution.

HUMAN EXPOSURE TO MICROPLASTICS

Human exposure to microplastics occurs predominantly through the consumption of contaminated food and water, with seafood products being a notable source. Once ingested, microplastics enter the gastrointestinal tract and can be absorbed, leading to oxidative stress, cytotoxicity, and potential translocation to other tissues (Alberghini et al., 2022).

Microplastic contamination is not limited to seafood; it also affects other foods. For example, a study from China found microplastics in sea salt, likely due to production from seawater (Cverenkárová et al., 2021). The widespread presence of microplastics in food poses a direct ingestion risk and raises concerns about cumulative exposure from various dietary sources.

In conclusion, the pervasive presence of plastic and microplastics in the environment, daily use items, and food supply underscores a pressing public health issue. More plastics means more microplastics and thus more pollution and contamination which affects our health and the environment. By reducing plastic production and consumption, using safer alternatives, and enhancing public awareness, we can mitigate this threat and protect human health.

TIME TO END ‘WASTE COLONIALISM’

THROUGH A GLOBAL PLASTICS TREATY

DEVELOPED COUNTRIES NEED TO STOP EXPORTING THEIR PLASTIC TRASH TO ASIAN COUNTRIES UNDER THE GUISE OF “RECYCLING”.

By Mageswari Sangaralingam

THE GLOBAL PRODUCTION and trade of plastic waste have drastically increased over the recent decades. Plastic waste is mostly traded under the banner of plastic “recycling.” This practice of exporting waste from higher-income countries to lower-income countries that are ill-equipped to handle the waste is a form of environmental racism or, as rights holders put it, waste colonialism.

A rich and developed country should have the capacity to manage its own waste. However, instead of reducing production and investing in infrastructure for recycling, they choose to transfer their responsibility to developing and under-resourced countries. This is not only unfair but is truly an injustice. Much of the plastic being produced is single-use and of little or no recycling value. However, these plastic wastes are still destined for recycling operations although not all plastics can be recycled.

Waste that cannot be recycled due to contamination or being low value is considered residual waste, and most often is dumped openly or burned in the recipient countries. When the waste is burned, the toxic fumes cause respiratory problems and other ailments in the neighboring communities. Since such practices are situated around the most vulnerable

communities; they suffer the most from breathing difficulties, asthma, skin problems, various kinds of cancers and other chronic illnesses.

In Surabaya, Indonesia, it was reported that communities were using plastic waste to fuel their stoves for making tofu. Dioxins were found in eggs from chickens in the neighborhood. The cost and burden to public health and the environment far outweighed the revenue that is purportedly gained from poor recycling practices and waste trade.

From early 2018 after China closed its doors to waste imports under its Operation National Sword, we have witnessed firsthand illegal recycling plants popping up in Malaysia, mostly by investors from China. These pop-ups operated without permits, using low-end technology and environmentally harmful methods of disposal. We are now increasingly seeing investors from China opening up paper and plastic recycling plants in Malaysia. Most of these plants have on-site incinerators to burn the residual waste. Local communities and the environment have to again bear the brunt from toxic air pollution and ash disposal, while witnessing their rivers being polluted.

On top of this, there is another issue we have to deal with: hidden plastics that come with other materials. These come in the form of plastics in imports of paper bales, plastics in electronic and electrical products, textile waste, rubber, and tire waste.

In addition to these challenges, there is the trade of refuse-derived fuel, which includes 30 to 50 percent plastic waste. Moreover, we must grapple with the consequences of microplastics produced in the recycling process, ultimately infiltrating water bodies. Microplastics are pervasive, found in existing waste, and present in virtually every corner of the world - whether in wildlife, on mountains, or within our bodies.

When countries in Asia started pushing back and campaigning against waste dumping, we found that plastic waste simply shifted destinations; waste is now being dumped in countries such as Myanmar and Laos. An investigation by collaborative newsroom Lighthouse Reports and six partners found some of the waste dumped in Myanmar comes from the West. This is an environmental injustice. This is why we have been calling for a ban on trade in waste and stricter enforcement to curb illegal trade.

