



The Inventory of POP-PBDE from E-Wastes in the Informal Sector

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The burgeoning production and use of Electronics and Electrical Equipment (EEEs) generates a staggering amount of e-wastes. Adding to this figure is the fact that Philippines is one of the primary recipients of old EEEs from industrialized countries like US and Japan. Primitive recycling technologies for wastes of EEEs have resulted in large contaminated areas and exposure of recyclers and the general population (Wong et. al., 2007) to hazardous chemicals. Treatment, storage, and disposal of e-wastes pose a major challenge to the Philippine government as these are known to contain hazardous chemicals like Polybrominated Diphenyl Ether (POP-PBDE). POP-PBDE is a flame retardant and has been annexed as one of the Persistent Organic Pollutants (POPs) banned in the Stockholm Convention.

While production and use of POP-PBDEs were banned in 2004, the End-of-Life Model (Peralta and Fontanos, 2006) of obsolete EEEs estimates a huge amount of EEEs produced before 2004 currently entering the waste stream. Recent studies have shown that plastics containing POP-PBDEs and other Brominated Flame Retardants (BFRs) have been recycled in the production of articles for which no flame retardancy is required including children's toys and household goods (Hirai & Sakai, 2007; Chen et al., 2009; Chen et al., 2010).

The main challenge in efforts to eliminate POP-PBDEs is the identification of potential contaminated sites, existing stockpiles, POP-PBDE-containing articles still used (reused or recycled) by consumers, and their disposal practices at end-of-life. This inventory of e-wastes aims to initiate actions to address this problem at the level of the informal sector. This study specifically aims to classify and quantify e-wastes handled by informal recyclers (i.e. junkshops and backyard recyclers) and conduct process flow analysis of their recycling and disposal techniques. This study accounts the e-waste recycling and disposal in the informal group as this group remains unaccounted despite having been reported as the one's handling the biggest bulk of generated e-wastes (Ballesteros, 2010).

This inventory shall provide broader understanding of the sources of POP-PBDEs in the country, the scope of their impact and the risks that they pose to human health and the environment (UNEP PBDE Inventory Guidance, 2013). Specifically, the estimated amount of PBDE shall serve as baseline data on the contamination and toxicity level of soil, water source, and air in the vicinity of dumping sites. Currently, the Philippine government (EMB) has NO capacity to detect POP-PBDEs in these environmental media. Assessment of the contamination and toxicity level shall guide state policy on importation of second hand E-wastes, recycling of E-wastes, and treatment and disposal of E-wastes.

Key Words: Persistent Organic Pollutants, E-Wastes, Polybrominated Diphenyl Ether, POP-PBDE