



ESTUARY NEWS



NEWSLETTER OF THE PARTNERSHIP FOR THE DELAWARE ESTUARY: A NATIONAL ESTUARY PROGRAM

On the Trail of Two Toxics

By Jennifer Adkins, Executive Director, Partnership for the Delaware Estuary

In 2006, scientists from around our region worked together with us to identify the top science needs in the Delaware Estuary, and toxics topped the list. They are poisonous to fish, wildlife, and people. Once in our soils and waters, these substances can be particularly difficult and costly to detect and remove, and they can persist for long periods of time.

Toxics are not a new problem for the Delaware Estuary – some of the most persistent ones are remnants of our industrial past. The 1996 *Comprehensive Conservation and Management Plan for the Delaware Estuary* includes an entire section on actions needed to address toxics, ranging from identifying sources to setting limits on their use and developing advisories for people who may be exposed to them. PAHs from petrochemicals are one of those toxics. We've learned that they can come from some surprising and preventable sources – like driveway sealants (see page 4).

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Water flows from a sewer's outfall pipe in Philadelphia, where scientists are keeping a close watch on the radioactive pollutant Iodine-131 (see page 3).

MEETINGS CONTACT LIST

Meetings conducted by the Partnership for the Delaware Estuary's implementation and advisory committees occur on a regular basis and are open to the public. For meeting dates and times, please contact the individuals listed below:

Estuary Implementation Committee

Jennifer Adkins, Executive Director (Chair), (800) 445-4935, ext. 102
jadkins@delawareestuary.org

Monitoring Advisory Committee

John Yagecic, Monitoring Coordinator, (609) 883-9500, ext. 271
john.yagecic@drbc.state.nj.us

Toxics Advisory Committee

Dr. Thomas Fikslin, Branch Head, (609) 883-9500, ext. 253
thomas.fikslin@drbc.state.nj.us

Fish Consumption Advisory Team

Dr. Thomas Fikslin, Branch Head, (609) 883-9500, ext. 253
thomas.fikslin@drbc.state.nj.us

Science and Technical Advisory Committee

Dr. Danielle Kreeger, Science Director, (800) 445-4935, ext. 104
dkreeger@delawareestuary.org

Delaware Estuary Education Network

lisa Wool, Program Director, (800) 445-4935, ext. 105
lwool@delawareestuary.org

Polychlorinated Biphenyls Implementation Advisory Committee

Pamela Bush, Esq., Commission Secretary & Assistant General Counsel
(609) 883-9500, ext. 203
pamela.bush@drbc.state.nj.us

Limerick Kids Become Schuylkill Action Students

Approximately 200 children became Schuylkill Action Students on October 14 by planting over 100 trees at Limerick Elementary School in Royersford, Pennsylvania. This future woodland sits beside Landis Creek, a small waterway flowing to Perkiomen Creek and, later, the Schuylkill River.

The purpose of the Schuylkill Action Students program is to recruit volunteers to plant grasses, shrubs and trees near waterways like Landis Creek. This way, polluted runoff is soaked up and filtered naturally by plants. Schools, meanwhile, gain valuable teaching experiences, outdoor learning spaces, and decreased maintenance costs.

This event was made possible by the Montgomery County Conservation District, Spring-Ford Area School District, TreeVitalize, and the Schuylkill Action Network (SAN), of which the Partnership for the Delaware Estuary is a leading member.

The SAN recognizes the value of schools and students as current and

future stewards of clean water. Within days, the SAN will open the competition for Drinking Water Scholastic Awards. Classes and youth groups can earn these awards by carrying out in-class lessons or outdoor projects that improve the Schuylkill River's health. Visit SchuylkillWaters.org to learn more about these awards and how your school can win.

