

**P3.07****A global perspective of the impacts of climate change on coastal brownfield and solid waste disposal sites**

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**Abstract**

This paper reviews the impacts of climate change on pollution sources and pathways in coastal brownfield and waste disposal sites, and the consequences for water quality and surrounding ecological and community health, including: 1) Brownfield and waste sites in low-lying coastal zones may be flooded due to sea-level rise and pollutants, which are currently isolated from the marine environment, and may be mobilized and released. An increase in temperature, moisture content and salinity in inundated landfills may both enhance and inhibit microbial activity, potentially resulting in changes to biogas production and organic pollutant biodegradation rates. The temperature, salinity and pH of soil and groundwater will change after flooding and sea water intrusion, thus changing the toxicity and mobility of heavy metal and degradation rates of organic contaminants such as polycyclic aromatic hydrocarbons. Saline intrusion will also modify sub-surface hydrology and cause soluble pollutants in the soil to move as less dense fresh water rises; 2) An increase in intensity and frequency of extreme weather, such as heavy rainfall, and extreme storm and flood events will accelerate erosion and has the potential to resuspend and remobilise both particulate and soluble pollutants. Erosion will lead to damage of these coastal structures and further release of particulate pollutants and solid wastes. Leakage of solid waste from landfills can adsorb metals and organic pollutants, and will significantly affect its transport, whilst exposure of solid wastes to the aerobic and high energy marine environment may accelerate their physical and photodegradation; 3) More widespread pollution and frequent extreme weather conditions will lead to more frequent public health emergencies, posing a threat to water security, physical and mental health of surrounding residents. When terrestrial pollutants such as persistent organic substances and emerging pollutants are released into the ocean, the scale of the impacts on marine ecosystems are unknown.