

**17th Annual
Maryland Ground Water Symposium**



**Session Guidebook
Thursday, September 25, 2008**

MORNING SESSION ONE

Arsenic Distribution And Occurrence In Ground Water From Coastal Plain Aquifers In Maryland

David D. Drummond, Maryland Geological Survey
(Wayne Room)

Arsenic concentrations exceed the US EPA maximum contaminant level (10 µg/L) in ground water from two coastal plain aquifers in some areas of eastern Maryland. This presentation will discuss a study that is underway to determine the distribution of dissolved arsenic in the Aquia and Piney Point-Nanjemoy aquifers, and to investigate the reasons for spatial and depth distribution of ground water with elevated arsenic concentrations.

About 250 wells were sampled for arsenic and other constituents to establish geochemical factors associated with the occurrence of elevated arsenic concentrations. About 3,000 additional arsenic analyses were obtained from county health departments, and 200 analyses from the Maryland Department of the Environment (MDE) to supplement data collected as part of this study.

Laying The Groundwork At The Local Level For Water Reuse Projects In Maryland

Robert Mitchell, Worcester County Department of Environmental Programs
Rebecca Kugel, Howard County Bureau of Utilities
(Maryland Room)

Maryland Counties are looking for various ways to accommodate growth and redevelopment while at the same time protecting the environment. This presentation will contrast the different approaches and needs of a rural county that is looking at spray irrigation and a suburban county trying to maximize its reuse possibilities.

The groundwork is not always done by the local environmental department. Other agencies like planning, public works, utilities, and elected officials will also be part of this solution. The state is moving forward on reuse, but they need partners at the local level. Howard County is a suburban county that expects an influx of new business and residents in the coming years. The expansion of their treatment plant will necessitate finding water reuse projects that will reduce their point source nutrient loadings by reducing their flow through water reuse projects. Worcester County is a mostly rural seaside county with a large agricultural industry. To preserve the quality of the Coastal bays and accommodate new growth, the concentration has been to partner with their farmers and resort golf courses to eliminate or reduce point source treatment loadings through spray irrigation.

MORNING SESSION ONE (continued)

Overview Of The Ground Water Rule

Nick Tymchenko, US Environmental Protection Agency
(Regency Room)

This presentation will provide background on the Ground Water Rule (GWR), the purpose of the rule and EPA's concerns about ground water systems that are susceptible to fecal contamination.

The purpose of the GWR is to provide for increased protection against microbial pathogens in public water systems that use ground water sources. The rule also applies to any system that uses both surface and ground water where the ground water is added directly to the distribution system and provided to consumers without adequate treatment. Since disease-causing pathogens may be found in fecal contamination emphasis is placed on ground water systems that are susceptible to fecal contamination.

Onsite Systems: Should They Be Used To Regulate Growth?

Gene von Gunten, RS, Montgomery County Dept of Permitting Services
(Embassy Room)

Statewide, the use of innovative sewage disposal technology is not allowed for new construction. Politicians and environmentalists fear the unbridled use of these systems would result in the construction of thousands of new homes- many in the so-called "Critical Areas" that have been delineated around the Chesapeake Bay and its many tributaries. This presentation will focus on onsite systems in Montgomery County, a densely populated suburban county where the use of "Shared Septic Systems" is prohibited.

Despite the fact that shared systems can promote land preservation, the County Council wants to avoid the added growth. In 1980, the County created a rural zone where the maximum housing density would be one house per 25 acres. As other portions of the County approach "build-out", this rural area has come under increasing pressure to provide large-lot building sites. County landowners lobbied the County Council in 1989 to modify the County Sewage Disposal Code to allow the use of sand mound systems. During 2005, members of the County Council and the Montgomery County Planning Board proposed changes that would restrict the use of mound systems in the subdivision of land. In 2006, the County Council banned the extension of public water and sewer facilities into the rural zone. Private institutional facilities (PIF's), including large churches and some private schools, were purchasing large tracts of farm land for their expansion plans. The Council also enacted a maximum septic system criterion that is based upon the theoretical housing "yield" which limits the size of these PIF's.