\$400K Flows Into Schuylkill

Seven projects in four Pennsylvania counties received almost \$400,000 on September 14 when grants were announced for the Schuylkill River Restoration Fund. Each project was chosen for its potential to make the Schuylkill River cleaner. They include:

- \$99,450 for the Schuylkill Headwaters Association to prevent an abandoned mine from polluting Wagner Run
- \$97,755 for the Berks County Conservancy to control runoff from three farms
- \$60,000 for waterfront and greenway improvements in Philadelphia's Shawmont neighborhood
- \$55,000 for the Montgomery County Conservation District to stop streambanks from washing away along Stony Creek
- \$50,000 for Greening Greenfield to install a green roof at Albert M. Greenfield School in Philadelphia
- \$30,000 for Maiden Creek Township to improve six acres neighboring Willow Creek
- \$4,000 for the Berks County Conservancy to preserve a 78-acre property in Pike Township

Contributors to the Schuylkill River Restoration Fund include Exelon Corporation and the

Philadelphia Water Department. The Partnership for the Delaware Estuary also made a small contribution for the first time. For further details, please visit SchuylkillRiver.org/Grant_Information.aspx.

How-to Guide Debuts for Businesses

Members of the Schuylkill Action Network have published a free guide to help business owners make their properties environmentally friendly.

The new handbook, entitled "Green Guide for Property Management," is now available at SchuylkillWaters.org and DelawareEstuary.org. It shows readers a variety of ways to capture or divert rain and melting snow before they become polluted stormwater. Examples of projects range from low-cost ponds, rain gardens or wetlands to long-term investments like green roofs, porous paving, underground storage tanks and more.

Stormwater runoff pollution occurs when rain and snowmelt carries litter, dog waste, and other contaminants into storm drains. This water can overflow from sewer pipes into creeks and streams. It can also wash directly into waterways after flowing across dirty parking lots, roofs and streets.

Members of the Schuylkill Action Network saw the value of such a handbook after the Philadelphia Water Department created its own in 2010 to aid businesses trying to reduce their stormwater bills. This free guide is available at www.Phila.gov/Water/Stormwater_Where.html.

Printed guides for both the Philadelphia Water Department and the Schuylkill Action Network can be obtained from the Partnership for the Delaware Estuary by calling (800) 445-4935, extension 106. ■



The Hilsmier family plants a tree outside Limerick Elementary School in Royersford, Pennsylvania on October 17 as part of the Schuylkill Action Students program. They include, from left to right, Kevin, Jenna, Tori, and Janet.

PWD Scouring Schuylkill for Radioactive Iodine

By Julia Rockwell, Project Engineer, Philadelphia Water Department

Following the earthquake and tsunami that severely damaged Japan's Fukushima nuclear power plant this past spring, the U.S. Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (PADEP) increased monitoring of radioactive contaminants, including Iodine-131 (I-131), in both surface water and treated drinking water in Pennsylvania.

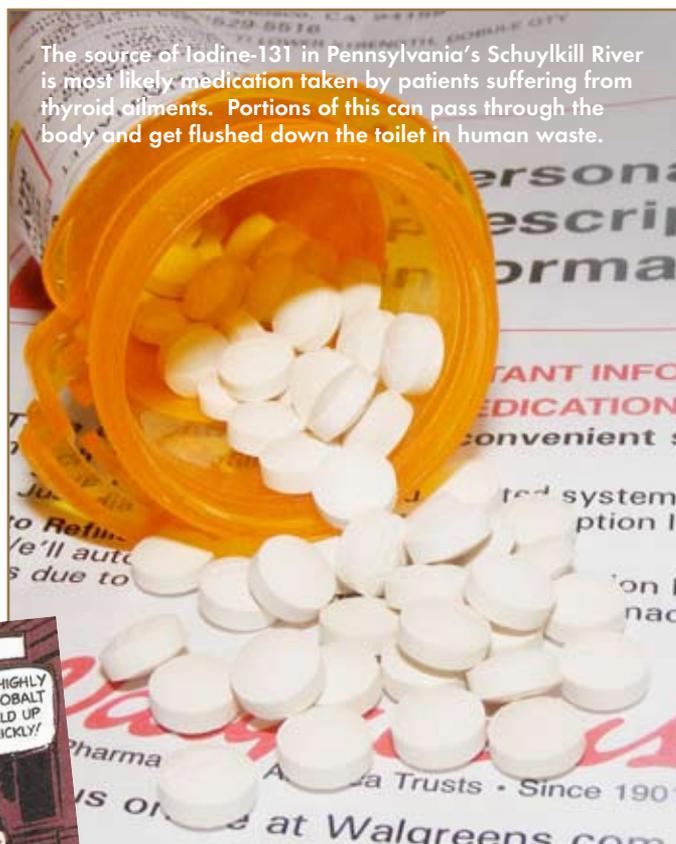
Upon reviewing the monitoring results from both agencies, the Philadelphia Water Department (PWD) identified the need to implement a sampling program to better characterize sources and levels of I-131 in Philadelphia's drinking water supplies, the Schuylkill and Delaware rivers.