Plastic wastes as well as their trade and management

WHEN COUNTRIES IN ASIA STARTED PUSHING BACK AND CAMPAIGNING AGAINST WASTE DUMPING, WE FOUND THAT PLASTIC WASTE SIMPLY SHIFTED DESTINATIONS; WASTE IS NOW BEING DUMPED IN COUNTRIES SUCH AS MYANMAR AND LAOS.

threaten workers, communities, ecosystems, and planetary boundaries, particularly in Global South countries. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal addresses some of these threats but also leaves many gaps.

The Basel Convention has provisions on waste generation and minimization. However, these provisions are all voluntary guidance that has failed to curb the plastic pollution crisis. The emphasis remains on recycling (often downcycling) rather than upstream action with waste prevention at source, such as stricter standards on the extraction of natural resources and redesigning products using sustainable materials and practices.

Prevention must be obligatory and binding for plastics. This must be the primary task for the prospective international instrument on plastic pollution – also known as the Global Plastics Treaty – that is currently being negotiated.

However, at the Global Plastics Treaty negotiations, some entities, particularly plastics industries, are lobbying for the treaty to be limited to waste management rather than production controls. Some countries want the treaty to focus on recycling and reusing plastics, referring to it as "circularity in the plastics supply."

Plastics are made with fossil fuels and thousands of chemicals, many of which are known to be highly toxic, as well as thousands of other substances that have never been studied and may be just as harmful.

All forms of plastic waste management harm the environment and human health, and violate human rights.

Plastic burning, whether by open burning or controlled burning in incinerators, cement kilns, or pyrolysis, and even in state-of-the-art facilities, generates significant toxic and carbon emissions as well as hazardous ashes laden with microplastics. Recycling and waste management infrastructure simply cannot deal with the amount of plastic being disposed of. Furthermore, plastic recycling does not address the health threats from chemicals in plastics. Recycling can spread these toxic chemicals even further.

We cannot recycle our way out of this plastic crisis. Plastic circularity or sustainability are false narratives. The world needs to stop producing unnecessary and hazardous chemicals, including plastic polymers, and reduce production on the whole, all while ensuring a just transition for the most vulnerable, such as waste pickers, waste workers, and those working in the recycling value chain.

Waste colonialism, whether in the form of trade in plastic waste and other hidden plastics, perpetuates social and environmental injustice. However, ending the plastic waste trade without reducing plastic production will likely trigger more dumping, cause toxic pollution, and contribute to the climate crisis.

Ultimately, a plastics treaty focused on binding upstream measures while establishing binding criteria for truly safe plastic waste management, and a Basel Convention with stronger governance and implementation powers and all loopholes plugged, will be the best combination to address the harms of plastics and plastic pollution across the whole life-cycle of plastics.

For years, the Global Alliance for Incinerator Alternatives (GAIA) has been at the forefront of the movement to end the plastics crisis, through policy changes, movement-building, and on-the-ground solutions. Our solutions include advocating for a reduction-first approach to plastic pollution. GAIA supports members in building new systems that move cities from outdated waste management infrastructure to people- and community-centric solutions such as the reuse and refill systems. Zero waste policies and systems are the way forward to end the plastic crisis.

Ending waste colonialism is on the horizon.

Community in Jenjarom affected by waste trade, standing on residual waste.

ENDING THE PLASTIC WASTE TRADE WITHOUT REDUCING PLASTIC PRODUCTION WILL LIKELY TRIGGER MORE DUMPING, CAUSE TOXIC POLLUTION, AND CONTRIBUTE TO THE CLIMATE CRISIS.

BREAK FREE FROM PLASTIC

Simple Tips to Reduce Toxin Exposure

Plastic is detrimental to human health, don't let its toxins invade your body. Take action to protect yourself and your family by going plastic-free.

There are many small things you can do that can make a big difference in reducing your exposure to the toxins in plastics. Start by eliminating single-use plastic in daily living and aim to avoid plastic use altogether. Look into areas of your life where plastic use is high (eg: food packaging, kids' toys, kitchen tools, etc) and find alternatives.

