

ENVIRONMENTAL, HEALTH AND SOCIAL IMPACTS OF DUMPING AND BURNING OF MUNICIPAL SOLID WASTE IN SOUTH AFRICA ENVIRONMENTAL, HEALTH AND SOCIAL IMPACTS OF DUMPING AND BURNING OF MUNICIPAL SOLID WASTE IN SOUTH AFRICA

Hester Roberts

*Central University of Technology, Free State,
South Africa*

Abstract

Global waste generation is escalating at a phenomenal rate and is closely associated with population increase, poor waste services, economic development and urbanization rates, leading to large amounts of waste being illegally dumped, burnt or disposed of at landfills. An estimated 1.3 billion tons of municipal solid waste (MSW) is generated globally per annum and is expected to rise to 2.2 billion tons by 2025. South Africa, in 2017, generated 78,085,869.5 tons of waste (46,220,203.9 tons MSW) and in the Free State Province (one of nine provinces) only 4,969.5 tons of the 4,572,320.2 tons generated was recovered/recycled. Poor service delivery impacts more severely on the urban poor and residents in developing countries as illegal and unregulated dumps and waste burning is a normal occurrence.

Landfill is used for 95% of MSW collected all over the world, including most of South Africa's waste. Data indicates that more than 19.2 million tonnes of general waste and one-million tons of hazardous waste were disposed of at 133 South African landfill sites in 2017. Waste in South Africa, as the rest of Africa is often disposed of in unregulated landfills, dump sites or open burning contributing to diseases, health implications, vector breeding, environmental pollution (air, water and soil), methane discharge and urban protests. The major South African cities have properly engineered landfills but the residents living in close vicinity of dumpsites in smaller towns and rural areas are exposed to extreme health risks. The Free State Province have one specially engineered landfill for waste disposal and 5 non-engineered landfills but most towns only have dump sites. Waste pickers operate on some landfill/dump sites, some people actually live on the dump sites while other residential housing are situated less than 200m from burning dump sites, children play in the waste, pigs are kept in pens, condemned meat carcasses, dead chickens lie around while cows eat plastic which are blown from the sites. Due to poor waste management services the municipal workers or community members burn the waste to reduce pests and bad odours causing air pollution and related respiratory diseases.

Results for 70 landfill sites in the Free State is included in the study describing the operational procedures at landfills, open burning of waste, using tyres and diesel to fuel burning of waste, unlined landfill sites and recycling practices. Air pollution monitoring (ambient air) will be done at 50 of these towns (FS) and 80 towns (10 per province) to determine the level of ambient air pollution and potential exposure of community members living in close proximity of these sites and descriptions of the additional sites will be added to existing data. The results of the study identifying the most prominent and harmful outdoor air pollutants directly affecting the health of the communities living in the vicinity of these burning dump sites will be compared to the records of local clinics and respondents living in a set radius from the dumpsites/landfills will be requested to complete questionnaires.

Study of dump sites and landfills in the Free State (personal observation, questionnaires and on site checklists) confirmed poor waste management (burning, dumping and air pollution) and extension of the study to the other South African Provinces with additional ambient air monitoring, GPS recorded of dump sites/landfills and closest residents affected compared with clinic results will provide important data to provide improved waste provision services.

Keywords: waste burning, ambient air monitoring, environmental pollution, diseases; environmental pollution