

SWEP Capital Chapter Quarterly Newsletter



DEP & USGS's Cooperative Emerging Contaminant Research in PA (May Lunch & Learn)

By Arianne Proctor

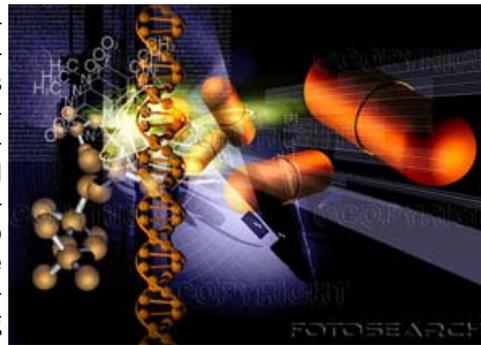
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Pharmaceuticals and personal care products (PPCPs) are a diverse collection of thousands of chemical substances that are consumed by people and animals for health, hygiene or cosmetic purposes. Endocrine disruptors are a subset of this collection and are agents that affect the endocrine system, a complex network of organs which secrete hormones into the bloodstream to target cell receptors in other organs or tissues to regulate many of the body's functions. Endocrine disrupting compounds are suspected to cause negative reproductive and developmental health effects in humans, animals and the aquatic environment by mimicking or blocking hormones and therefore disrupting the body's normal functions. Some examples of known endocrine disrupting compounds include pesticides, plasticizers and flame retardants.

These compounds enter our environment through various passageways. Some common human activities that contribute pharmaceuticals

and personal care products to the environment are when medications are not metabolized completely by the body and are excreted into the sewer system, when unused or expired medications are flushed or placed in the trash, or when externally applied personal care products



are washed down the drain. At this time, there is not one drinking water or wastewater treatment technology available to remove all of these compounds. The removal efficiency of the treatment technology is related to the structure and concentration of the compound. Each treatment technology has pro's and con's. For this reason, we must place strong emphasis on preventing pollution at the source.

In 2006, the PA Department of Environmental Protection (DEP) entered into a coop-

erative agreement with the U.S. Geological Survey (USGS) Water Science Center in New Cumberland to conduct a reconnaissance study to screen for pharmaceuticals and antibiotic compounds in surface and well waters in South Central Pennsylvania. Samples

were collected at upstream and downstream locations in the vicinity of 6 agricultural operations and 5 wastewater treatment plants. Samples were also collected at 6 groundwater stock wells in agricultural areas. Samples were analyzed for 15 phar-

maceutical and 31 antibiotic compounds. In the stream samples, 13 pharmaceuticals and 11 antibiotics were detected at least one time. Carbamazepine was the most frequently detected pharmaceutical, followed by caffeine and diphenhydramine. Sulfamethoxazole was the most frequently detected antibiotic followed by trimethoprim, ofloxacin, erythromycin, and azithromycin. In 24 well samples, there were a

Events at a Glance

- September 2008- Lunch & Learn
- October 2008- Mentoring event

(Con't on page 5)

**Save the date:
March 5, 2009
For the 4th
annual
"Making
Environmental
Connections"
conference**



**Welcome to
Member's
Corner - A
venue to
introduce
and share
information
about your
fellow SWEP
members!**

SWEP of Greater Philadelphia news

By Member Bonita Moore

Bonita Moore, Environmental Chemist from PADEP attended the SWEP of Greater Philadelphia's PA DEP update and annual business meeting. The bulk of the meeting comprised the presentation of the PA DEP regulatory updates, followed by a networking lunch and their business meeting and the Touchstone Award Committee Kick-off meeting. Members and non-members paid a fee for lunch and proceeds benefited the SWEP of Greater Philadelphia Scholarship Fund.

Bonita presented an overview of the proposed regulatory changes to the PA Code, Chapter 93 (relating to Water Quality Standards) and Chapter 16 (relating to the Toxics Management Strategy - Statement of Policy).

SWEP of Greater Philadelphia contact person is:
Lynda Rebarchak
DEP Community Relations
Coordinator
Southeast Regional Office
484-250-5820

Agenda items included:

- Municipal and Residual Waste Reg Changes-Jim Wentzel
- Uniform Environmental Covenants Act (UECA)-Andy Hartzell
- New PA Surface Water Quality Standards-Bonita Moore
- Act 2 Program Changes - Sarah Pantelidou
- Storage Tank and Spill Prevention Program Amendments-Kathy Naugle
- PA New "Agreement State" Status with NRC- Terry Derstine



Member's Corner: Spotlight on Rhonda Manning

Rhonda Manning is Chief of the Program Analysis and Support Section in the Bureau of Water Standards and Facility Regulation, DEP. She took this position in February 2005.



