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Editorial

Plastic is one of the root causes of endocrine disorders

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ABSTRACT

Endocrine-disrupting chemicals (EDCs) found in various products, including electronics, carpets, paints, cosmetics, and plastics, can disrupt human endocrine systems, potentially affecting reproductive health, thyroid function, metabolic alterations, diabetes, cardiovascular disease, obesity, impaired brain development, compromised immune responses, and cancers in hormone-sensitive tissues. Exposure to EDCs during gestation and early postnatal life has significant impacts, and hazardous compounds in plastics can lead to further damage.

1. Introduction

Electronics, carpets, paints, cosmetics, and plastics are just a few of the things that include endocrine-disrupting chemicals (EDCs) that affect human endocrine systems. Besides these, synthetic industrial chemicals, including phthalates, bisphenols, flame retardants, and per- and poly-fluoroalkyl substances (PFAS), are also harmful. They can be used as nonstick materials for mold manufacture and as plasticizers for flexibility and durability, among other uses. A member of the bisphenol family, bisphenol A (BPA) is utilized in epoxy resins found in clothes and food containers. People are exposed to EDCs not only through direct exposure of the EDCs but also through workers' (chemical factories) perspiration, skin, body, and food fats since they are lipophilic and combine with dissolved fats. They can seep into the fatty substances included in plastic food packaging. Endocrine-disrupting chemicals (EDCs) like bisphenol A (BPA) and phthalate esters, used in plastic materials, have been reported to disrupt actions of hormonal functions potentially affecting female and male reproductive health, thyroid function, metabolic alterations, diabetes, cardiovascular disease, obesity, impaired brain development, compromised immune responses, and cancers in hormone-sensitive tissues. These chemicals can alter hormone synthesis, transport, metabolism, and excretion, mimicking or antagonizing hormone actions.[1] Obesity and hypothyroidism are the prevalent endocrine disorders among women, as a study reported that endocrine disruptors are significant risk factors for the endocrine system. The study concluded that a hypothyroid diet plan without endocrine disruptors worked well without Levothyroxine. Exposure to EDCs during gestation and early postnatal life has substantial impacts, with repercussions that may not manifest until maturity. Plastics, organic polymers containing additives, are utilized in construction, packaging, and household items. BPA is utilized for cross-linking in polycarbonate polymers and epoxy resins. Phthalates are used in PVC plastics and several consumer products. Initial investigations indicated that BPA might migrate from plastics when subjected to heat, resulting in its prevalence as an environmental pollutant. Plastics in indoor and outdoor settings can affect hormonal systems, disrupting the endocrine system. As utilization escalates

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and exposures grow, the issue deteriorates. Various pollutant chemicals, including BPA and phthalates, exhibit analogous effects, resulting in further damage.[2] Hazardous compounds in plastics, including antimicrobial agents, colorants, flame retardants, solvents, UV stabilizers, and plasticizers, can lead to exposure during the product's lifecycle, encompassing manufacture, customer interaction, recycling, and trash disposal. Exposure to endocrine-disrupting chemicals (EDCs) is a pervasive concern, and microplastics harbor hazardous substances. Bioplastics, promoted as eco-friendly, contain similar additives and endocrine-disrupting effects.[3] Substituting these compounds with alternatives presents a viable approach; however, identifying suitable replacements has been difficult. Educating consumers on minimizing plastic exposure is essential.

2. Conflict of Interest

None.

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