Here's what you can do.

AVOID PLASTIC FOOD STORAGE CONTAINERS

WHEN IT COMES to storing food, using plastic containers can pose health risks due to the potential migration of chemicals from the plastic into the food. Plastics can contain a variety of chemicals, such as phthalates and bisphenol compounds (like BPA). These chemicals can leach into food, particularly when the plastic is heated. Studies have shown that heating plastic, such as in a microwave, increases the rate of chemical migration.

The chemicals that migrate from plastics into food can have various health impacts. For example, BPA and phthalates are endocrine disruptors that can interfere with hormone function, potentially leading to reproductive issues, developmental problems, and other health concerns. To minimise these risks, it is advisable to use food storage containers made from glass or stainless steel. These materials do not contain harmful chemicals that can leach into food, even when heated.

If you must use plastic containers, do not microwave food in plastic containers as the heat can cause more chemicals to migrate into the food. Let hot food cool down before placing it in a plastic container to reduce the risk of chemical leaching, and do not fill the container to the brim. Leave some space to prevent the food from directly contacting the lid, which can also be a source of chemical migration.

CHOOSE WOOD, STAINLESS STEEL AND OTHER SAFE KITCHEN TOOLS

CHOOSING WOOD AND stainless steel for kitchen tools is a proactive step to minimise exposure to harmful substances that can leach from plastic kitchenware. Plastic items, such as cutting boards, utensils, and containers, are known to release microplastics and other chemicals into food. Plastic kitchen tools can degrade over time, especially with frequent use and exposure to heat or acidic foods. This degradation process can release microplastics—tiny plastic particles—into food, which may pose health risks when ingested.

Wooden cutting boards and utensils are durable and can be easily sanitised with proper care. They are less likely to harbour bacteria compared to plastic boards if cleaned properly. Stainless steel is a robust and non-reactive material, meaning it does not interact with food or release harmful substances. It is resistant to staining and odours, making it an excellent choice for utensils, cookware, and cutlery.

By choosing wood and stainless steel, you can reduce the risk of microplastic contamination and ensure a safer cooking environment.

BE SELECTIVE WITH TOYS

CHOOSE TOYS MADE from alternative materials, such as natural rubber, wood, or other non-plastic options, to reduce the risk of exposure of children to harmful chemicals. These materials are less likely to contain toxic substances and can provide a safer play environment for young children.

It is best not to select toys made from plastics. However, if you choose plastic toys for children, it is essential to ensure they are free of toxic chemicals such as Bisphenol A (BPA). BPA is a chemical often used in the production of plastics and resins to enhance their durability and flexibility. However, BPA is known to be an endocrine disruptor, meaning it can interfere with the body's hormone systems, potentially leading to developmental and reproductive issues.

Young children frequently put toys in their mouths, which increases their risk of ingesting BPA if it is present in the toy. This ingestion can have significant health implications, especially for infants and toddlers who are more likely to chew or suck on toys.

Avoiding plastic use goes beyond protecting health. Reducing your plastic footprint is a noble goal necessary for protecting our planet.

BPA IS KNOWN TO BE AN ENDOCRINE DISRUPTOR, MEANING IT CAN INTERFERE WITH THE BODY'S HORMONE SYSTEMS, POTENTIALLY LEADING TO DEVELOPMENTAL AND REPRODUCTIVE ISSUES.

STEER CLEAR OF FAST FOODS

FAST FOODS, SUCH as burgers, fries, and pizzas, are often found to contain high levels of phthalates and other plasticizers, which can leach into food from various sources during preparation and packaging, potentially posing health risks.

One significant source of contamination is vinyl gloves used by fast food workers for hygiene purposes. These gloves can contain high levels of phthalates, which may transfer to the food during handling. Phthalates are known endocrine disruptors and can negatively affect reproductive health.

Additionally, plastic packaging used for many fast food items may contain plasticizers that can migrate into the food, especially when exposed to heat from hot foods.