MORNING SESSION TWO

Ground Water Hydrology And Geochemistry Near Existing And Former Wetlands In The Upper Choptank Watershed, Maryland

Judith M. Denver, US Geological Survey

(Wayne Room)

Local ground-water hydrology and geochemistry are critical to the effectiveness of existing and former wetlands at mitigating agricultural impacts on stream quality. This presentation will discuss the Conservation Effects Assessment Project (CEAP), a joint effort of the U.S. Department of Agriculture, U.S. Geological Survey, and University of Maryland. The project involves evaluation of the influence of natural, restored, and prior-converted (drained and used for agriculture) wetlands on local stream quality at eight sites in the upper Choptank Watershed. Shallow wells were installed at each site, and water levels and water chemistry were monitored to determine the orientation of ground-water flowpaths and evaluate the extent to which ground water containing nitrate likely flows through areas with reducing conditions associated with wetlands.

Local ground-water hydrology near existing and former wetlands in the upper Choptank Watershed is controlled by the regional hydrologic setting and the thickness and heterogeneity of the surficial aquifer. In addition, wetland hydrology is dynamic, and may vary considerably with seasonal or climatic fluctuations in the water table.

Greening Of Gray Water

Larry Zinser, Master Water Conditioning Corporation

(Maryland Room)

This session will present, discuss and compare the current variables in efficiency for residential and commercial water treatment systems. The speaker will address the latest concepts in technology that minimize the quality and quantity of treatment discharge. Included will be a discussion of the feed water-discharge water paradox, and a practical guide for assessing efficiency.

Implementation Of The Ground Water Rule

Travis Sterner, RS, MD Dept of the Environment

(Regency Room)

If you are looking for an exciting and informative presentation explaining The Maryland Department of the Environment's (MDE) implementation of the ground water rule, this is the presentation for you. MDE is currently exploring options and developing methodologies to meet the federal requirements of the Ground Water Rule. This presentation will take a look at the ideas MDE is currently considering. These new regulations will affect all ground water systems, including ground water

MORNING SESSION TWO (continued)

transient systems, and county health department personnel working with these transient water systems.

Howard County's Management Of Shared Sewage Disposal Facilities
Rebecca D. Kugel, Howard County Dept of Public Works
(Embassy Room)

Responding to deteriorating water quality in the Chesapeake Bay, the Maryland Department of the Environment placed more stringent nutrient loading restrictions on the land application of wastewater. Howard County, Maryland agreed to be the owner and controlling authority for eight permitted on-site treatment systems with subsoil discharge. This presentation will discuss the experiences of the County since taking control of the on-site systems.

Planning for the systems entailed creating a new division within the Bureau of Utilities. The County Code, developer agreements and declaration of covenants were rewritten to protect the County and residents from poor construction and process failures of the treatment systems.

MORNING SESSION THREE

Aurora Hills Stream And Wetland Restoration Project

Eric Michelson and Keith Underwood, Underwood & Associates
(Wayne Room)

This presentation will focus on construction of a stream and wetland project on five tributaries to Wells Branch, in Anne Arundel County, MD. This project involved implementing a number of features developed to enhance nutrient uptake and reduce sedimentation, including the heavy use of carboniferous material throughout the system, increasing the hydroperiod and contact with benthos, as well as stream connection to the adjacent soils.

The project presented opportunities to raise local groundwater tables by filling incised stream inverts 10-20 feet and re-hydrating the adjacent soils. It also involved "daylighting" over 300 linear feet of stream, removing it from pipes, exposing it to the native soils, and allowing it to seep through the landscape. Cobble riffle weir grade control was placed in Wells Branch raising the stream invert and re-connecting the stream to the adjacent floodplain. The entire project site was planted with a suite of the native acidophile plant community, including Atlantic White Cedar (*Chamaecyparis thyoides*) and its associates. These methods represent an innovative and effective approach for dealing both with stormwater retrofits in developed uplands as well as sequestering "legacy sediments" in the floodplains of streams.

Do Hydraulic Conductivity Values In Varying Geologic Settings Depend On Selection Of Slug Testing Field Methods And Data Evaluation Techniques?

Amy Martinez and Elizabeth Gehrman, Advanced Land and Water, Inc.
(Maryland Room)

This talk presents statewide field evidence supportive of our conclusion that hydrogeologic factors alone do not control the K value of a shallow saprolite aquifer. Hydrogeologists perform slug tests to determine the saturated hydraulic conductivity (K values) of aquifers. Slug tests support contaminant fate and transport models, hydrologic balance evaluations and groundwater mounding estimates. K values are a key input parameter and accurate evaluations begin with solid controls on field-determined K values. K often is presumed to be an innate aquifer property, with its variability dependent solely on hydrogeologic characteristics of the aquifer such as porosity and permeability. In summary, whereas K variability usually is considered to be solely of hydro-geologic origin, we will present variances in K values attributable to data collection methods and evaluation techniques. The presentation will conclude with recommendations for limiting unintended bias and maintaining conservatism.

