Tracking Triclosan's Field Footprint

EurekAlert

A study by U.S. Department of Agriculture (USDA) scientists and cooperators provides new details about how fertilizing soils with biosolids also introduces triclosan-an antibacterial agent in soaps and other cleaning supplies-into the environment.

Farmers add "Class B" biosolids, also known as treated wastewater solids, to their fields as a fertilizer. These biosolids meet federal regulations for human health and safety, but little information has been obtained about their triclosan levels. Triclosan has not been identified as a human health hazard, but the U.S. Food and Drug Administration is currently conducting a scientific and regulatory review of the compound.

For this project, Agricultural Research Service (ARS) chemist Clifford Rice, in the ARS Environmental Management and Byproducts Utilization Laboratory in Beltsville, Md., partnered with University of Maryland engineers Nuria Lozano and Alba Torrents. District of Columbia Water and Sewer Authority scientist Mark Ramirez also contributed to the study. ARS is USDA's principal intramural scientific research agency.

The scientists determined that triclosan levels in Class B biosolids from a Mid-Atlantic wastewater treatment plant averaged around 15.5 milligrams per kilogram. They then collected surface soil samples from 26 farms in northern Virginia, mostly from pastures. Some fields had never been amended with biosolids and others had been amended with from one to four applications of biosolids within the previous 9 months to 13 years. Most of the biosolid amendments came from the wastewater treatment plant in the study.

The researchers found farms that had not received biosolid applications had background triclosan levels that peaked at 4.5 nanograms per gram of dried soil. Farms that had received single and multiple biosolid applications also had low triclosan levels, but the concentrations varied from 3.1 to 66.6 nanograms per gram. (One billion nanograms are in one gram.) The results also suggested biological degradation of triclosans in the soils that had been amended with biosolids resulted in the loss of 78 percent of the triclosan after 7 to 9 months, and that up to 96 percent was removed after 16 months.

Results from this study, which were published in *Chemosphere* in 2010, provide baseline data about triclosan levels in treated biosolids and in agricultural fields that have been amended with biosolids--information that can help support future studies of triclosans in the environment.

SOURCE [1]

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