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CAES SEMINAR SERIES

"Dynamics of Organic Compounds in Soils Characteristic of Japan"

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12:00 noon to 1:00 p.m.

Food and coffee will be available at 11:45 a.m.

Jones Auditorium
The Connecticut Agricultural Experiment Station
123 Huntington Street, New Haven, CT

Japan has 110 active volcanoes and less than 1% of the world's soil is affected by volcanic ash, but about 30% of Japan's soil is strongly affected by volcanic ash. First of all, I would like to introduce the characteristics of the soil affected by volcanic ash unique to Japan. This soil is characterized by the high amount of active aluminum from volcanic ash. Next, I will describe some organic-compound examples of how those compounds behave in this soil. It is known that the adsorption of organic compounds to soil is greatly affected by the hydrophobicity of organic compounds and the content of soil organic matter. However, as an example, the adsorption of organic arsenic compounds was influenced by the structure of arsenic compounds and the amount of active aluminum in the soil. These organic arsenic soil contaminations became apparent due to the illegal dumping of chemical weapons by the former Japanese army and harmed the health of residents near the contaminated sites. Neonicotinoids have caused severe damage to honey bees in Japan, but their use has not yet been restricted at all. Also, despite the fact that neonicotinoid insecticides basically adsorbed to soil organic matter, the presence of aluminum and iron ions in the solution increased their adsorption. What is found is that some results seem different from what has been widely known, while other results are not easily understood. The mechanisms observed in the soils specific in Japan should apply to all soils.