Rhonda received her Bachelor's Degree in Biology and Master's of Business Administration at Bloomsburg University, which is located in north-central Pennsylvania. She started her career as a laboratory technician, for both the water and wastewater plants, at the Sunbury Municipal Authority. With this experience, she expanded her horizons and took a position with Pennsylvania American Water Company as a plant operator. Rhonda is currently certified to operator both water and wastewater facilities.

After working in private industry for twenty-one years, she made a career move to

the public sector, state government. Rhonda began her public service in the Public Bathing Place Program with the PA Department of Health. Her work also included investigating environmental exposures to human health risks. She left Health to work in the Drinking Water and Wastewater Programs in DEP. I guess you could say she came full circle, she is finishing her career in the exact same field she began her career, drinking water and wastewater. The only difference is at opposite sides. Rhonda began her career implementing regulations and now helps write the regulations!

A major research project in Rhonda's section is the pharmaceutical research effort. (see article on page 1) This is a cooperative agreement with DEP and USGS. The first phase of the research has been completed and the report is available on the USGS website. The second phase of the research is currently underway and results will be available to the public in 2010.

Rhonda's hobbies and interests outside of work include photography, painting, tennis and volleyball. She also enjoys traveling to other parts of the world to sight see and experience different cultures. Rhonda is the chair for SWEP's Website/Newsletter Committee.

The SWEP Capital Chapter would like to make "Member's Corner" a reoccurring feature in our newsletter. Please consider submitting a short piece about something that has impacted the path of your personal or professional life.

**Member's
Corner**

Save the Date! Meetings, Hearings to be Held on Water Resources Planning, Act 220

You are invited to attend combined public meetings and hearings on the Draft Pennsylvania State Water Plan. DEP and the Statewide and Regional Water Resources Committees will be seeking comments from the public in early fall 2008. Meetings and hearings are set for:

Ohio Region: Monday, September 8
Great Lakes Region: Tuesday, September 9
Delaware Region: Thursday, September 11
Lower Susquehanna Region: Monday, September 15
Upper/Middle Susquehanna Region: Wednesday, September 17
Potomac Region: Thursday, September 18

The meetings and hearings are an opportunity for citizens to provide input on drafts of the updated State Water Plan.

Additional information, including meeting locations and times will be posted on the DEP website in late August at www.depweb.state.pa.us, Keyword: "Water Resources."

SWEP Trivia Question:

*What are
emerging
contaminants*

The Chesapeake Bay Tributary Strategy

Presented at June's Lunch & Learn

SWEP Capital Chapter would like to sincerely thank Shannon Williams, P.E. with Herbert, Rowland & Grubic, Inc., and SWEP member, for her presentation at June's lunch and learn. Ms. Williams' discussion focused on the

The Chesapeake Bay is the world's most productive estuary and more than half of the Commonwealth of Pennsylvania is within the Chesapeake Bay Watershed.

Chesapeake Bay Tributary Strategy (CBTS). The Chesapeake Bay is the world's most productive estuary and more than half of the Commonwealth of Pennsylvania is within the Chesapeake Bay Watershed. The Susquehanna River is the Bay's largest tributary and provides roughly half of the total freshwa-

ter flow. The Chesapeake Bay Tributary Strategy establishes water quality goals aimed at reducing nutrient and sediment loads in the tributary watersheds and Bay. Many thanks to Ms. Williams for her willingness to share her knowledge of an important subject receiving considerable media attention.



The Susquehanna River is the Bay's largest tributary and provides roughly half of the total freshwater flow.

If you have any interest in presenting your area of study at a future SWEP lunch and learn please contact Sharon Hill at shill@state.pa.us or (717)787-6842.



New ASTM Standard for Vapor Intrusion

Indoor air quality issues may arise when vapors containing volatile organic compounds (VOCs) migrate into buildings from nearby areas containing contaminated soils and groundwater. This phenomenon, commonly referred to as "Vapor Intrusion" (VI), has become a significant issue for the assessment/closure of contaminated sites and a potential liability to property owners in real estate transactions.

Currently, the guidelines under American Society for Testing and Materials (ASTM) Practice E1527-05 and the United States Environmental Protection Agency (USEPA) All Appropriate Inquiry (AAI) rule do not require the assessment of potential VI issues during the performance of a Phase I Environmental Site Assessment (ESA). To address this issue, the ASTM has approved its new "Standard Practice for Assessment of Vapor Intrusion into Structures on

Property Involved in Real Estate Transactions" and has designated the standard as E-2600. The new VI standard was released by ASTM in early March 2008.

