

Biosolids microbes pose manageable risk to workers

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Class B biosolids are sewage sludges that have been treated to contain fewer than 2.0×10^6 fecal coliforms/dry gram. The USEPA estimates that 6.3 million tonnes of Class B biosolids are generated in the United States each year, and that by 2010, the amount generated per year will increase to 7.4 million tonnes. Biosolids produced during municipal sewage treatment are most commonly applied to land as a fertilizer at agricultural sites throughout the United States. Class B biosolids, which are the principal type of biosolids applied to land, contain a variety of enteric pathogens.

Land application of biosolids has received national attention due to the potential for off-site transport of disease-causing microorganisms through soil, water, and air. Workers face greater exposure to bioaerosols from biosolids than those not associated with the operation. A new study published in the November–December issue of *Journal of Environmental Quality* investigated levels of microorganisms in air immediately downwind of land application operations and estimated occupational risks from aerosolized microorganisms.

The authors report that risks of aerosol-borne infection for biosolids workers are generally low, at less than 1 or 2% per year. Overall, occupational exposure to bioaerosols from biosolids appears to be less risky than similar exposures among wastewater treatment workers.

In all, more than 300 air samples were collected downwind of biosolids application sites at various locations within the United States. Coliform

bacteria, coliphages, and heterotrophic plate count (HPC) bacteria were enumerated from air and biosolids at each site. Concentrations of coliforms relative to Salmonella and concentrations of coliphage relative to enteroviruses in biosolids were used, in conjunction with levels of coliforms and coliphages measured in air during this study, to estimate exposure to Salmonella and enteroviruses in air.

The HPC bacteria were ubiquitous in air near land application sites whether or not biosolids were being applied, and concentrations were positively correlated to windspeed. Coliform bacteria were detected only when biosolids were being applied to land or loaded into land applicators. Risks from aerosolized microorganisms at biosolids land application sites appear to be lower than those at wastewater treatment plants, based on previously reported literature.

Source: Soil Science Society of America

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