Chinese landfill collapse: urban waste and human health

At least 69 people were killed and eight others were missing after a landslide in Shenzhen, north of Hong Kong, on Dec 20, 2015.[1] Unlike most landslides triggered by high-intensity rainfall or earthquakes, this disaster was man-made and triggered by the collapse of a construction waste disposal site. This landslide highlights the health implications of both disaster resilience and waste management during rapid urbanisation in developing countries.

From 2000 to 2015, more than 3400 people were killed and over 2 million were otherwise affected by landslides in China.[2] The immediate injuries included blunt trauma, crushing, asphyxiation, and drowning.[3] Victims are more likely to have mental disorders, including post-traumatic stress disorder, panic attacks, or major depressive episodes. After the landslide in Shenzhen, more than 300 medical workers and 50 mental health professionals were actively involved in the disaster relief and recovery work, but the long-term mortality, morbidity, and mental health implications are still unknown.

This disaster was caused by the collapse of a large pile of construction and demolition waste. Soil and aggregates are usually not directly toxic, but asbestos, polychlorinated biphenyls, brominated flame retardants, and heavy metals are often produced and released during construction and demolition work, especially in improperly managed brownfield sites. Dust and particulate matter, such as PM2·5, are generated by waste transportation and dumping. Toxic leachates, particularly heavy metals, and methane from landfills are major challenges for the environment and for human health.

In addition to formal waste collection and recycling systems, 3·3–5·6 million people are involved in informal waste collection and are responsible for recycling 17–38% of urban solid waste in China.[4] Unfortunately, the informal sector is usually unaware or has little consideration of occupational health and safety. Several classes of disease have been identified as especially prevalent among waste pickers—eg, diarrhoea, malaria, cholera, hepatitis B, and pneumonia.[5] A range of cancers are occupational hazards for many informal collectors.

To avoid similar landslides, the fundamental solution is to reduce waste volume. Additionally, monitoring, reusing, recycling, and recovering waste should be more widely conducted. Globally, about 15 million people are involved in informal waste recycling.[6] To alleviate the hazards faced by those involved in this sector, cooperatives and associations of informal recyclers have been created in Latin America.[6] In China, new initiatives are needed to integrate the informal waste collectors into waste management systems, improve waste recycling rates, and tackle pressing health issues.

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