The March 2008 ASTM Vapor Intrusion Standard considers a VI Assessment to be a non-scope consideration that can be added to the work scope for a Phase I ESA in a similar fashion to asbestos and lead-based paint evaluations. ASTM defines a Vapor Intrusion Condition (VIC) as "the presence or likely presence of any chemical of concern in existing or planned structures on a property resulting from an existing release or past release from contaminated soil or groundwater on the property or within close proximity to the property, at a concentration that presents or may present a human health risk". Constituents of concern (COC) may include but are not limited to: chlorinated VOCs such as 1,1,1,-TCA,

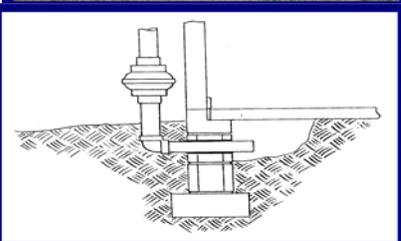
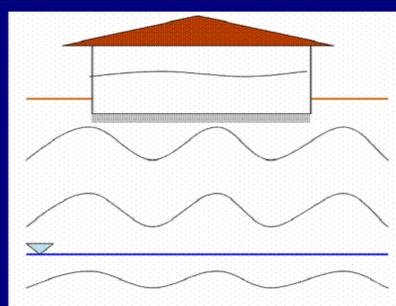
TCE, PCE, and vinyl chloride; petroleum hydrocarbon VOCs such as BTEX; selected semivolatiles VOCs such as naphthalene and poly aromatic hydrocarbons; and some inorganic volatile analytes such as mercury.

Skelly and Loy has more than 20 years of experience performing environmental assessments and compliance inspections, conducting geologic and hydrogeologic investigations, providing aboveground storage tank (AST) and underground storage tank (UST) support services, designing environmental remediation systems, developing plans and specifications, and furnishing engineering/environmental support services. Our portfolio of expert services as they relate to real estate transactions includes, but is not limited to, the following.

Phase I & II ESAs
Indoor Air Sampling

VI Assessments, Modeling, & Mitigation
Indoor Air Quality Assessments

Site Investigations
Soil Gas Surveys



For more information about Skelly and Loy's vapor intrusion services, please contact:

Mark B. Ioos P.G.
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(800) 892-6532 or (717) 232-0593

Emerging Contaminant Research (con't from page 1)

total of five minute detections just at or a little above the minimum reporting levels. The report for Phase I titled *Concentrations of Selected Pharmaceuticals and Antibiotics in South-Central Pennsylvania Waters, March through September 2006* is available as a portable document format (PDF) file at the following web site: <http://pubs.water.usgs.gov/ds300/>.

With DEP Secretary Katie McGinty's continued commitment to providing the residents of Pennsylvania the highest quality of water possible, Deputy Secretary Cathy Curren Myers and EPA, together with USGS contributions, allotted more funds to continue the emerging contaminant research in PA. In 2007, the PADEP commenced a 3 year cooperative agreement with the USGS titled; "Characterization of Emerging Contaminants and Fish Health in Pennsylvania Surface Waters." The focus for Phase II is now statewide instead of centralized and will evaluate our sourcewater and will conduct a comprehensive fish health assessment.

Phase II is a multifaceted study. Part one of Phase II will continue to characterize surface water downstream of wastewater treatment plants. Analysis will include additional suites for hormone analytes and wastewater compounds in water and streambed sediment as well as the original suites for pharmaceuticals and antibiotics. Part two of Phase II involves the chemical analysis of surface water at 27 Water Quality Network (WQN) stations in sourcewater statewide. Stations were selected based on their proximity to Public Water Supply surface water intakes. Samples will be analyzed quarterly for three years for pharmaceuticals, antibiotics, and hormones as well as pathogens (*cryptosporidium*) and bacteria (*E.*



coli and *Enterococci*). Contaminant levels at these stations will be studied for their impacts on drinking water sources. Part three of Phase II will involve the identification of pathogenic bacteria. The USGS Michigan Water Science Center (WI WSC) and the PA DEP Bureau of Labs will analyze for pathogenic and fecal source markers from *E. coli* and enterococci in a side by side method comparison using cultures resulting from the PA DEP *E.coli* and enterococci quantification from part two of Phase II. By identifying specific genes through a polymerase chain reaction (PCR) laboratory technique we may determine if the contaminant source originates in animals or humans and may also determine if the *E. coli* are pathogenic to humans. A formal USGS peer-reviewed report, published in the Scientific Investigations Report series, will be available in June of 2010. The report will characterize the distribution and occurrence of emerging contaminants, pathogens and bacteria, as well as the identification of pathogenic and fecal source markers.