Iodine-131 is a radioactive, man-made form of iodine that is a byproduct of nuclear energy production. Iodine-131 is used in medicine to diagnose and treat disorders of the thyroid gland. In the mid-1990s, hospitals began allowing thyroid patients treated with radioactive I-131 to return home shortly after receiving treatment. The portion of an I-131 dose that is not absorbed by the patient during treatment is eliminated through his or her waste and is eventually treated at a wastewater treatment plant.

Since 1989, the PWD has worked with the EPA on a voluntary basis to provide quarterly river-water and drinking-water samples for analysis of various radioactive elements. Monitoring drinking water for radioactive materials is one element of the EPA's RadNet program, a national radiation monitoring program. RadNet data from the PWD's three drinking-water treatment plants, from both before and after the Fukushima accident, indicate that there is no public health risk. However, a potentially worrisome upward trend of I-131 in Philadelphia's RadNet samples over the past decade has led the PWD to embark on a comprehensive I-131 sampling program.

The PWD commenced a multiphased sampling program for I-131 in April. The current sampling program consists

The source of Iodine-131 in Pennsylvania's Schuylkill River is most likely medication taken by patients suffering from thyroid ailments. Portions of this can pass through the body and get flushed down the toilet in human waste.



of routine, weekly sampling for I-131 at several locations along the Schuylkill River, including two locations at Philadelphia's drinking water treatment plants. In addition to routine sampling, the

PWD conducted a low-flow sampling program in conjunction with the PADEP this past summer when river flows were their lowest. The low-flow samples were taken downstream of larger wastewater treatment plants on the Schuylkill River. Samples taken during low flow were minimally affected by rainfall and dilution, providing a clearer picture of the presence of I-131.

The PWD's sampling indicates that the city's surface waters are affected by detectable and highly variable levels of I-131. The PWD believes the source of I-131 in the Schuylkill River and its tributaries is potentially linked to its use in the treatment of thyroid patients and its eventual discharge into surface waters via wastewater treatment plants. Other possible sources of I-131 in the Schuylkill River continue to be investigated.

The city's efforts to identify sources of I-131 have initiated a national discussion that will likely continue for years to come. The PWD's approach to studying I-131 levels in the Schuylkill River reflects the department's multi-barrier approach to ensuring the safety and quality of Philadelphia's drinking water, as well as the PWD's commitment to informing regional and national discussions on drinking-water protection. ■

Credit: Flickr user Victoria Shephard / Newbirt35

Coal Tar Sealants:

A Source of Toxic PAH-Pollution

By Thomas E. Ennis, Professional Engineer and Blogger for Coal Tar Free America

Ever cringe while watching a video from the '50s of children being sprayed with DDT at a neighborhood pool? Maybe you were one of them! Or do you ever wonder, what were they thinking as doctors smoked in patients' rooms in the '60s? Ever feel that way when you or your neighbor seals a driveway? Do you feel a sense of foreboding for the environment and perhaps the

children that may play on this surface? Most don't—yet, but I do, and let me tell you why.

What is Coal Tar?

