

Health effects of exposure to e-waste

Discarded electrical and electronic equipment and components, known collectively as e-waste, are the most rapidly increasing sources of waste worldwide.¹ Most e-waste is disposed of in landfills, but recycling efforts occur to recover valuable materials.² Exposure to e-waste might occur directly via recycling or indirectly via ecological exposure.² A large proportion of e-waste is shipped to less developed countries for dumping or recycling.³ Much e-waste recycling occurs in the informal sector, in homes where women and children are engaged in unsafe recycling practices without the benefit or the knowledge of exposure-minimising technology or protective equipment.¹ High levels of environmental contamination can occur from e-waste recycling, putting residents in surrounding areas at risk of ecological exposure via inhalation or ingestion of contaminated water, air, and food supplies.¹ In addition to risks of injuries, potential exposures include the original constituents of the equipment, substances added during the recovery process, and substances formed as a result of the recycling process.^{1,2} Thus, although the toxicity of the original components might be known, workers and residents are likely to be exposed to complex mixtures of unknown toxicity.

Concern about the effects on health of chemical exposure to e-waste and e-waste recycling is increasing despite the paucity of solid research. Reported adverse effects include: fetal loss, prematurity, low birthweight, and congenital malformations; abnormal thyroid function and thyroid development; neurobehavioural disturbances; and genotoxicity.^{1,2} However, few direct studies have been undertaken. Children and developing fetuses are particularly susceptible and evidence of adverse effects in early life via ecological exposure is increasing.²

In response to the lack of specific data and little awareness from public health on the effect of e-waste on children's health, the WHO department of Public Health and Environment (PHE) is developing a specific plan of action. This initiative includes raising awareness of and communicating the problem, developing training methods and programmes for health professionals, encouraging specific research about e-waste, and gathering interested stakeholders to move this issue forward. The initiative will be officially launched at the 15th international conference of the Pacific Basin Consortium for the Environment and Health (PBC), to be held at the East-West Center, Honolulu, HI, USA, Sept 24–27, 2013, and continues the collaborative efforts of PHE, the PBC, and the US National Institute of Environmental Health Sciences in children's environmental health.^{4,5} The conference is open to the scientific community and others who wish to attend.

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