



Project No. WRI - 117

Project Title: Controlling Phosphate in Agricultural Field Leachate Using Mine Drainage Treatment Ferrihydrite

Recipient: West Virginia University

Principle Investigator: Paul Ziemkiewicz  
[paul.ziemkiewicz@mail.wvu.edu](mailto:paul.ziemkiewicz@mail.wvu.edu)  
(304) 293-2867 x 5441

Co-Investigators: Richard Herd  
[rsherd@mail.wvu.edu](mailto:rsherd@mail.wvu.edu)  
(304) 293-2867 x 5442

Melissa J. O'Neal  
[melissa.o'neal@mail.wvu.edu](mailto:melissa.o'neal@mail.wvu.edu)  
(304) 293-2867 x 5439

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Project Description:

In an effort to reduce phosphorous contamination in the Chesapeake Bay watershed the West Virginia Water Research Institute is studying the possibility of using a byproduct from the treatment of acid mine drainage (AMD) to absorb excess phosphorus in waters leaving agricultural lands.

Excess phosphorus in the Chesapeake Bay is a nutrient of concern associated with the eutrophication of the Bay. This results in an increase in the ecosystem's primary productivity leading to excessive plant growth and decay, and further effects including lack of oxygen and reductions in water quality, fish, and other animal populations. Runoff and ground water draining from agricultural lands have been identified as sources of some of this phosphorus contamination. Land applied litter from the many large poultry farms as well as excess fertilization of crops contribute to the pollution which results in these detrimental impacts on the ecological functions of the Bay.

The treatment of AMD in settling ponds produces a byproduct with sufficient ferrihydrite to effectively absorb water soluble phosphorus in laboratory testing. Project researchers will identify suitable sources of AMD precipitate byproducts and perform lab analysis to determine phosphorus absorption potential. Suitable agricultural field sites will be identified as study areas and appropriate treatment prescriptions will be determined. Field studies will take place and monitoring will be undertaken to determine the effectiveness of the treatment in reducing phosphorus in water samples collected from field drainage.

If this process proves successful in field studies, the resultant benefits would be to utilize a would-be waste product to reduce phosphorus concentrations leaving agricultural fields, improving the ecological integrity of the Chesapeake Bay.