It’s what you can’t see...

Learn about hidden chemicals in your water

TOXINS
Chemicals in pharmaceuticals and personal care products (PPCPs)

PROBLEMS
Inadequate laws, outdated waste treatment and health risks

SOLUTIONS
Education, partnerships, research, and best practices

Erie Times-NIE/Great Lakes Sea Grant Network
Won’t you take time to learn how you can keep chemicals in your pharmaceuticals and personal care products from getting into the Great Lakes, the source of drinking water for 42 million people in the U.S. and Canada?

We need to keep drugs, chemicals out of our water

We have a finite supply of water. Yet almost 7 billion people are polluting our streams, lakes and oceans at an ever-increasing rate with man-made chemicals found in everyday products, including pharmaceuticals and personal care products (PPCPs). There are no laws to keep these chemicals out of the environment, and inadequate laws don’t keep them out of products we use daily.

Since the fall of 2010, Sea Grant programs in Indiana, Illinois, New York, Ohio and Pennsylvania have been teaching people of all ages about problems caused by chemicals in PPCPs, and involving them in finding solutions.

Funding from the Great Lakes Restoration Initiative of the U.S. Environmental Protection Agency has allowed these Great Lakes Sea Grant Network members to take action to keep PPCPs out of the Great Lakes.

This education campaign began with the publication “Dose of Reality” in September 2010. This 12-page newspaper insert, prepared in cooperation with the Erie Times-News Newspaper in Education program, told the story of these contaminants, the importance of Great Lakes freshwater, the severe risks of taking freshwater for granted; and what some concerned people have done to address the problems. But most importantly, it shared ideas that every citizen can implement to tackle these serious issues.

To meet their goals of educating people and keeping pills out of the environment through collection events and outreach, the Sea Grant Partners also relied on community partners and student service-learning projects for help.

“Our goal is to educate members of the legislature, professionals who produce, prescribe and dispense pharmaceuticals and the public that uses them,” said Marti Martz, coastal outreach specialist for Pennsylvania Sea Grant and lead investigator for this project. “This issue resonates with most people we contact and they are happy to bring it up with their peers, from fourth-graders to seniors. Word of mouth transmission helps spread our message around the Great Lakes basin.”

This special NIE supplement shares additional information and stories about people and organizations that are making a difference to improve the health of the Great Lakes by reducing the amount of persistent toxic substances that enter them. “More mindful PPCP consumption and waste minimization must be part of the solution,” said Martz. “We don’t realize our personal contribution to this problem until someone makes us aware of it.”

About the cover: Gina Longstreet, a recent graduate of Central Career and Technical School in Erie, Pa., designed the “Dose of Reality” cover. Her billboard design, which won the school billboard competition sponsored by Pennsylvania Sea Grant and Earth Action, was also chosen for the cover of this publication. Longstreet was a student in Joe Krol’s Industrial Arts program for four years while she was a student at Central. She is currently enrolled at Edinboro University of Pennsylvania.

Unless indicated otherwise, articles are written by Anna McCartney, a communications and education specialist for Pennsylvania Sea Grant. She can be reached at amx40@psu.edu
Drugs taken by people, pets and farm animals, as well as discarded leftover medications, get into water sources when they are flushed, go down the drain or are carried by stormwater from farms and streets, and from landfill leachate.

Chemicals in hygiene and beauty products enter wastewater when you bathe or wash your hands. Insufficient regulation to keep manufactured chemicals out of the water allows them to build up in the environment.

How do PPCP chemicals get into our water?

Private septic systems and municipal waste treatment plants were not designed to detect or remove PPCPs. Studies show these compounds persist in the environment; pass through water, soil and air; and bioaccumulate in the food chain. Pharmaceutical residues have been detected in drinking water in very small amounts. The American Water Works Association (AWWA) explains that “PPCPs are a group of compounds consisting of human and veterinary drugs (prescription or over-the-counter) and consumer products, such as fragrance, lotions, sunscreens, house cleaning products, and others.”

A large percentage of PPCPs in the environment seems to come from unmetabolized pharmaceuticals in human waste and from other products that are flushed or placed in the trash. According to the U.S. Environmental Protection Agency, “PPCPs are found where people or animals are treated with drugs and everywhere people use personal care products. PPCPs are found in any water body influenced by raw or treated sewage, including rivers, streams, groundwater, coastal marine environments, and many drinking water sources. PPCPs have been identified in most places sampled.”

