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The Journal of Community Health Management

Journal homepage: https://www.jchm.in/

Editorial

Plastic pollution- Think and act now!

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ARTICLE INFO

Article history:
Received 20-05-2023
Accepted 13-06-2023
Available online 17-06-2023

1. Fifty Years of Celebrating World Environment Day

World Environment Day is celebrated by millions of people across the world to discuss the important issues related to environment worldwide and provides one of the largest global platforms for discussions, formulating policies and providing public outreach. Under the aegis of United Nations Environment Programme (UNEP), the meeting is held annually on 5th June since 1973, and this year it was hosted by Côte D'Ivoire, a country that took firm steps and banned plastic bags since 2014.[1] This year World environment day has very rightly brought into focus the humongous problem of plastic pollution and the theme is Beat Plastic Pollution and all nations have to focus hard on solutions to plastic pollution under the campaign.[2]

2. Hazards of Plastics and Microplastics

Plastic has saturated our landfills, it leaches into the ocean, enters into every ecosystem and is combusted into toxic smoke, making it currently one of the gravest threats to the planet. The world is going to be buried under plastic soon if immediate remedial measures are not undertaken. According to a report by UN, more than 400 million tonnes of plastic is produced every year, half of which is single use plastic and nearly 19-23 million tonnes end up in lakes, rivers and seas.[1] Microplastics (tiny plastic particles up to 5mm/5000 micrometer in diameter) and nanoplastics (size range from 1 to 1000 nm) find their way into the food we eat, the water we drink and even the air we breathe.[3,4] According to an estimate, each person on earth consumes more than 50,000 plastic particles per year and even more if inhalation is considered. Many plastic products contain hazardous, toxic additives such as Bisphenol-A (BPA), Polyvinyl Chloride (PVC), phthalates which may pose a threat to our health, the economy and the environment.[5,6] It is also important to note that fossil fuels are mainly used to produce plastic, therefore, due to constantly increasing plastic production more and more fossil fuel is consumed which intensifies the climate crisis. Plastic products also create greenhouse gas emissions across their whole lifecycle contributing to global warming.[1]

3. Microplastics, Nanoplastics Pollution (MNP) and health of community

Extensive MNP pollution due to human activities leads to inevitable exposure through dietary, inhalation route and/or skin contact. The main source of microplastics and nanoplastics are synthetic textiles, tyres, marine coatings, road markings, plastic paints, personal care products, plastic pellets, detergents and city dust etc. Daily sources of microplastics include bottled water, other bottled beverages, sea food, salt, tea bags, canned food, and readymade meals.[6] Water in plastic bottles that is used for drinking results in ingesting around 130,000 fragments of

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https://doi.org/10.18231/j.jchm.2023.010

microplastic in the human body yearly.[4,7] Canned foods have the chemical BPA because it is used to harden the plastic, which seeps into the food inside and contaminates it. In a recent study, MNPs have been reported to be present in the tissues of terrestrial plants, aquatic animals even human placenta thus harming the ecosystem and entering the food chain. MNPs may pose acute toxicity and chronic toxicity (cardiovascular toxicity, hepatotoxicity, and neurotoxicity), carcinogenicity, genotoxicity, endocrine disturbances, infertility and developmental toxicity.[8,9]

4. Sustainable Solutions

In rhyming with the theme "BeatPlasticPollution" it is pertinent that all stakeholders including people, governments, industries must scale up and speed actions to stop plastic pollution to protect our health and the health of our planet. Following are some of the sustainable solutions.