MORNING SESSION THREE

Sanitary Surveys And The Ground Water Rule

Dee Whitcomb, RS, MD Dept of the Environment
(Regency Room)

The Groundwater Rule specifies eight required elements of the Sanitary Survey and requires correction of identified sanitary deficiencies within a specified time period. Basics of the sanitary survey procedure will be presented including the updated form, the required elements, and potential defects in design, maintenance, and operation of water systems. To ensure adequate reporting by the delegated Counties, the transient inspection form has been amended. Water Supply's use of information collected during sanitary surveys will also be addressed. This session is highly recommended for personnel who inspect water systems.

Capacity Allocation Model For Onsite System Permitting And County Comprehensive Planning

Craig Goodwin, NCS Wastewater Solutions and
Anish Jantrania, VA Dept of Health
(Embassy Room)

This presentation describes a performance based capacity allocation model that we believe will protect public health and the environment and provide a critical land use/capacity planning tool very valuable to the counties. The model also provides an important tool currently missing in Maryland for developing and managing explicit Chesapeake Bay restoration goals for areas served by onsite systems.

County comprehensive water and sewer plans in Maryland currently delineate those areas to be served by central sewer and those to be served by onsite systems. Critical questions such as how much density onsite systems can support or the impact on county zoning and growth management planning is vague at best. Critical issues such as the impact on Chesapeake Bay restoration efforts cannot be readily addressed. Those areas to be served by onsite systems are in essence "zoned by septic". The basic philosophy used for regulating onsite systems until now is that only certain types of soil and site conditions are "suitable" for dispersing effluent in the ground and that the criteria used for sizing a dispersal system are the single most important factors that predict the overall performance and impact of onsite systems on public health, the environment and land use patterns.

This approach offers flexibility in design, accountability for performance and predictability in community planning. It also removes the unnecessary uncertainty associated with the current approach to permitting onsite systems.

AFTERNOON SESSION ONE

Empirical Methods for Estimating Water Use in the Ft. Meade-Aberdeen Proving Ground Area, Maryland

Marilee A. Horn and Mark R. Nardi, US Geological Survey
(Wayne Room)

Estimates of water use rely on understanding the factors that influence water demand and its associated consumptive use because changes in demand and consumptive use affect withdrawals and return flow. In this talk we describe a method which estimates domestic water demand using a per capita water demand model that relates metered deliveries to domestic users with climate, land-use, water-rate, and census block and block-group data. Prediction of annual, summer, and winter per capita water-demand coefficients for each census block is made through use of the model. Domestic consumptive use will be estimated as the difference between annual and winter domestic water demand. Estimates of commercial and industrial water demand will be based on coefficients derived from reported use and metered deliveries.

Repeatability And Reliability Of Fracture Trace Analysis, And The Use Of Multiple Analysis Sources With Independent Validation To Add Confidence To Fracture Trace Analysis Results

Ethan O. Weikel, P.G., SAIC
(Maryland Room)

Fracture trace analysis is frequently used for the development of ground water supplies and assessment of water availability, as well as many other ground water investigation applications. This presentation addresses the causes for inconsistency in fracture trace analysis, and a presents a new methodology for fracture trace analysis.

Studies of the repeatability of fracture trace analysis among qualified geologists with the same source data indicate that results are often not in agreement. Even repetition of the same analysis by the same geologists a year later was at times not in agreement with their previous results. With repeatability in question, the reliability of fracture trace analyses should be questioned. The subjectivity of fracture trace analysis has been well documented since the late 1950s. Multiple Analysis Sources with Independent Validation (MASIV) yields more repeatable results than traditional methods, and adds statistical and spatial validation of the analysis results across multiple data sources.

AFTERNOON SESSION ONE (continued)

Overview Of Well Performance Studies And Practical Implementation

Jim Bailey and Mark Steele, Kleinfelder, Inc.

(Regency Room)

The long term operation of a well or well field requires regular performance monitoring and periodic maintenance. This presentation will highlight the findings of some interesting recent studies related to declining well performance and rehabilitation. The studies include two from KIWA water research in the Netherlands that relate to mechanical plugging of aquifers in the production zone of wells, and different operational strategies to address mechanical and biological fouling problems. Several studies from Germany are discussed including an evaluation of the effectiveness of swabbing as a development tool, the energy penetration ability of various mechanical and impulse generation methods, the effectiveness of various acids to dissolve different types of iron oxides, and the differential biologic fouling of well screens related to ground water flow conditions. Finally a study from Australia is presented that looks at impacts of well drilling, and construction on the long term operation of wells completed in unconsolidated aquifers. Several examples are presented that illustrate the real world implementation of some of these research findings including the City of Salisbury Maryland and the City of Berlin, Germany that can be applied locally.

