

The Basel Convention and e-waste: translation of scientific uncertainty to protective policy



Every year, about 45 million metric tonnes of defunct electronic products are discarded worldwide. In many countries, this electronic waste is regarded as hazardous because of its composition of toxic metals and organic chemicals.¹ However, the report by Kristen Grant and colleagues² in *The Lancet Global Health* shows major gaps and uncertainties in the understanding of the risks associated with exposure, vulnerability, and causal linkage of e-waste to disease burden.

Data from Grant and colleagues' meta-analysis of results from published epidemiological investigations of human exposure to electronic waste suggest an association with diseases affecting the reproductive, respiratory, neurodevelopmental, genomic, and hormonal systems, but the authors are rightly cautious in not concluding a causal relation between specific electronic waste toxicants and these diseases. The systematic review is not exhaustive, partly because of the stringent criteria used to include or exclude publications on this topic, and because of the intrinsic biases associated with searches of archival journal databases. Moreover, all the epidemiological studies judged worthy of inclusion in the meta-analysis focused on one region in China that is notorious for electronic waste processing. Further, there is a paucity of information on sub-populations that are especially vulnerable to exposure and disease outcomes. These restrictions call for broader geographical and methodological scopes of research on the health effects of electronic waste to begin filling the major gaps, as noted by Grant and colleagues.

Scientific uncertainties have sometimes fuelled vigorous debates and disagreements within countries, regions, and the international community about whether restrictive policies are warranted to encourage product designers, manufacturers, retailers, and consumers of electronic products towards risk-reduction strategies to minimise exposure and prevent disease.^{3,4} The disharmony between policies and procedures to regulate and manage e-waste can be linked to the differences in weights assigned to uncertainties in risk analysis among decision makers.⁵

The UN Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and

their Disposal represents global leadership to address the problem of e-waste. The first world forum on e-waste was convened in 2006, at the 8th meeting of the Conference of the Parties to the Basel Convention, leading to the Nairobi Declaration on creating innovative solutions for the environmentally sound management of electronic wastes. The signatories, noting the rapid expansion in the transboundary movement of electronic waste worldwide and the risk to human health, especially in countries without the capacity for safe management of such wastes, declared the urgent need to promote public awareness of the risks, technology development, and information exchange on best management practices, and stronger enforcement of provisions under the Basel Convention, the main global instrument for stopping illegal trafficking in electronic waste and for guiding the safe management of such wastes.⁶

However, questions have emerged about whether the Convention is the appropriate framework to deal with multifaceted dimensions that include employment, technology transfer, communications, economic development, environmental protection, and effects on human health. In response to these questions, in December 2012, the Basel Convention secretariat produced a draft of technical guidelines on transboundary movements of e-waste that focused on the distinction between waste and non-waste (eg, used electronic products targeted for the recovery or refurbishing of spare parts).⁷

The guidelines acknowledge the difficulties faced by government authorities to assess and differentiate bonafide used electronic equipment shipped for repair, refurbishment, resale, or humanitarian-aid reuse from defunct electronic waste destined for environmental disposal and unsafe scrap mining. For example, the new guidelines would need documentation of invoice and contract regarding the sale or transfer of fully functional used electronic equipment, and evidence of assessment and testing of equipment destined for repair or refurbishment along with proof of appropriate protection against damage during transportation, including protective packaging during loading and

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unloading. These guidelines should make it more difficult and less cost effective to transfer hazardous junk electronic waste across national boundaries, especially to regions of the world where labour is cheap and children are placed at risk by working to recover small amounts of precious metals from e-waste through unsafe procedures.

The USA, a signatory but not a party to the Convention, was among 11 independent entities that registered comments on the draft guidelines ahead of the 11th Conference of Parties to the Basel Convention. These comments focus on protecting business-to-business transactions in the shipment of used or non-functional electronic equipment, even when there is uncertainty about the ultimate environmental fate of such equipment. The comments are in sharp contrast to the so-called non-binding ban amendment to the Convention that sought to prohibit any shipment of e-waste among other hazardous wastes for any reason. The Basel Action Network, a non-governmental organisation and strong supporter of the ban amendment, disagrees with introducing exemptions to the Basel Convention definitions of hazardous waste through technical guidelines on electronic waste, but nonetheless warned in its comments that e-waste remains the largest category of illegally traded hazardous solid waste. The Network also warned that attempts to weaken the parts of the Basel Convention dealing with the nature of the hazard or perception of health and environmental effects would be disastrous.

Some of the disagreements about international e-waste policy arise from the framing of the issue in terms of commercial interests or environmental quality instead of the real or potential effects on public health. When human health effects emerge as a dominant frame, environmental issues tend to be taken more seriously, and increasingly stringent actions are taken to prevent disease and disability.^{8,9} Although appropriate framing of the e-waste problem in terms of global health would undoubtedly increase its saliency, such

framing should be credible and supported by empirical data. Reports based on meta-analyses of the scientific literature allow a quick assessment of the state of knowledge, and should provide information to help with more research in identified areas. However, uncertain or incomplete reports should not be used as excuses for inaction toward protective policies. The UN's leadership through the Basel Convention needs to survive the uncertainties in epidemiological data and the arrival of new research to advance our knowledge, especially regarding the toxic effects of e-waste on children who sometimes handle and dismantle this hazardous waste.

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I declare that I have no conflicts of interest.

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