**NEWSPAPER ACTIVITY**

Are your PPCP buying habits influenced by ads? While articles are intended to inform you using facts, advertisements are designed to influence you to buy something even if it means distorting the truth. Collect PPCP ads and list them according to their appeal. Do any of them imply: “Everybody else is doing it,” or “users of this product are just like you”? Do the ads use techniques like card stacking — distorting or omitting facts, testimonials or endorsements by famous people, or transference — association of a respected person such as a doctor with a product or idea? Design an ad to inform and influence people to only buy and use PPCPs that don’t harm you or the environment. Use your ad in a campaign to educate others in your school or organization about the information you learn from reading this publication.
Aquatic organisms, unborn babies, and young children are most vulnerable to reproductive and developmental harm due to ingredients found in pharmaceuticals and personal care products (PPCPs). Many of these bioactive chemicals act as endocrine disrupters. Triclosan, a pesticide in antibacterial soaps; manufactured fragrances found in many products; and chemicals used in pharmaceuticals can affect fetal growth and development because they interfere with natural hormones.

Observe feminization of aquatic animals has raised concerns about estrogenic compounds in water supplies. Antibiotic resistance is another problem.

Synthetic chemicals block natural hormones

Man-made chemicals found in PPCPs can cause endocrine disruption because they interfere with natural hormones; one such chemical is triclosan, a pesticide found in antibacterial soaps.

While such chemicals can lower sperm count and harm immune systems in humans, neither the U.S. Food and Drug Administration nor the EPA has done much to control them.

Many of these chemicals mimic, disrupt or block the actions of natural hormones such as insulin, thyroxine, estrogen and testosterone. Considering the fact the endocrine system regulates every vital function and the hormones provide instructions for cells, this can have disastrous consequences.

Hormones control all growth, sexual development and behavior; the production and utilization of insulin, metabolism, intelligence and behavior and the ability to reproduce.

While studies show that triclosan is no more effective at preventing illness or removing germs than regular soap and water, antibacterial soaps are the most commonly used soaps in homes, schools and other institutions.

Anyone who reads a magazine or watches TV might believe antibacterial soaps are more effective because advertising says that “they kill 99.9 percent of germs.”

With names like “Tangelo Orange Twist” and “Sugar Lemon Fizz,” they are even marketed to teenagers by using the slogan “spread love, not germs.”

Newspaper Activity

Choose three articles in this publication and predict the content of the articles based on the headline and what you may already know about the topic. After reading the stories, re-write the headlines. Share them with others and ask which headlines they like best — yours or the ones used by the writers.
Scientists seek more answers about PPCP dangers

Steve Mauro, a Mercyhurst College microbiologist, is concerned about the effect of chemicals found in pharmaceuticals and personal care products on the ecosystem since even low levels damage the reproductive systems of mollusks and can also affect fish brains.

Chemicals used in PPCPs have been found in surface water, sewage effluent, sewage sludge, groundwater, drinking water, and plants grown in soil treated with biosolids and irrigated with contaminated water.

Low doses of fluoxetine and other chemicals were found by Mauro and his team in water near Presque Isle State Park’s Lake Erie beaches. National Geographic featured Mauro’s work in the June 2011 edition.

His initial work to study PPCPs was funded by Pennsylvania Sea Grant, which is one of 32 programs nationwide that supports applied research on issues critical to coastal resources and management.

Mauro has since received EPA funding to continue his work. According to his research, fluoxetine, the active ingredient in Prozac, is killing both good and bad bacteria in the lake. This and other chemicals were consistently found in areas that are sewage-free, indicating that these chemicals spread throughout the lake. Other chemicals he found every time samples were taken include triclosan and estradiol, both considered endocrine disrupters.

Though many experts say the levels are too low to show immediate effects on human health, scientists acknowledge they know little about the long-term effects of these chemicals on people. There are many other unanswered questions about how PPCPs degrade or interact with other chemicals in the water or chemicals that are used in the water treatment process.

While the concentrations may be low, concerns arise because many of these PPCPs are designed to work in the body at low concentrations. Furthermore, some of the Great Lakes take up to 191 years to flush out pollutants, so these chemicals will remain there for generations.

