Determination of Antibiotics in Surface and Groundwater due to Poultry Litter Application. (S11-dion101023-Poster)

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Abstract:

Feed additives, including antibiotics, are common in the feed and livestock industries to promote rapid growth and maintain health. Unfortunately, antibiotics are not completely metabolized and are excreted in urine and feces, potentially leading to the contamination of land and water. In this study, poultry litter from several farms was collected, extracted, and analyzed for antibiotics. Poultry litter is notoriously difficult to for analyze organic compounds from due to its complex matrix. We examined a variety of extraction, clean-up, and detection methods. Extraction steps focused on liquid-liquid extraction principles using methylene chloride, ethyl acetate, and acetone as the organic phase. Clean-up procedures included testing several solid-phase extraction, and micro-extraction, cartridges to optimize analyte recovery. Detection was accomplished by both electrospray ionization-ion mobility spectrometry-mass spectrometry (ESI-IMS-MS) and conventional liquid chromatography-ESI-MS. Results indicate antibiotic levels high enough to continue to inhibit microbial growth, potentially leading to an increase in antibiotic resistant bacteria.

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