Ground-Water/Surface-Water Interactions And Evidence Of Septic Waste Contamination, Charles County, Maryland

Michelle M. Lorah, U.S. Geological Survey

David Gardiner, Port Tobacco River Conservancy, Inc

(Embassy Room)

The presentation discusses the results of a study of ground-water transport of contaminants released from septic systems as a potential source of bacteria and nutrients in surface water. A residential area within the Port Tobacco River watershed was selected for the study, which was conducted in cooperation with the Port Tobacco River Conservancy, Inc., and Charles County, Maryland. Ground-water samples were collected from piezometers installed adjacent to intermittent streams and along ground-water flowpaths from upland areas of the community to lowland areas adjacent to the Port Tobacco River. Porewater samples were collected from piezometers installed in the bottom sediments of two intermittent streams and in the Port Tobacco River. Surface-water samples were collected near the porewater samplers and at other locations along the streams. All samples were analyzed for nitrate, ammonia, and specific conductance, while samples from selected sites were also analyzed for enterococci bacteria, organic nitrogen, total organic carbon, major ions, optical brighteners, and organic wastewater compounds. Organic wastewater results from the storm event in June 2008 will also be discussed.

AFTERNOON SESSION TWO

Baseline Ground Water And Surface Water Quality Data Collection And Analysis For The Little Blackwater River Watershed, Prior To Anticipated Land Use Changes

Brandon J. Fleming, US Geological Survey, (*Wayne Room*)

Urbanization of agricultural areas in the Little Blackwater Watershed, Dorchester County, Maryland, presents an opportunity to measure effects of these land use changes on water quality within the watershed. As part of a combined effort with other agencies, the U. S. Geological Survey (USGS) collected baseline data on water quality in both surface and ground waters periodically from March 2006 to June 2008. The most comprehensive sampling effort, which included major ions, nutrients, pesticides and dissolved gases took place in early June of 2008. A conceptual model of local hydrogeology, developed using geologic drilling logs, hydrologic observations from wells, surface water sites, and real time stream gages, is being constructed to provide the framework within which to interpret the results of the water quality analysis. Downstream of the Little Blackwater River Watershed is the Blackwater National Wildlife Refuge (BWNWR), a very sensitive ecosystem, which has undergone large scale losses of marsh lands over the last half century. Possible contributing mechanisms include: sea level rise, invasive rodents (Nutria), decrease in deep ground-water discharge into the marsh system, and transport of agricultural and urban compounds from the Little Blackwater River Watershed, the latter being the focus for this study.

Naturally-Occurring Radionuclides and the Radionuclide Rule – What You Measure May Not Be What You Want – A Case Study for Poolesville, Maryland. Kathleen Mihm, S. S. Papadopoulos & Associates, Inc

In November 2005, the Maryland Department of Environment (MDE) notified the Town of Poolesville, Maryland that four Town wells were potentially in violation of the water quality standard for alpha radionuclides. The governing water quality standard, also known as the Radionuclide Rule, establishes maximum contaminant levels (MCL) for radionuclides in public water supply and provides a conservative approach to identify drinking water systems that may be in violation of the standard. Due to complexities of the occurrence of naturally-occurring radionuclides in groundwater, the procedures outlined in the Radionuclide Rule can lead to apparent violations of the water quality standard for some groundwater. This presentation focuses on the Town of Poolesville and describes lessons learned about specific laboratory analytical methods that must be used for the measurement of both uranium activity and uranium concentration to demonstrate compliance with the gross alpha activity and uranium MCLs.

AFTERNOON SESSION TWO (continued)

Surface Water Treatment Rule: Assessing And Determining Fractured Rock Ground Water Sources For Ground Water Under The Direct Influence Of Surface Water (GWUDI)

Allison Tritt, RS, Maryland Department of the Environment
(Regency Room)

The main topic of this session is how to determine the surface water treatment rule (SWTR) number for a source. The SWTR number indicates one of four groups defined by MDE that indicate the vulnerability of the source to surface water influence. This session is geared toward the County Health Department employees who will be making these determinations as part of the County Delegation Agreement. The subjects covered in this session include: an overview of the requirements of the SWTR that apply to GWUDI, an overview of how GWUDI determinations have been handled by MDE to date, and training on how County Health Department employees will make the determinations in the future.