Funding from Illinois/Indiana Sea Grant allowed researchers Patrick Ferguson, Melody Bernot and Thomas Lauer from the Department of Biology at Ball State University in Muncie, Ind., to look for PPCPs in southern Lake Michigan. They, too, found measurable concentrations of pharmaceuticals every time they sampled, suggesting ubiquitous dispersal in Lake Michigan.

These and other research projects are continuing to quantify PPCPs and their effects in the field. Lab experiments are also being conducted by the U.S. Geological Survey and others to learn more about the influence of PPCPs found in the environment on fish development, growth and behavior.

To read more about PPCP-related research, go to www.unwantedmeds.org.
There are no federal regulations for discarding household pharmaceutical waste. While the 1976 Resource Conservation and Recovery Act regulates the management and disposal of hazardous pharmaceutical wastes for manufacturers and the healthcare industry, it exempts this same waste discarded from the homes of millions. Instead, individual states may determine how it is disposed. This does nothing to address the facts that most states lack regulations for this waste or that affected water does not recognize state boundaries.

The EPA has urged the public to participate in pharmaceutical “take-back” programs where they exist. The EPA has urged the public to participate in pharmaceutical “take-back” programs where they exist. However, these events are sporadic and available in too few communities. So what should people do with all those unused prescription and over-the-counter meds?

Many are advocating that manufacturers of these drugs be responsible for establishing a drug collection program similar to producer-responsibility programs for computers and other products that include hazardous waste. Such a program would immediately end the dangerous practices of flushing drugs down the drain or toilet or throwing drugs into the garbage.

Currently, federal agencies recommend that unused medications be mixed with cat litter or coffee grounds, sealed in a container and thrown in the trash. The exception is a list of narcotics, such as OxyContin and Percocet, which the U.S. Food and Drug Administration says should be flushed down the toilet to make sure they are not abused. But many find this advice too complicated and confusing, and putting the drugs into landfills is still risky to the environment and to solid waste workers.

However, because manufacturers are currently not inclined to take responsibility for a better solution due to associated costs, any consistent drug take-back programs will likely require state and federal laws.

The Sea Grant partners have expanded their efforts to make it easier for consumers to get rid of unused meds by working with legislators, schools of pharmacy and veterinary medicine, hospitals, health departments and the Product Stewardship Institute, a national nonprofit membership-based organization.

Sea Grant develops model take-back programs

**NEWSPAPER ACTIVITY**

Newspapers are an excellent source for learning about your federal, state and local representatives. The letters to the editor are an exceptional way to make your representatives and others in your community aware of important issues. Write a letter to the editor of your local newspaper sharing key points about problems caused by the use and disposal of PPCPs. Use the opportunity to ask what your representatives are doing to solve these problems. Encourage others in your community to get involved to expedite solutions for disposing unused meds by offering specific steps they can take to make a difference.

**BY THE NUMBERS**

**1,289,958**

Pills collected since Oct. 1, 2010

**650,510**

People reached since Oct. 1, 2010

**SOURCE:** Pennsylvania Sea Grant

Sea Grant is working with these groups to develop model take-back programs for permanent solutions for the disposal problems.

One possible solution would allow designated pharmacies to take back expired or unused medications and properly dispose of them through licensed and regulated facilities. Another is the use of mail-back envelopes like those used by the University of Maine Center on Aging.

However, the best solution will involve a collaborative effort by drug manufacturers, water utilities, private and public research facilities and state and federal agencies.
Partnerships, collaborations, research and best practices have played important roles in the success of the Sea Grant “undo the Chemical Brew” project since it began in 2010.

Pennsylvania Sea Grant has been working closely with Elliott Cook, assistant professor at the School of Pharmacy at the Lake Erie College of Osteopathic Medicine, to educate pharmacy students and involve them in solutions to problems related to PPCP use and disposal.

Cook and many of the students at the school have volunteered their time to record the unused drugs collected at drug take-back programs in the Erie region. Starting with the 2011 fall semester, PPCP issues will be included in the pharmacy curriculum. Students will also educate consumers about the problems when they do their rotation at some of the local pharmacies.

“This is a great way for students to actively learn more about medications, patient adherence, patient safety, the environment, drug policy, and drug abuse. All these aspects are vital to the education of a future pharmacist,” said Cook. “Also, the students gain experience working side by side with a local nonprofit, PA Sea Grant, by gathering and analyzing data while interacting directly with the public in their field of study. All in all, it is a great experience not only for students and faculty of LECOM, but also the public.”

