

Characteristics of volatile compound emission and odor pollution from municipal solid waste treating/disposal facilities of a city in Eastern China - DTU Orbit (09/11/2017)

Characteristics of volatile compound emission and odor pollution from municipal solid waste treating/disposal facilities of a city in Eastern China

Transfer station, incineration plant, and landfill site made up the major parts of municipal solid waste disposal system of S city in Eastern China. Characteristics of volatile compounds (VCs) and odor pollution of each facility were investigated from a systematic perspective. Also major index related to odor pollution, i.e., species and concentration of VCs, olfactory odor concentration, and theoretic odor concentration, was quantified. Oxygenated compounds and hydrocarbons were the most abundant VCs in the three facilities. Different chemical species were quantified, and the following average concentrations were obtained: transfer station, 54 VCs, 2472.47 $\mu\text{g}/\text{m}^3$; incineration plant, 75 VCs, 33,129.25 $\mu\text{g}/\text{m}^3$; and landfill site, 71 VCs, 1694.33 $\mu\text{g}/\text{m}^3$. Furthermore, the average olfactory odor concentrations were 20,388.80; 50,677.50; and 4951.17, respectively. The highest odor nuisance was detected in the waste tipping port of the incineration plant. A positive correlation between the olfactory and chemical odor concentrations was found with $R^2 = 0.918$ ($n = 15$, $P < 0.01$). The result shows odor pollution risk transfer from landfill to incineration plant when adopting thermal technology to deal with the non-source-separated waste. Strong attention thus needs to be paid on the enclosed systems in incineration plant to avoid any accidental odor emission.

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