Geographic Information System Applications Case Study In Carroll County

Leigh Broderick, RS, Carroll County Health Department
(Embassy Room)

Over the last few years, the Carroll County Bureau of Environmental Health has begun to tap into the potential that GIS offers for doing more efficient and thorough reviews of plans for proposed lots, proposed commercial sites, and the development of existing lots of record. Initially, the primary use was to identify whether a property is a "site of environmental concern" or proximal to sites of environmental concern. Within the past year, the Carroll County government has made accurate flow topography for the entire county available for our use on the GIS. This has allowed our staff to verify concerns relating to topography. Most recently, through the use of grant funding, a data layer has been constructed that will make staff aware of earlier reviews completed on specific properties (previously, this would have been accomplished through senior staff's recollection).

AFTERNOON SESSION THREE

Water Quality (Data) Exchange And The Approach To Integrate Private Wells Data, Ming Jiang, MD Dept of Environment, (Wayne Room)

This presentation discusses the Water Quality Exchange (WQX) Grant and the possibility of using the online data collection system and the GIS site to integrate private wells information.

The WQX Grant, which SSA received from EPA 2005, includes three deliverables: create an online data collection system for local data providers, submit STORET data (the database for Maryland ambient water quality data) to EPA Node, and create a GIS website. The online data collection system and the GIS site are in the process of being finalized. MDE is exploring the possibility of utilizing these two systems to integrate private wells information; currently this information is maintained by the Counties due to regulations. Once integrated, the information will be transferred to DHMH for the Environmental Health Tracking and also used for various environmental evaluations. Participating Counties can submit their private wells data to MDE through a data file upload. Since a few Counties are using PatTrac, it is being considered to be the standard data format. For non-PatTrac Counties, a template will be provided for their data standardization. MDE will help with the conversion processes. Data collected will be made available for query and download through the public GIS website, in accordance with the data from MDE Public Drinking Water and STORET. The GIS site is designed to be interactive and both the queried data and map are downloadable, to achieve the goal of data sharing.

Tier II Anti-Degradation Case Studies, Mathew Rowe, MD Dept of Environment, (Maryland Room)

The “three-legged stool” of the Clean Water Act is comprised of designated uses, criteria to protect those uses, and an anti-degradation policy to ensure that existing water quality is maintained. Maryland’s anti-degradation policy is specifically designed to protect high quality or Tier II waters where aquatic communities (both fish and benthic indices evaluated using Maryland Biological Stream Survey data) exceed a minimum score of 4. This presentation will discuss the unique set of regulatory issues associated with some of the Tier II case studies, including Terrapin Run, Hoyes Run, Puzzley Run, and Gillis Falls.

Activities/Discharges that may impact water bodies designated as Tier II require an anti-degradation review to ensure that the assimilative capacity (AC) of that water body, or ability to withstand changes in water quality associated with new discharges, is not exceeded. Discharges shown to exceed AC require a socio-economic justification demonstrating a substantial public and economic benefit to lowering water quality. In addition to discharges, the Maryland Department of the Environment is also considering the impact of both ground and surface water

AFTERNOON SESSION THREE (continued)

appropriations on Tier II waters. Since many of the details of Maryland's anti-degradation policy are not addressed in regulation, these case studies will be critical in developing a consistent, and scientifically and legally-defensible approach to protecting Maryland's high quality Tier II waters.

Geothermal Wells In Maryland

Barry Glotfelty, MD Dept of Environment
(Regency Room)

Geothermal wells are increasingly being used as an energy conserving technology in Maryland. This presentation will discuss types of geothermal wells and the laws, regulations and policies governing their use in Maryland. Emphasis will be placed on the permitting and construction requirements for closed and open loop geothermal well installations.

Onsite Sewage Disposal Of High Strength Wastewater

Don Hammerlund, MD Dept of Environment
(Embassy Room)

This presentation will discuss the characteristics of high strength wastewater, the problems associated with high strength wastewater disposal, various measures of waste strength, potential impacts of high strength wastewater and suggested methods of taking high strength wastewater into account in the onsite disposal of wastewater.