The data collected by Cook and his students is important for determining which drugs are unused and why. This information can be shared with drug manufacturers and medical professionals so they can help eliminate unused drugs at the design and prescription stages.

A partnership between the Great Lakes Sea Grant Network and the University of Maine Center on Aging will give some citizens in selected Great Lakes states a new way to discard unused medications. Special leakproof postage-paid mailing envelopes can be filled at home with unwanted prescription and over-the-counter drugs and will be mailed to Maine; the drugs will then be incinerated in the presence of drug enforcement agents. The GLRN grant provided the funding for these mailers. Participants are asked to complete a survey to help researchers gather data about why the drugs were not used.

The Maine mail-back disposal program is one of the first in the nation to deal with the huge amount of unused medications. Also the first state to require manufacturer payment for disposal of old televisions and computer monitors, Maine is currently working on a statewide pharmaceutical disposal system that would be paid for by the drug companies. Mail-in collection systems paid for by drug makers are common in Europe and British Columbia.

Illinois-Indiana Sea Grant (IISG) Pollution Prevention Specialist Laura Kammin has been successful in addressing another important audience — veterinary professionals and pet owners.

“It doesn’t matter whether the medicine is intended for people or pets. We are always looking for new partners to help us educate people on this issue,” said Kammin. “Educating pet owners about PPCP proper storage and disposal can reduce the number of pets that are poisoned and also keep unused pet meds out of the water.”

While at the American Veterinary Medical Association (AVMA) Convention in St. Louis, Kammin and IISG staff spoke with vet med students and veterinary professionals from 31 states, Canada, Egypt and Brazil about educating their clients on proper storage and disposal of medicines.

Convention attendees were excited about Sea Grant fact sheets and service-learning curriculum to involve their students and clients. Attendee Trenton Boyd, head librarian at the University of Missouri Zalk Veterinary Medical Library, is helping IISG reach hundreds of professionals in university veterinary schools by posting their resources on the International Veterinary Librarians Discussion Group list server. IISG will also begin work with the AVMA on other opportunities to partner with veterinary professionals to educate their clients.

Ohio Sea Grant has been educating boaters, anglers and other water enthusiasts through its displays at fishing tournaments, Charter Boat Association meetings, at its Aquatic Visitors Center at Put-in-Bay, Ohio, and through the Lorain County Metro Parks Environmental Series: “What’s In Our Water?” To date they have talked with and dispensed literature to almost 5,000 individuals.

Sea Grant has also been working with local law enforcement agencies and health departments to support a disposal system that reduces the high rate of prescription drug abuse. By offering a consistent, convenient way to get rid of unused medicines, pain pills and other drugs can be kept out of the hands of interested teens and others who might abuse them.
Try this. Take an inventory of the assortment of pharmaceuticals and personal care products you use daily. Include any prescription or over-the-counter medicines you take. Don’t forget any soap, body wash, toothpaste, shampoo, lotion, deodorant, perfume, shaving cream, lipstick, mascara, eye shadow, hair gel, mousse, hair spray, anti-aging cream or other products. Don’t be surprised if you hit 12-15. You’re not alone.

Marketing has convinced us that we need these products every day. Read the ingredients and safety precautions for each product.

Researchers are raising alarms about the cumulative effects many of the compounds found in PPCPs are having on human health and the environment. Do you really want these chemicals to show up in your drinking water? Which products can you live without? What can you do to improve your health so you don’t need to take medications for the rest of your life?

Find the list of the worst chemicals used in personal care products on page 9 and use the listed resources to research safe alternatives. When you use products without unnecessary toxic chemicals, you send a clear message to manufacturers and retailers that you want safe, effective products that don’t harm you or the environment. Many cosmetics and personal care companies are already making safer products. Keep your family safe and healthy with these nontoxic soaps and other products. Don’t forget to ask friends and family — and even your child’s school or your office manager — to use safer products too!

Use the David Suzuki Foundation’s “Avoid the Dirty Dozen” mobile shoppers’ guide to audit your bathroom and shop for products without harmful ingredients. This Dirty Dozen mobile site can help you avoid toxic ingredients in your personal care products. Access it from any Web-enabled portable browsing device at http://davidsuzuki.org/dirty12/.

