

## ASA, CSSA, and SSSA 2010 International Annual Meetings

Oct. 31-Nov. 4 | Long Beach, CA



### Green Revolution 2.0: Food+Energy and Environmental Security

[Start](#) | [View At a Glance](#) | [Author Index](#)

167-2 A Regional Dynamic Modeling Approach to Calculate Cadmium, Copper and Zinc Accumulation in Soils and Runoff to Surface Waters.

See more from this Division: [A05 Environmental Quality](#)

See more from this Session: [Trace Elements and Emerging Contaminants in the Environment: I](#)

*Tuesday, November 2, 2010: 2:15 PM*

*Hyatt Regency Long Beach, Seaview Ballroom B, First Floor*

[Share](#) |

**Jan Groenenberg**, Luc T.C. Bonten, Paul F.A.M. Römkens and Wim de Vries, Soil Science Centre, Alterra, Wageningen University and Research Centre, 6700 AA Wageningen, Netherlands

Cadmium, copper and zinc inputs on agricultural land in excess of crop uptake lead to accumulation in soil, leaching to ground water and runoff to surface waters. A regional dynamic model was used to evaluate long-term effects of measures related to feed and manure legislation in the Netherlands on metal inputs and changes in metal concentrations in soil and surface water. For given metal inputs, the model calculates metal uptake by crops, metal leaching to deeper soil layers and ground water and runoff to surface water. Continuing inputs of metals at present levels lead to 23-133% increase in soil contents and 25-340% increase in runoff to surface water within 100 years, depending on the metal. Ecological thresholds for soil will not be exceeded and this also holds for surface water criteria for Cd. Increased runoff, however results in an increase of the area where Cu and Zn concentrations in runoff exceed surface water criteria from 2% to 20% for Cu and from 33% to 54% for Zn within 100 year. A substantial reduction (50%) of Cu and Zn in animal food together with a total stop of discharge of hoof disinfection solutions is required to achieve no further increase in runoff to surface waters.

See more from this Division: [A05 Environmental Quality](#)

See more from this Session: [Trace Elements and Emerging Contaminants in the Environment: I](#)

[<< Previous Abstract](#) | [Next Abstract >>](#)