A properly designed, installed and maintained onsite sewage disposal system (OSDS) should adequately treat and dispose of domestic wastewater. If an OSDS is overloaded, either hydraulically or organically, it can malfunction, leading to a health or environmental hazard, or can fail prematurely. Experience in the onsite disposal field, both nationally and within Maryland, indicates some commercial facilities tend to generate wastewater which is more variable, in volume and/or quality than residences. Often, the quality of this wastewater is of a much higher strength.

AFTERNOON SESSION FOUR

SWISS - Innovative Discrete Interval Sampling Technology For Detection And Assessment Of Contaminants In Soil And Ground Water, Brian P. Shedd and Ethan O. Weikel, Kleinfelder, Inc (Wayne Room)

With over half of the U.S. population relying on water sources derived from ground water, sampling and detection of contaminants is of critical importance. This presentation will discuss the Shedd-Weikel Interval Sampling System (SWISS).

SWISS aids in sample collection, detection, and assessment by creating interval isolation and mitigating the possibility of cross-contamination without the costs and difficulties associated with installation and use of currently available interval sampling systems. SWISS technology is simple, taking little more effort than typical well installation; relying on proven oil-field and water industry materials and an innovative custom design to yield a simple, SWISS is a cost effective solution for discrete zone sampling and isolation. The technology allows for a testable seal within the well, provides the predictable characteristics of a standard well structure, and allows the option for removal and abandonment if cross-contamination is detected. Flexible tubing is installed from each interval to the surface to allow for quick and efficient sampling from each zone. Prototyping of the technology is planned with applications for a wide range of hydrogeologic environments.

Groundwater Withdrawals And Surface Water Impacts In The Appalachian Basin, William J. Seaton, ARM Group, Inc (Maryland Room)

The hydrogeologic relationship between surface water and groundwater in the Appalachian Basin has received only limited study, but is the basis of an increasing amount of regulatory oversight. This presentation will review the key points of concern for both the preservation of surface water bodies and the regular use of groundwater resources. In addition, currently employed guidelines for limiting groundwater withdrawals based upon impact to surface water resources will be discussed, including case histories of diminished streamflow due to groundwater withdrawals.

The following will be covered: how (actual or potential) impacts of groundwater withdrawals on streamflow, wetlands and ponds have affected the permitting of wells used for municipal, irrigation and manufacturing water supply purposes; procedures for determining the impacts of a particular groundwater withdrawal upon nearby surface water bodies; the apparent lack of consensus on acceptable levels of impact of groundwater withdrawals on surface water bodies.

AFTERNOON SESSION FOUR (continued)

EMERGING CONTAMINANTS: TECHNICAL AND INSTITUTIONAL CHALLENGES

Simin Rezai, MD Dept of the Environment
(Regency Room)

Unregulated and emerging contaminants like endocrine disrupting compounds (EDCs), such as pharmaceutical and personal care products (PPCP) are entering the environment at the rate of thousands of tons per year. This presentation will the potential for manmade chemicals to cause endocrine disrupting effects and why the preferred way to protect our environment is prevention through cleaner production, i.e., integration of environmental aspects during entire life cycle in product design and development.

As early as the 1960s there was concern about endocrine disrupting compounds. Concern became more widespread in 1990s, when scientists began to look at the potential endocrine disrupting effects from dozens of naturally occurring and manmade chemicals. More than 70,000 chemicals, which are believed to have endocrine disruptive potential, have been released into the environment with many released through the discharge of treated domestic wastewater treatment plant (WWTP) effluents. WWTP are not designed to remove these chemicals. There is no single treatment process that will remove all these contaminants, and removal does not necessarily equal mineralization or loss of endocrine disrupting capacity.

In the EU companies have been forced to take more responsibility for their products at the end of consumer life as the result of a landmark EU chemical law passed in December 2006. The so-called REACH (Registration, Evaluation, and Authorization of Chemicals) regulation is designed to make firms prove the thousands of chemicals they use in products from cars to clothes are safe.

BAY RESTORATION FUND OSDS AND GIS

Joshua Flatley, MD Dept of Environment
(Embassy Room)

The Bay Restoration Fund (BRF) uses Geographic Information System (GIS) for a number of scenarios. This presentation will discuss how the BRF team through use of GIS functions has been able to geocode all installations of best available technology systems, create population maps of septic users, and identify sewer extension areas. MDE and BRF contracted with the Eastern Shore Regional GIS Cooperative at Salisbury University (ESRGC) to create data that would identify all citizens that pay the "Flush Fee" for onsite sewage disposal systems use throughout the state. MDE and BRF have also contracted Towson University to create an interactive online septic mapping management application in both tabular and geospatial format.