Information document on toxic additives in plastics in the Republic of Uzbekistan

Plastics find extensive application across various sectors of Uzbekistan's economy, yet their composition contains several chemical additives that could pose risks to both human health and the environment. These additives encompass stabilizers, plasticizers, flame retardants, and pigments.

Toxic substances in plastics in Uzbekistan are regulated through national sanitary norms, technical regulations, and international obligations. This paper examines the main toxic substances in plastics that are regulated, their impacts, and the existing control standards.

Uzbekistan maintains strict controls over the import, recycling, and disposal of plastic waste as part of its national legislation and international obligations. The primary restrictions align with the Basel and Stockholm Conventions and are also established in the Cabinet of Ministers Resolution No. 916 dated December 30, 2024. These measures are designed to prevent environmental pollution, manage toxic additives in plastics, and mitigate public health risks.

A key aspect of the regulation is the prohibition on importing packaging waste and containers that are contaminated with persistent organic pollutants (POPs). Specifically, plastics that contain polychlorinated biphenyls (PCBs) and polybrominated biphenyls (PBBs) are prohibited. These substances are extremely toxic, decompose slowly in the environment, and can adversely affect human health.

Certain types of plastic waste may be imported, but they require mandatory certification. These materials include:

Polypropylene, polyacrylates, and organic vinyls - must have confirmation of environmental safety prior to importation.
Recyclable plastics - allowed for import only if accompanied by an expert opinion.

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Major classes of toxic additives and their regulation in the Republic of Uzbekistan

Under Article 21 of the Sanitary and Epidemiological Welfare of the Population Act, legal entities and individuals must comply with sanitary rules, norms, and hygienic standards for the transportation, storage, use, neutralization, disposal, and burial of chemical substances, biological agents, and materials to ensure the sanitary and epidemiological welfare of the population. The importation of new polymeric and plastic materials into the Republic of Uzbekistan and their production is permitted only after a toxicological and hygienic assessment and with the permission of the Chief State Sanitary Doctor of the Republic.

This section will review the General Technical Regulation on the Safety of Food Contact Packaging No. 476 of July 7, 2017 (hereinafter referred to as the Packaging Safety TR), the Technical Regulation on the Safety of Children's Toys No. 451 of July 23, 2020 (hereinafter referred to as the Children's Toy Safety TR), and the Hygienic Requirements for the Production and Processing of Synthetic Polymeric Materials No. 0273-09 of November 16, 2009 (hereinafter referred to as the SanPiN for Synthetic Polymeric Materials).

Stabilizers

Stabilizers are used in plastics to safeguard against degradation caused by ultraviolet radiation, heat, and oxidation. However, many stabilizers contain toxic compounds.

Regulatory substances in stabilizers:

- Lead, cadmium, and tin compounds enhance the heat resistance of plastics, yet they are toxic to humans and the ecosystem.

Regulation in Uzbekistan:

- According to the TR on the safety of children's toys and TR on the safety of packaging , the use of lead and cadmium compounds is restricted, especially in food contact plastics and children's products.
- The TR on packaging safety bans the use of certain stabilizers, such as melamine, in food packaging.

Plasticizers

Plasticizers enhance the flexibility and elasticity of plastics, but many are toxic and may be released into the environment.

Regulatory substances in plasticizers:

- Diethylhexyl phthalate (DEHP) - adversely affects the reproductive system.
- Benzylbutyl phthalate (BBP) - recognized as a carcinogen.
- Dibutyl phthalate (DBP) - banned in children's toys in the EU and EAEU.
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Regulation in Uzbekistan:

- The Packaging Safety TR regulates the maximum permissible concentrations of phthalate varieties and prohibits the use of dibutyl phthalates in food contact materials.
- The TR for children's toys regulates the maximum permissible concentrations of phthalates in children's products.
- The Sanitary Regulations for Synthetic Polymeric Materials require the use of less toxic and less volatile compounds when using phthalic acid-based plasticizers

Flame retardants

Flame retardants are used to prevent plastics from catching fire, but many have toxic properties.

Regulated substances in flame retardants:

- Polybrominated diphenyl ethers (PBDEs) - can cause thyroid disorders and accumulate in the body.
- Hexabromocyclododecane (HBCD) - banned in some countries due to high toxicity.
- Tetrabromodiphenyl ether (TBBPA) - has adverse effects on the nervous system.

Regulation in Uzbekistan:

- As part of its international obligations, Uzbekistan regulates PBDEs and HBCDs as persistent organic pollutants (POPs) under the Stockholm Convention.

Water and oil repellent additives (PFAS)

Per- and polyfluoroalkyl substances (PFAS) are used to give plastics water-repellent properties but are highly persistent in the environment and can cause cancer and hormone disruption.

Regulated Substances in PFASs:

- Perfluorooctanoic acid (PFOA) - banned by the Stockholm Convention.
- Perfluorooctanesulfonic acid (PFOS) - limited in the plastics industry.
- Perfluorohexane sulfonic acid (PFHxS) - banned by the Stockholm Convention.

Regulation in Uzbekistan:

- Under the Stockholm Convention, Uzbekistan regulates PFOA and PFOS and the substances that degrade with their formation.

The Republic of Uzbekistan is a party to the Stockholm Convention on Persistent Organic Pollutants (POPs). This international treaty was ratified by the Law of the Republic of Uzbekistan dated May 8, 2019 ZRU-535 and entered into force on September 26, 2019. In accordance with the provisions of the Convention, substances included in its Annex A are subject to prohibition or strict regulation. Thus, they are regulated in Uzbekistan automatically upon ratification of the Convention.

POPs related to plastics and regulated under the Stockholm Convention

To date, the Stockholm Convention regulates 17 POPs related to plastics. These include:

1. Perfluorohexanesulfonic acid (PFHxS)
2. Perfluorooctanoic acid (PFOA)
3. Perfluorooctanesulfonic acid (PFOS)
4. УФ-328 (2-(2H-бензотриазол-2-ил)-4,6-дитрет-пентилфенол)
5. Short-chain chlorinated paraffins (SCCPs)
6. Polychlorinated naphthalenes (PCNs)
7. Polychlorinated biphenyls (PCBs)
8. Hexachlorobutadiene (HCBD)
9. Tetrabromodiphenyl ether (TetraBDE)
10. Pentabromodiphenyl ether (PentaBDE)
11. Hexabromodiphenyl ether (HexaBDE)
12. Heptabromodiphenyl ether (HeptaBDE)
13. Decabromodiphenyl ether (DecaBDE)
14. Hexabromocyclododecane (HBCD)
15. Mirex
16. Hexabromobiphenyl (HBB)
17. Pentachlorobenzene (PeCB)

Recommendations to improve the current situation:

During consultation meetings with all stakeholders, several measures have been suggested to decrease toxic substances in plastics, including:

- Development and implementation of environmentally friendly alternatives to plastic;
- Phase-out harmful additives in plastic products and transition to safer alternatives;
- The development of non-toxic and organic additive production is driving innovation in the industry.
- Providing subsidies to producers to switch to safe technologies and raw materials;
- Incorporating requirements to reduce or ban toxic additives in regulations or developing new regulatory documents.

These measures aim to reduce the environmental burden, protect public health, and develop sustainable plastic production.

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