In recent years, much attention has been focused on the fish kills in the Potomac and Susquehanna watersheds in which the occurrence of intersex conditions in male small mouth bass were documented. Intersex is a general term for gonadal abnormali-

ties in which male and female characteristics are present. While it is believed that intersex is not the cause of the fish kills, there is increasing evidence that many of these emerging contaminants also adversely affect the immune system and disease resistance. It is widely believed that intersex is also an indicator of exposure to estrogenic compounds. The final component of Phase II will evaluate the environmental impact of emerging contaminants, particularly hormones, by the assessment of the general and reproductive health of selected fish species. The target species include the white sucker, a bottom feeder, and small mouth bass, a predatory species. All sites will be sampled during the summers of 2007 and 2008. A final report evaluating the fish health in PA source water is anticipated in 2009 and will assess whether impacts to fish are occurring that may be associated with the occurrence of emerging contaminants.

Of particular concern are whether or not these compounds pose a threat to human health in the quantities observed and what treatment technologies for drinking water and wastewater adequately remove such compounds. To date, concentrations of analyzed compounds have been detected in the range of parts per billion (ppb) and parts per trillion (ppt). Research has not proved these concentrations to be detrimental to human health, although some of these compounds have been linked to negative effects in fish and aquatic health. We will be using the results from Phase II as a baseline to monitor trends

(Con't on page 6)

P.O. Box 11666
Harrisburg, PA 17108-1666

SWEP Member News

Promotions!

SWEP Trivia Answer:

Emerging contaminants include endocrine disruptors, pharmaceutically active compounds and more recently, personal care products.



SWEP Society of Women
Environmental Professionals

Website/Newsletter Committee Members

- Rhonda Manning-Chair
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CONGRATULATIONS

to SWEP members, **Rhonda Manning** and **Bev Reinhold**, who are participating in the Class of 2008 Leadership Development Institute for Women in State Government.

They join several other SWEP members who are alumni of this institute.

The following Members have been recently elected to serve as Committee

Chairs:

- **Denise Brinley**-Vice-Chair
- **Pat Leitman**-Program Committee Chair
- **Sharon Hill**-Marketing & Public Relations Committee Chair

Congratulations to the new officers!

Member **Denise Brinley** accepted an Executive Assistant position with the Office of Community Revitalization and Local Government Support.

Member **Sandra Roderick** has been promoted to Executive Assistant with the Office of Administration.

Emerging Contaminant Research (con't from page 5)

and to determine if the concentrations of these compounds are increasing over time. It is our opinion that outreach and education would offset future increases in concentrations due to excessive human activities.

We are also actively screening the compounds that are most commonly detected in the greatest concentrations so that we may advise EPA where to prioritize risk assessments through the Contaminant Candidate Lists as well as use the data to focus future efforts. Ap-

proved and available laboratory methods restrict the compounds that can be analyzed; therefore we urge EPA to continue to concentrate on developing new methodology. We continue to review research related to the most commonly detected chemicals to determine which of the various wastewater and drinking water treatment technologies are most effective at removing particular contaminants.

We have to believe that these compounds have existed in the environment for as long as they have been

used commercially. Therefore the existence of these compounds in our waters is not a new phenomenon. It has only become more widely evident in the last decade because of continually improving chemical analysis methodologies that have lowered the limits of detection to the level of parts per trillion. Even though we believe these compounds are not new to our environment, we still believe that there could be reason for concern and therefore reason to address the issue here in Pennsylvania and therefore dedicate funding to advance our knowledge of the subject.

NEWSLETTER ARTICLES AND MEMBER NEWS SOUGHT

Your input is extremely crucial to a successful and interesting newsletter!

Newsletters will be published each quarter.

- October 2008
- January 2009
- April 2009
- July 2009

Please have articles to committee 2 weeks prior to the beginning of the quarter.



If you are interested in submitting an article about a project you are working on or

about a topic you are interested in, don't be shy, we would love to hear from you!

Also, please send us your news, photographs and announcements to include in upcoming newsletters.

Please forward all information to SWEP Newsletter/