Most of the black liquid sprayed or mopped onto driveways and parking lots as pavement preservation or beautification is made from a material called "coal tar." Coal tar is a waste product from the steel industry where purified coal (called "coke") is used. Consequently, the most common kind of hazardous waste site in the United States is from coal tar. That fact prompted one headline from the *Chicago Tribune*: "Too Toxic for the Dump, But OK for Your Driveway."

There are other parking-lot sealants on the market that are much less toxic, like asphalt, gilsonite or acrylic, but their use is far less common.

What is the Problem with Coal Tar-based Pavement Sealant?

"There is a very clear connection between the use of these sealants and high levels of contamination downstream," said Dr. Alison Watts, a University of New Hampshire researcher who studied the connection between parking-lot sealant and stream pollution. "The problem isn't going to go away if you keep putting this stuff down every three years."

The chemical of concern is actually a family of chemicals: polycyclic aromatic hydrocarbons (PAHs).

Just last year, the instantaneous effects of coal tar sealant pollution were caught on film in Boone, North Carolina after a coal tar sealant applicator's work was washed off into a stream by a storm. Numerous trout and crayfish died as a result. Early this year the Town of Boone enacted rules to restrict the use of coal tar sealants there. The video is available on YouTube and can be found by searching for "coal tar," "Boone" and "fish kill."

PAHs are created from the incomplete combustion of organic material and can come from a variety of sources, but in much smaller concentrations. According to a 2005 study by the City of Austin, the concentration of coal tar sealant is dramatically higher than that which flakes off any other source. In fact, the flakes that come off a driveway are more than 1,000 times more toxic than the "effects concentration" of aquatic species. The effects concentration is the



The entrance to a parking lot appears as black as nearby asphalt after being coated with coal tar sealant, a substance now banned by a growing number of municipalities and corporations.



Coal tar sealant flakes off an aging application, where it will sit until wind, rain, snowmelt or tracking carries it to the nearest sewer, soil or stream.

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concentration which causes observable, adverse biological effects and reproduction problems in aquatic species.

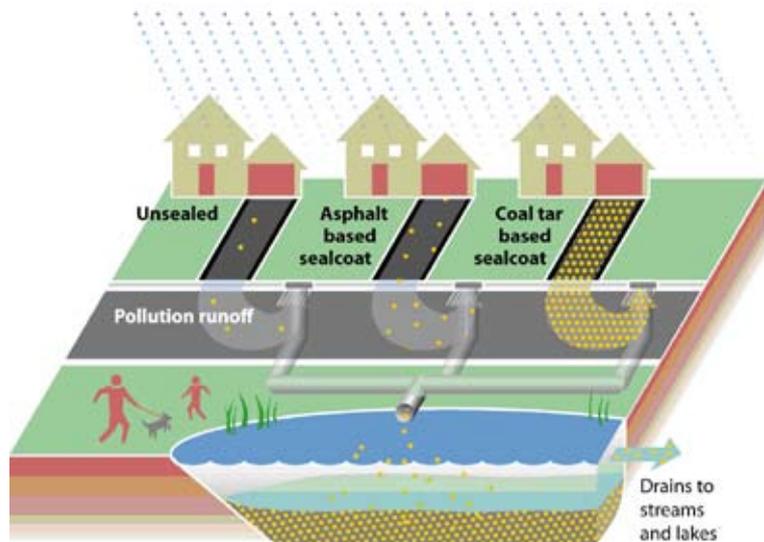
What about the Effects of Coal Tar Sealants on People?

The U.S. Geological Survey (USGS), an environmental science and research branch of the U.S. government, found that people living in ground-level apartments in Austin, Texas, where coal tar sealants are on the parking lot, are likely to have elevated PAH concentrations in the dust in their carpets. While there currently is no standard in the United States for PAH concentration in household dust, a German standard was exceeded in more than one in three apartments.

PAHs have been documented to cause cancer, birth defects, learning disabilities, asthma, and decreased sperm counts in men. The lifetime cancer risk factor for coal tar sealant exposure has not yet been published, but soon it will be.

