

ASA-CSSA-SSSA | 2007 International Annual Meetings
November 4–8 • New Orleans, Louisiana
A Century of Integrating Crops, Soils & Environment
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Monday, November 5, 2007 - 10:00 AM
118-3

Direct Speciation and Distribution of Dietary Arsenic in Chicken Excreta and Tissues.

Jennifer Seiter, University of Delaware, 531 South College Ave, Rm 152, Department of Plant & Soil Sciences, Newark, DE 19717-1303 and Donald Sparks, 152 Townsend Hall, University of Delaware, University of Delaware, Department of Plant & Soil Sciences, Newark, DE 19717-1303.

Roxarsone is an organic arsenical used in the poultry industry to prevent disease and promote weight gain. This study examines arsenic distribution and speciation in poultry excreta and poultry tissues. A series of As diets were fed to broilers in order to assess the effects that As speciation and concentration have on the birds' ability to retain and transform As. It was found that poultry tissues can withhold a limited amount of both inorganic and organic As species. Poultry industry standards require that As is removed from the diets 5 days before slaughter, in order to flush the As out of the body. A series of birds were removed from the diet one week prior to slaughter, and As concentration in all tissues did decrease, but were not completely eliminated. X-ray Absorption Near Edge Spectroscopy (XANES) studies were conducted on all excreta and tissue samples to determine As speciation. Many arsenic species are found in the poultry excreta, indicating that roxarsone is degrading with time. Preliminary analyses show that As(III) is found in the poultry breast, and is not evenly distributed in the tissue, indicating that there is an As preference in poultry tissue.

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