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Perspective

Role of Municipal Solid Waste Management in Environmental Health

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DESCRIPTION

The severity of the dangers to environmental health posed by the three waste treatment alternatives recommended by the national municipal solid waste management improving strategy, which comprise composting, waste-to-energy incineration, and sanitary landfilling in addition to material recovery. It deals with potential long-term health concerns from air pollutants to impacted area's residential receptors. In order to determine the source strength of chemicals of possible concern, it uses methodologies from life cycle inventory, analogue survey, design documentation, and field surveys. Through integrated waste management and the Screening Air Dispersion Model, life cycle inventory and air dispersion are modeled.

The exposure concentration is based on long-term exposure to the highest level of air contaminant under "reasonable worst case" emissions, and is then directly compared to a reference concentration and unit risk factor/cancer slope factor derived from the national air quality standard (for a conventional pollutant) and toxicological studies (for a specific pollutant). The impact of airflow rate and biomass temperature on the bio-stabilization and bio-drying of municipal solid waste. When biomass was exposed to low air-flow rates, there was a negative association between biodegradation and bio-drying. Biodegradation was therefore encouraged, but water elimination was insufficient. Although there is a slower rate of degradation, there is a higher air flow rate and more regular water loss.

Therefore, the bio-drying process necessitates the maintenance of high air-flow rate along with high temperature in order to achieve sufficient water loss and ensure high energy content in the end product (fuel). Temperature gradients were seen throughout the pile as the process progressed, and moisture gradients also emerged, however unlike the temperature gradients, which vanished as the process continued, the moisture gradients remained until the conclusion. The necessity to invent and exploit unconventional energy sources using existing natural or non-natural resources has become vital for the future in order to graciously contribute to global challenges including the depletion of fossil fuels, the greenhouse gas effect, and global warming. The understanding of energy-saving techniques, another notion that can help to use less energy in the Waste Energy (WE) resources, which converts waste into heat or power. Thermal and biological treatments are typically two strategies to limit the amount of MSW remaining for landfill disposal. However, biological treatment is less expensive for comparable waste, but it takes more time and is more difficult to regulate the growth of bacteria. Thermal treatment thus emerges as an alternative for the massive amount of trash. The MSW management system has three thermal-based Wastes to Energy (WE) options: incineration, air gasification, and plasma gasification.

Basically, combustion is a chemical reaction (oxidation) between oxygen and combustibles. Flue gases produced during incineration represent available fuel energy as heat. Air pollution control devices are added when incineration and waste management controls are insufficient to meet allowable pollution limits. Wet Scrubbers, dry scrubbers and dry-wet scrubbers are considered alternately.

Specifically, gasification is the conversion of solid waste into fuel or syngas by gasification reactions. The result is a hot fuel gas (syngas) containing large amounts of calorific incompletely oxidized products, rather than the hot flue gas of conventional direct waste incineration. The organic portion of the waste is converted primarily to carbon monoxide, hydrogen and a small amount of methane.

CONCLUSION

On other hand, Plasma gasification processes, converts the organic fraction to syngas and vitrify the inorganic fraction into a non-leachable vitreous slag that can be safely disposed of after cooling or even reused as a construction material increase. The composting of material recycling by processing has only fewer adverse health effects. It analyses to show that landfill integrated waste management collection rates have a significant impact. As temperature and humidity gradients have been developed across the biomass.

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