1. *Reduce, reuse, recycle and diversify:* First and foremost, reduce the unnecessary plastic products consumption. Ninety percent of the plastic items in our daily lives are single use products such as plastic wrap, grocery bags, disposable bottled water, disposable cutlery, straws, coffee-cup lids. It is advisable to wean yourself from disposable plastic items and find alternatives solutions such as including carrying water bottle, mug, cloth grocery bag from home.[2,10] We should stop buying bottled water. Each year, close to 20 billion plastic bottles are thrown away in garbage. Also, it is preferable to buy in bulk, so that instead of tiny packets, buying a single bag will reduce plastic packaging burden. Use alternative packaging materials such as paper or cardboard or we can use old packaging material in an innovative way. Plastic bottles and containers can be used for growing plants which is currently quite popular.
2. *Circular economy:* This promotes production and design of materials in a way that they can be reused, remanufactured, recycled or recovered and thus maintained in the economy for as long as possible with minimal generation of hazardous waste, and greenhouse gas emissions.[2,11]
3. *Source control* is the most acceptable method to control MNPs pollution. Microplastics and microbeads can be found in many health, cosmetic and cleaning products. To mitigate the impacts of MPs, plastic shopping bags as well as single use plastics should be banned. Synthetic clothing (polyester) is a huge contributor of microplastics. Instead choose eco-friendlier, sustainable clothing made from organic materials such as cotton, silk and wool. Microbeads are actually banned in many countries. Don't microwave your food in plastic.[7,8]
4. *Proper disposal* of plastic waste: Only less than 14 percent of plastic products are recycled. Therefore, much more stringent measures are needed and governments should focus on garbage collection and recycling systems to reduce waste in the environment.[10]

5. Plastic ban in India

Government of India has identified and prohibited the use of certain single use plastic items having low utility with effect from 1^{st} July, 2022.[12] These include ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene (thermocol for decoration), plastic plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 micron, stirrers etc.[12] Despite the plastic ban in force for approximately a year now, the blatant violations continue and serious action is not yet taken against the violators. Some states such as Himachal Pradesh, Sikkim have implemented the single use plastic ban stringently and it is time that we all follow the rules laid by the Government and do the needful if we want to save our planet for our future generations.

6. Conflict of Interest

None.

References

1. World Environment Day; 2023. Available from: https://www.un.org/en/observances/environment-day(lastcited4th.
2. Turning off the Tap: How the world can end plastic pollution and create a circular economy; 2023. Available from: https://www.unep.org/resources/turning-off-tap-end-plastic-pollution-create-circular-economy.
3. Yang X, Man YB, Wong MH, Owen RB, Chow KL. Environmental health impacts of microplastics exposure on structural organization levels in the human body. *Sci Total Environ*. 2022;825:35202683.
4. Jassim K. Effect of Microplastic on the Human Health; 2023. Available from: http://dx.doi.org/10.5772/intechopen.107149.
5. World Health Organization. Dietary and inhalation exposure to nano- and microplastic particles and potential implications for human health; 2023. Available from: https://www.who.int/publications/i/item/9789240054608.
6. Campanale C, Massarelli C, Savino I, Locaputo V, Uricchio VF. A Detailed Review Study on Potential Effects of Microplastics and Additives of Concern on Human Health. *Int J Environ Res Public Health*. 2020;17(4):7068600.
7. Prata JC. Microplastics and human health: Integrating pharmacokinetics. *Crit Rev Environ Sci Technol*. 2023;53:16. doi:10.1080/10643389.2023.2195798.
8. Zuo AR, Xu BQ, Qian CY, Lihui AN. Identification of microplastics in human placenta using laser direct infrared spectroscopy. *Sci Total Environ*. 2023;856:159060.
9. Yuan Z, Nag R, Cummins E. Human health concerns regarding microplastics in the aquatic environment - From marine to food systems. *Sci Total Environ*. 2022;823:35143789. doi:10.1016/j.scitotenv.2022.153730.
10. https://www.nrdc.org/stories/10-ways-reduce-plastic-pollution; 2023. Available from: https://www.nrdc.org/stories/10-ways-reduce-plastic-pollution.

11. Towards a more resource-efficient and circular economy. The role of the G20; 2023. Available from: https://www.oecd.org/environment/waste/OECD-G20-Towards-a-more-Resource-Efficient-and-Circular-Economy.pdf.
12. Ban on Single Use Plastics. Ministry of Environment, Forest and Climate Change; 2023. Available from: https://pib.gov.in/PressReleasePage.aspx?PRID=1882855.

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Cite this article: Sharma S. Plastic pollution- Think and act now!. *J Community Health Manag* 2023;10(2):41-43.