The Road Ahead

Currently over 10 million U.S. citizens live in communities where coal tar sealants are banned. Home Depot and Lowes have stopped selling coal tar sealants in their stores. The Commonwealth of Massachusetts limits the use of coal tar sealants near wetlands. The State of Minnesota has ceased its use on state properties and projects. Statewide legislation has been introduced in a half-dozen states and was passed in 2010 in the State of Washington. Discussions have begun at a national level about phasing



Credit: Minnesota Pollution Control Agency

This graphic illustrates how pollution from three types of driveways can wash into sewers, which can overflow into streams during periods of heavy rain and snow.

out the use of this product. In the meantime, concerned individuals can minimize their risks by not using coal tar sealants, being aware of their exposures, getting involved in phase-out efforts at the national and local level, and talking to their communities about coal tar sealant pollution.

For more information and the current status of legislation, research and education, see my blog site, *Coal Tar Free America*, at <http://coaltarfreeamerica.blogspot.com>. This site and views expressed in this article are not associated with, or paid for by, any city, trade organization, or manufacturing group. ■

PAHs in the Delaware Valley

According to a 1983 article in the *British Journal of Industrial Medicine*, the first-known occupational cancer was experienced by 18th-century chimney sweeps exposed to PAHs. Since then, numerous human-health effects have been attributed to elevated PAH concentrations.

PAH levels have gradually increased over time in the Delaware River Basin, or the land draining to the Delaware River and Bay. A leading researcher at Philadelphia University attributes this to increases in both industry and urban activities, as well as an absence of laws regulating PAHs.

According to the Delaware River Basin Commission, the quantities of PAHs typically encountered in Delaware River water are so small they are deemed safe by current standards. Primarily, PAHs cling to

dirt, dust, and sediment (mud) and are poorly dissolved in water.

As it turns out, PAHs are everywhere in small concentrations; in the water we drink, the food we eat, and the air we breathe. There are many sources of PAHs in our region. The most common are air polluted by automobile exhausts, coal-fired power plants, oil spills, and tobacco smoke, just to name a few. But coal tar sealant is a common, concentrated form that can be avoided by using alternatives.

How can I tell if the sealant I want is coal tar-based? Most sealants feature labels declaring whether they are made with coal tar. The best way to tell, though, is to check the CAS (Chemical Abstracts Service) number on the product's Material Safety Data Sheet. This is usually available online or from contractors. The CAS number for coal tar is 65996-93-2. ■

Research Links Turtle's Survival to Wetland Size

By Steven H. Pearson, Doctoral Candidate, Drexel University

Freshwater wetlands of the Delaware River Basin are amazingly diverse. Many plant and animal species continue to thrive while many other species are in decline. The freshwater turtle communities in the Delaware River Basin are an example of an organism type that is either thriving or in decline, dependent on the species. Some species like the painted turtle (*Chrysemys picta*) are abundant in many wetlands. Others, like the eastern mud turtle (*Kinosternon subrubrum*), have been wiped out from the majority of the wetlands they once occupied in Pennsylvania.

In the commonwealth of Pennsylvania, the red-bellied turtle (*Pseudemys rubriventris*) is officially a threatened species. However, it is not yet a federally listed threatened species. Recent surveys have shown that red-bellied turtles are now absent from half of the wetlands they once occupied. Historically, the red-bellied turtle decline has been driven by habitat loss and overharvesting. The continued decline may be due to the introduction of red-eared slider turtles (*Trachemys scripta elegans*), a potential competitor.

Red-eared slider turtles are native to the Mississippi River Drainage Basin. They have been introduced, and have established breeding populations, on



Two red-eared slider turtles (*Trachemys scripta elegans*) sun themselves on a dock. Notice the red patches where you might expect to see ears; hence the term "red-eared."

Credit: Flickr user turtlemom4bacon

all continents except for Antarctica. Introductions of red-eared slider turtles are mainly due to released or escaped pets, and occasionally they are released for religious or ceremonial purposes.

Introduced species can impact native species through predation by directly reducing native species' population size. They can also do so through competition, which reduces the rate of growth, reproduction and survivorship of ecologically similar species.