Or you can search more than 65,000 products online at www.ewg.org/skindeep/ to find out about unsafe chemicals in your products and safe substitutes.

The use of PPCPs has steadily risen since World War II. There was an estimated increase from 2 billion to 3.9 billion annual prescriptions between 1999 and 2009 in the United States alone. On average, women in the U.S. use 12 personal care products daily; men use 6. There are no laws that protect consumers or the environment from synthetic chemicals used in these products. To learn more go to: http://storyofstuff.org/cosmetics/

Studies show that ingredients in pharmaceuticals and personal care products are entering our environment with negative effects on fish and other aquatic life. These chemicals have been detected in drinking water, too. Many people now flush their unused meds and make the problems worse. Prevention is the best solution since wastewater treatment plants and septic systems are not designed to remove these synthetic chemicals.

Is your wastewater polluting our water resources?

Take inventory at home to flag ‘Dirty Dozen’
Contrary to popular belief, the U.S. doesn’t regulate personal care products for safety, long-term health impacts or environmental damage. Many PCP common ingredients are harmful to people and the environment. Yet consumers buy these products at drug stores, grocery stores, online or in salons, usually without questioning the product’s safety. Don’t trust the claims. Protect yourself, your family and the environment. Avoid the dirty dozen and use safer alternatives.

The Dirty Dozen

- **BHA and BHT**: Preservatives used mainly in moisturizers and makeup. Suspected endocrine disruptors may cause cancer (BHA) and are harmful to fish and other wildlife.
- **Coal tar dyes**: P-phenylenediamine and colors listed as “CI” followed by a five-digit number: Find them in hair dyes and other product colors. The U.S. color name may be listed (e.g. “FD&C Blue No. 1” or “Blue 1”). Potential to cause cancer and may be contaminated with heavy metals toxic to the brain.
- **DEA-related ingredients**: Used in creamy and foaming products, such as moisturizers and shampoos. Related chemicals are MEA and TEA. Can react to form nitrosamines, which may cause cancer. Harmful to fish and other wildlife.
- **Dibutyl phthalate**: Plasticizer used in some nail care products. Suspected endocrine disrupter and reproductive toxicant. Harmful to fish and other wildlife.
- **Formaldehyde-releasing preservatives**: Look for DMDM hydantoin, diazolidinyl urea, imidazolidinyl urea, methenamine and quarternium-15. They slowly release small amounts of formaldehyde, which causes cancer.
- **Parabens**: Preservatives suspected as endocrine disrupters and may interfere with male reproductive functions.
- **Parfum (a.k.a. fragrance)**: Any mixture of fragrance ingredients—even in some products marketed as “unscented.” Can trigger allergies and asthma. Some linked to cancer and neurotoxicity. Some harmful to fish and other wildlife.
- **PEG compounds**: Used in many cosmetic cream bases. Can be contaminated with 1,4-dioxane, which may cause cancer. Related chemicals include propylene glycol and other ingredients with the letters “eth” (e.g., polyethylene glycol).
- **Petrolatum**: This petroleum product used for shine in hair products and as a moisture barrier in some lip balms, lipsticks and moisturizers can be contaminated with polycyclic aromatic hydrocarbons, which may cause cancer.
- **Siloxanes**: Look for ingredients ending in “-siloxane” or “-methicone.” These chemicals used to soften, smooth and moisten are suspected endocrine disrupters and reproductive toxicants (cyclohexasiloxane). Harmful to fish and other wildlife.
- **Sodium laureth sulfate**: Used in foaming cosmetics, shampoos, cleansers and bubble bath. Can be contaminated with 1,4-dioxane, which may cause cancer. Related chemicals include sodium lauryl sulfate and other ingredients with the letters “eth” (e.g., sodium laureth sulfate).
- **Triclosan and triclocarban**: Pesticides used as antibacterials in cosmetics, toothpastes, soaps and antiperspirants are suspected endocrine disrupters and may contribute to antibiotic resistance in bacteria. Harmful to fish and other wildlife.

For more about these ingredients and for a copy of a parent’s buying guide, visit ewg.org/childrenshealth. For more about human exposure, cdc.gov/nceh/hsb.

**SHARE WHAT YOU LEARN**

Word of mouth has been an excellent tool to educate more people about the dangers of PPCPs. With whom will you share this information? Get your friends, family and co-workers involved in preventing these problems.

