

# Municipal solid waste management in India – Current status, management practices, models, impacts, limitations, and challenges in future

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**Abstract.** Pollution, climate change, and waste accumulation are only some of the new problems that have arisen because of the exponential population growth of the past few decades. As the global population expands, managing municipal solid trash becomes increasingly difficult. This is by far the most difficult obstacle for governments to overcome, especially in less developed nations. The improper open dumping of trash, which is causing mayhem across the country, has two immediate effects: it contaminates groundwater and surface water. Air pollution and the accumulation of greenhouse gases are both exacerbated by the release of methane and other harmful waste gases. Leachate from the landfill leaks underground and pollutes groundwater. In most cases, leachate moves into the groundwater zone and pollutes it after forming in association with precipitation that infiltrates via waste. This has far-reaching effects on people's health and disturbs the natural environment. This review article critically examines the current state of Solid Waste Management (SWM), addressing both the highlighted concerns and the government management solutions that have been put in place to address these issues. In addition, the constraints, and difficulties that India will face in the future in terms of solid waste management and the role of models for such a system are discussed.

**Keywords:** landfilling; leachate; municipal solid waste; waste generation; waste management models; waste-to energy

## 1. Introduction

As the result of increasing urban population and the influx of people into cities, a substantial amount of waste is being generated. It is very important that we investigate the causes of the worrying rise in trash production around the world. The rates at which waste is generated is becoming higher and higher around the entire globe. This is the most difficult obstacle that governments in nations that are still in the process of developing must overcome. The most recent statistics indicate that between 80 and 90% of MSW is disposed of in landfills without any kind of

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