In the Delaware River Basin, red-eared slider turtles are ecologically similar to red-bellied turtles and require the same habitat for basking, foraging and nesting.

To determine if red-eared slider turtles are potential competitors of red-bellied turtles, we have been studying the spatial and dietary resource use of these two species. Our sample populations live in the wetlands at Fort Mifflin, Philadelphia County, and at the Silver Lake Nature Center (SLNC) in Bucks County, Pennsylvania. The two wetland complexes differ in size and degree

of fragmentation. The Fort Mifflin wetlands consist of three small wetlands surrounded and separated by mowed lawns and paved roads, while the wetlands at the SLNC consist of two large lakes connected by a creek and surrounded by lowland forest and parkland.

Our research suggests that at both Fort Mifflin and the SLNC, red-eared slider turtles and red-bellied turtles share many resources. However, for dietary resources, both species feed on the same foods at Fort Mifflin, while at the SLNC they feed on different items. These studies suggest that in small, highly fragmented wetlands like Fort Mifflin, the potential for competition between red-eared slider turtles and red-bellied turtles is greater than in large, less fragmented wetlands like those at the SLNC. The level of fragmentation and the diversity of dietary resources within a habitat are important in maintaining the native turtle populations of that habitat.

As land development within the Delaware River Watershed continues, we must ensure that the habitats necessary for the recovery and long-term survival of wildlife remain undeveloped and are as large in size as possible. ■

Editor's Note: Steven Pearson won a Best Student Poster Award at the Delaware Estuary Science and Environmental Summit in February. In recognition of his accomplishment, the Partnership for the Delaware Estuary is pleased to share his research in Estuary News.



A baby red-bellied turtle (*Pseudemys rubriventris*)

Credit: Flickr user Kevin Collins / kevincollins123

ESTUARY EVENTS

Fall Migration Special

Ducks in Fall Color

November 26 at 9 a.m.

John Heinz National Wildlife Refuge of Philadelphia

FWS.gov/Heinz

Bird Identification Station

November 27, from 11 a.m. to 5 p.m.

Bombay Hook National Wildlife Refuge of Smyrna, DE

FWS.gov/Northeast/BombayHook

Featured on *ecoDelaware.com*

Hawk Watch

Through November 30, from 9 a.m. to 3 p.m. daily

Ashland Nature Center of Hockessin, DE

Cape Henlopen State Park of Lewes, DE

DOSBirds.org

Hawk Watch

Through November 30, from sunrise to 5 p.m. daily

Cape May Bird Observatory of Cape May, NJ

BirdCapeMay.org

Hawk Watch

Through November 30, from 9 a.m. to 3 p.m. daily

Bucktoe Creek Preserve of Kennett Square, PA

<http://tlcforscc.org>

Owls of Pennsylvania

December 14 at 7:30 p.m.

Marple Township Library of Broomall, PA

BCDelCo.org

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Pearl Jam Twenty

November 29: doors at 5 p.m., bands at 5:45 & movie at 6:30

Wilmington, DE

Watch a special screening of the documentary *Pearl Jam Twenty* at the Queen Theatre and help raise funds for the Partnership for the Delaware Estuary. Come early for a pre-screening reception, complete with Dogfish Head brews, and then hang out after the show. The night will include a concert showcasing local bands, a silent auction and raffles. Tickets are just \$5. For other details visit <http://Queen.WorldCafelive.com>.

Baysshore Holiday

December 9, from 5:30 to

8:30 p.m.

Bivalve, NJ

Make yours a bayshore holiday when you visit the Delaware Bay Museum & Folklife Center. Activities will include an art exhibit, hands-on activity, history presentation and live music. Visitors will also have access to local seafood, beer, wine, baked goods and produce. It's all part of an ongoing series entitled "Second Fridays by the Bay." For details visit the maritime travel guide Fyddeye.com.

Oiled Bird Training

December 10, from 9 a.m.

to 4 p.m.