EAT FRESH, MINIMALLY PROCESSED FOOD

EATING FRESH, MINIMALLY processed foods is a highly effective strategy for reducing exposure to harmful plasticizers, such as phthalates and Bisphenol A (BPA), which are commonly used in plastics to enhance flexibility and durability. These chemicals can leach into food products, particularly those that are processed or packaged in plastic materials. Fresh fruits and vegetables are less likely to contain plasticizers because they typically have minimal contact with plastic during production and packaging.

The health implications of plasticizers are significant. BPA, for instance, is known to disrupt endocrine function, potentially leading to metabolic issues and other health concerns. Moreover, exposure to these chemicals has been linked to increased risks of obesity, type 2 diabetes, and cardiovascular diseases.

To mitigate these risks, it is advisable to prioritise the consumption of fresh, whole foods over processed options and to minimise the use of plastic packaging by opting for alternatives such as glass or stainless steel.

AVOID PLASTIC WRAP

REPLACE CONVENTIONAL PLASTIC bags, plastic wrap, and overwrap with beeswax wraps or other reusable alternatives. Beeswax wraps are biodegradable and reusable, making them an environmentally friendly choice. They are ideal for covering food items and preserving their freshness without the harmful effects associated with plastic containers.

Beeswax wraps are biodegradable and break down naturally. Unlike plastic wraps, which can take hundreds of years to decompose, beeswax wraps offer a sustainable alternative and can be reused multiple times. Simply wash with cold water and mild soap, and they are ready for use again. They cover a variety of foods, including fruits, vegetables, sandwiches, and cheese, and can be moulded around bowls or food items for a secure seal.

Beeswax wraps breathable nature helps keep food fresh by reducing moisture build-up and spoilage. Free from harmful chemicals like BPA or phthalates, beeswax wraps are a safer choice for food storage.

KEY ISSUES FOR INC-5

IPEN
for a toxics-free future

KEY ISSUE: A MEANINGFUL PLASTICS TREATY

In finalizing the negotiations for the future Plastics Treaty, the INC should ensure that the health–protective objectives of the Treaty are supported by meaningful global controls and that the INC fulfills the UNEA mandate 5/14 by addressing the full life cycle of plastics, and prioritize the health of vulnerable people, including women, children and youth, and Indigenous Peoples. This includes:

- Global control measures and not national rules.
- Regulating chemical groups and using the precautionary principle when there is scientific uncertainty.
- Regulating plastic chemicals throughout their life cycles, not only in plastic products.
- Reducing the production of plastics.
- Sufficient and predictable funding and applying the polluter pays principle.
- Monitoring and reporting to track progress and understand trends and indicators of human health protection.

KEY ISSUE: ELEMENTS OF A TREATY

To protect human health and the environment, the Treaty should include:

- Objective: The objective is to protect human health and the environment.
- Principles: Provisions should enable a health-protective Treaty that promotes the right to a clean, healthy and sustainable environment, the precautionary principle, and the rights of workers.
- Control measures: The Treaty should include controls that aim to:
  - reduce plastic production;
  - eliminate threats from toxic chemicals throughout the plastics life cycle;
  - ensure transparency and traceability of plastic chemicals;
  - control and monitor releases and emissions of toxic plastic chemicals;
  - prioritize the identification and remediation of hotspots of existing plastic pollution; and
  - ensure the environmentally sound management of plastic waste, considering the health of surrounding communities.

A GLOBAL PROCESS TO CREATE A PLASTICS TREATY IS UNDERWAY TO ADDRESS THE PLASTIC POLLUTION CRISIS, INCLUDING THE HEALTH AND ENVIRONMENTAL THREATS FROM TOXIC CHEMICALS THROUGHOUT THE PLASTICS LIFE CYCLE. THE FIFTH MEETING OF THE INTER-GOVERNMENTAL NEGOTIATING COMMITTEE (INC-5) OF THE PLASTICS TREATY WILL BE HELD FROM 25 NOVEMBER TO 1 DECEMBER 2024 IN BUSAN, REPUBLIC OF KOREA.