Water quality effects of surface mine reclamation with biosolids. (S11-stehouwer073336-Poster)

Authors:

- R.C.Stehouwer - *Pennsylvania State University*
- K.E.Macneal - *Pennsylvania State University*

Abstract:

Large, one time biosolids application rates of 134 Mg/ha (dry weight) are routinely permitted for mine reclamation in Pennsylvania. Depending on the biosolids this adds approximately 5000 kg N/ha, 3700 kg P/ha, and 80 Mg organic material/ha. To assess the effect of such additions on mine water quality an abandoned mined land site was instrumented to collect surface runoff, vadose zone percolate water, and ground water one year prior to reclamation. Water samples were analyzed for pH, acidity, total N, NH4+, NO3-, total P, ortho-P, Al, Fe, and several trace elements. During the first year following biosolids application little change in surface and ground water quality was observed aside from small NO3- pulses and increased acidity. Vadose zone water at 1 m depth showed a large NO3- pulse, decreased pH, increased acidity, Al, Mn, Cu, Ni, Pb, and Zn. These results indicate a need to reassess permitted application rates due to the potential for significant NO3- loss.

Corresponding Author Information:

Richard Stehouwer
Pennsylvania State University
116 ASI Bldg.
University Park, PA 16802-3504

phone: 814-863-7640
fax: 814-896-7043
e-mail: rcs15@psu.edu

Presentation Information:

Presentation Date: Wednesday, November 13, 2002
Presentation Time: 3:00-5:00 pm
Poster Board Number: 1538

Keywords:

mine reclamation, biosolids, sewage sludge, nutrient management