Newark, DE

When the *Athos I* struck a sunken anchor in 2004, the resulting oil spill killed over 3,000 birds foraging in the Delaware River. This number might have been far greater had it not been for the work of volunteers cleaning crude oil off wildlife. You, too, can help birds in such a manner. All you have to do is sign up for this once-annual training. The cost? Just \$30, and that includes a one-year membership at Tri-State Bird Rescue & Research. To learn more, please log on to TriStateBird.org or call (302) 737-9543.



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Autumn Hawkwatch

Through December 15, from 9 a.m. to 5 p.m. daily

Hawk Mountain of Kempton, PA

HawkMountain.org

Christmas Bird Count

December 17 to January 1

Bombay Hook, Middletown, Prime Hook and Wilmington, DE

DOSBirds.org

Valley Forge Christmas Census

December 24, from dawn until dusk

John James Audubon Center of Audubon, PA

<http://martinp1.tripod.com/wcbchome.htm>

Monday Morning Bird Walks

Through December 26, from 8 to 10 a.m. weekly

Bucktoe Creek Preserve of Kennett Square, PA

BucktoeCreekPreserve.org

Winter Bird Count

January 8 at 8:30 a.m.

Rolling Hill Park of Gladwyne, PA

LMConservancy.org ■

On the Trail of Two Toxics

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Other toxics, like Iodine-131, present new and very unique management challenges (see page 3). A by-product of nuclear energy production, Iodine-131 has been detected in some of our waterways. Scientists in our area monitored water for impacts from the Fukushima nuclear power plant disaster in Japan earlier this year. But it turns out that medication, not nuclear power, is the likely source of Iodine-131 here.

Toxics are an important consideration in many of the management issues facing us today, from deepening the Delaware River to "hydrofracking" for natural gas in the Marcellus shale formation. Agencies like the Philadelphia Water Department and the Delaware River Basin Commission can help improve our understanding and management of toxics, but we all play a part in keeping toxics out of the Delaware Estuary. ■



Credit: Lee Karney/USFWS

Partnership for the Delaware Estuary: a National Estuary Program

The Partnership for the Delaware Estuary, Inc., (PDE) is a private, nonprofit organization established in 1996. The PDE leads collaborative and creative efforts to protect and enhance the Delaware Estuary and its tributaries for current and future generations. The PDE is one of 28 National Estuary Programs. To find out how you can become one of our partners, call the PDE at (800) 445-4935 or visit our website at www.DelawareEstuary.org.

Partnership for the Delaware Estuary, Inc.

Jennifer Adkins, Executive Director
Tel: (800) 445-4935 / Fax: (302) 655-4991
E-mail: jadkins@delawareestuary.org

Environmental Protection Agency

Irene Purdy, EPA Region II
Tel: (212) 637-3845 / Fax (212) 637-3889
E-mail: purdy.irene@epa.gov

Megan Mackey, EPA Region III
Tel: (215) 814-5534 / Fax: (215) 814-2301
E-mail: mackey.megan@epa.gov

Pennsylvania

Andrew Zemba
Department of Environmental Protection
Tel: (717) 772-5633 / Fax: (717) 783-4690
E-mail: azemba@state.pa.us

Delaware

John Kennel
Department of Natural Resources and Environmental Control
Tel: (302) 739-9255 ext. 109 / Fax: (302) 739-7864
E-mail: john.kennel@state.de.us

New Jersey

Jay Springer
Department of Environmental Protection
Tel: (609) 341-3122 / Fax: (609) 984-6505
E-mail: jay.springer@dep.state.nj.us

Delaware River Basin Commission

Bob Tudor
Tel: (609) 883-9500 ext. 208 / Fax (609) 883-9522
E-mail: robert.tudor@drbc.state.nj.us

Philadelphia Water Department

Stephanie Chiorean
Tel: (215) 685-4943 / Fax: (215) 685-6207
E-mail: stephanie.chiorean@phila.gov

Editor

Shaun Bailey, Marketing and Communications Coordinator, Partnership for the Delaware Estuary

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