Country Information on Chemicals in Recycled Plastic Pellets from Togo

The study was conducted in Togo by the NGO Les Amis de la Terre.

Broader analysis
The results from the broader analysis was published in the data article A dataset of organic pollutants identified and quantified in recycled polyethylene pellets, and the complete dataset is publicly available online. Samples from 13 countries were analyzed, and nearly 500 chemicals were detected in total. These included pesticides, industrial chemicals, PCBs, pharmaceuticals, and many others.

One sample was analyzed from Togo for a wide range of target chemicals. A total of 167 chemicals were detected in the sample.

The 30 chemicals detected at the highest concentrations in each sample are provided below in Annex 2. Out of these 30 chemicals, it can be noted that more than half were traces from various stages of the production of different types of plastics. These 30 chemicals also included several bioactive substances, including the pesticide chlorpyrifos that is in its final stages of evaluation for listing under the Stockholm Convention, and pharmaceuticals. In addition, three Polycyclic Aromatic Hydrocarbons (PAHs) and a Polychlorinated biphenyl (PCB) was included in these 30 chemicals.

Conclusion
Both studies provide evidence that recycling of plastics leads to toxic chemicals present in the source materials being mixed and carried over into the recycled plastic. These include intentionally added chemicals, as well as chemicals from the production and recycling process, and contamination of plastic containers from use.

The results indicate that the source material included for example:
- plastics from electronics that contain flame retardants
- containers from various types of pesticides and pharmaceuticals
- containers of personal care products

Annex 1: Sources of the information for the country information

Link to the report Widespread chemical contamination of recycled plastic pellets globally:
https://ipen.org/documents/widespread-chemical-contamination-recycled-plastic-pellets-globally

Link to data article A dataset of organic pollutants identified and quantified in recycled polyethylene pellets:
https://www.sciencedirect.com/science/article/pii/S2352340923008090

Link to the complete dataset: https://zenodo.org/records/8367104

Annex 2: The 30 chemicals detected in the highest concentrations

No	Compound	Use	Concentration (ng/L)
1	N-Ethyl-o-toluenesulfonamide	Plasticizer	39,930
2	Fluoranthene	Polycyclic Aromatic Hydrocarbon (PAH)	4,384
3	p-Toluenesulfonamide	Plasticizer	2,979
4	TMDD	Surfactant	1,972
5	Quaternium-15 (free base)	Preservative used in personal care products	1,005
6	N,N-Dimethyl-p-phenylenediamine	Used in polymer production	870
7	4-Methylmorpholine-N-oxide	Solvent	704
8	Azelaic_acid_M+NH4	Pharmaceutical	693
9	DEET	Insect repellent	650
10	Lauramidopropylbetaine	Personal care and household products	509
11	Adiponitrile	Used to produce Nylon	422
12	Permethrin	Insecticide	413
13	3_Hydroxy_4_4_dichlorobiphenyl	Polychlorinated biphenyl (PCB)	397
14	3,3'-Dichlorobenzidine	Curing agent	385
15	Cyclohexylphenylketone	Used in polymer production	369
16	Diethofencarb	Pesticide	360
17	Chlorpyrifos	Pesticide	301
18	4,4'-DDMU	Industrial chemical	255
19	Benzyl benzoate	Pharmaceutical	243
20	Didecyldimethylammonium	Biocide	240
21	Octocrylene	UV protection	232
22	Lauric isopropanolamide	Personal care and household products	208
23	Anthracene	Polycyclic Aromatic Hydrocarbon (PAH)	199
24	Phenanthrene	Polycyclic Aromatic Hydrocarbon (PAH)	193
25	Allethrin	Pesticide	175
26	Benzophenone-3	Stabilizer	155
27	Benzyl-2-naphthylether	Industrial chemical	151
28	Triphenylphosphate	Flame retardant and plasticizer	150
29	Tri-isobutylphosphate	Solvent	145
30	1_1_1_Tris_4_hydroxyphenyl_ethane_M+NH4	Industrial chemical	143