From:	Axelrad, Don
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Subject:	Seminar announcement: Sulfur Biogeochemistry, Sources, Levels and Effects in the Florida Everglades
Date:	Wednesday, November 05, 2008 4:13:55 PM

Bill,

After discussions/Emails with Dave and Cindy, this below is what went out.

I sent it to FDEP, USGS Tallahassee, FSU, FAMU, UF, Florida FWC and a couple other Florida Departments.

On Nov 12 we'll also have a 1:30pm get together with Frank Nearhoof and Daryll Joyner (boss 3 levels up) re sulfur and the 'glades.
My question, what do we have to demonstrate in order that the growers look at S BMP options.

Don
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SEMINAR ANNOUNCEMENT

Sulfur Biogeochemistry, Sources, Levels and Effects in the Florida Everglades

Speaker:
William H. Orem, Ph.D.
U.S. Geological Survey, Reston, VA

Wednesday, November 12, 2008
10:30 – 11:30am (followed by question time)
Room 609
Bob Martinez Center
2600 Blair Stone Road
Tallahassee 32301

In 1995 the USGS initiated the Aquatic Cycling of Mercury in the Everglades (ACME) Project to examine biogeochemical controls on the production and bioaccumulation of neurotoxic methyl-mercury in the greater Everglades ecosystem. Methyl-mercury (CH_3Hg^+) is a very toxic and bioaccumulative mercury compound formed from inorganic mercury by naturally-occurring sulfate reducing bacteria in aquatic ecosystems.

Mercury levels in fish in the Everglades are elevated most probably as a result of the high rate of atmospheric mercury deposition in south Florida coupled with high rates of production of methyl-mercury in Everglades sediments. These elevated mercury levels in Everglades fish have resulted in the Florida Department of Health issuing ***"do not eat"*** advisories for some fish species over much of the Everglades. Such mercury levels also represent a risk to fish-eating wildlife such as wading birds.

One of the unexpected results of ACME research was the discovery that there are elevated levels of sulfur over broad areas of the Everglades, with a gradient of declining sulfate concentration from north to south mirroring the general direction of water flow of the Everglades. Highest

surface water sulfate levels across the landscape are found in Everglades Agricultural Area (EAA) canals. Surface water sulfate and porewater sulfide concentrations in the northern Everglades approach 100 and 1000 times background levels respectively.

Sulfur is not often considered to be an element of major importance in freshwater ecosystems, but ACME biogeochemical researchers (from USGS and the Smithsonian Institution) determined that sulfur is the dominant factor controlling the rate of methyl-mercury production in the Everglades, and the observed mercury distribution in the Everglades food web. Elevated sulfur levels may have effects on the Everglades beyond stimulation of methyl-mercury production rate; other potential risks include sulfide toxicity to flora and fauna, and internal eutrophication - nutrient release from sediments.

In this presentation, Dr. Orem will discuss the distributions, sources, biogeochemistry, and effects of sulfur on the Everglades, and invite discussion of how ecosystem managers can best address this water quality issue.

Several publications on Everglades mercury and sulfur can be accessed at:

http://www.dep.state.fl.us/labs/mercury/orem_seminar.htm

For further information, please contact Don Axelrad, 850.245.8072.