Top three photos: Students and teachers participating in Sea Grant programs learned to identify hazardous chemicals in personal care products and shared what they learned with others.

Bottom two photos: Students in Lisa Radock’s science classes at Fort LeBoeuf Middle School in Erie, Pa., shared the information at a local task force meeting sponsored by PA Sea Grant and State Representative John Hornaman at the Tom Ridge Environmental Center and via satellite with students around the world.

ANNA McCARTNEY/Contributed photos
Students advocate for new state laws

One problem an Erie, Pa., student group chose to tackle for their service-learning project is the lack of proper disposal for unused prescription and over-the-counter meds.

Pennsylvania Sea Grant has been working with Earth Action, an environmental education organization, to involve students in solutions to such problems.

Earth Action Junior PA Lake Erie Watershed Association (JrPLEWA) members from nine junior/senior high schools have been involved with this project since September 2010. Their ultimate goal is to influence legislation and passage of a Pennsylvania pharmaceutical bill that provides for proper disposal of PPCPs and community education to help citizens learn more about the issues.

In January, the group met with Pennsylvania State Reps. Pat Harkins, D-1st Dist., and John Hornaman, D-3rd Dist., to learn about any current legislation and the probability of introducing a new pharmaceutical take-back program bill in the 2011 session. Before making their recommendations to state lawmakers, they researched take-back programs in Canada and other U.S. states and documented the impacts of PPCPs on water quality and aquatic life and potential human health problems.

Interviews and surveys these students conducted in the community to learn what people were doing with their unused meds indicate the majority of respondents flush them or put them in the garbage. Their interviews with pharmacists show that more than half of them were advising their customers to flush their unused meds and that the majority were willing to participate in a state-mandated take-back program if one became available.

The students’ culminating event was a four-day trip to Harrisburg in June to meet with the House Northwest PA Legislative Caucus to give recommendations that students hope will be introduced this fall by Rep. Hornaman. They also gave a brief presentation to the Citizen Advisory Council of the Pennsylvania Department of Environmental Protection and the DEP Environmental Education Office.

“The JrPLEWA trip allowed me and my fellow lobbyists to soak up the city’s history, potency, and culture,” said Molly Giewont. “Meeting Sen. Jane Earll and some of Pennsylvania’s representatives like John Hornaman, Pat Harkins and Flo Fabrizio at the Capitol was a once-in-a-lifetime opportunity I’ll never forget. I truly feel that with their help, our pharmaceutical bill will become a law.”

College students employ new tools to say: ‘Don’t rush to flush’

A new generation of Great Lakes stakeholders from the University of Buffalo turned a course requirement into a call for action: “Don’t rush to flush!”

Thirty students enrolled in the Great Lakes Ecology course at the university tackled the problems associated with PPCPs going down the drains of households around the Great Lakes basin. Their creativity and genuine concern were evident in the public awareness projects they designed to educate others. One group even made pill-shaped cookies to provide “food for thought” to share their message.

A group of engineering students focused their efforts on investigating the effectiveness of wastewater treatment procedures and shared that information with the class. The knowledge that they weren’t designed to remove PPCPs made the students more resolved to keep them out of the environment.

Some groups used Facebook and Twitter to reach thousands of their friends and contacts to survey their behaviors and knowledge about use and proper disposal of PPCPs.

The survey results indicated that a majority, including many of their friends, were not aware of the problems or proper disposal. Other students developed posters they displayed around the university, targeting dorms and restroom facilities on campus, to encourage students to think before they flush!

One student designed stickers for bathroom mirrors in the dorms and student apartments that asked: “What are YOU putting down the drain?” These stickers included information for reducing the amount of personal care products used and proper disposal of unwanted/unused medicines.

By HELEN DOMSKE
Contribution writer

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What’s in your medicine chest?

By ROBIN GOETTEL and IRENE MILES
Contributing writers

In most homes, children are kept out of medicine cabinets to protect them from the dangers of chemicals in medications. Illinois-Indiana Sea Grant’s (IISG) latest product, “The Medicine Chest,” invites high school students to metaphorically open those doors to investigate what makes those chemicals harmful to people, pets, and the environment.

“The new curriculum collection gives educators an instructional tool to create an innovative service-learning experience for their students, while tackling an important environmental and human health concern,” said IISG Education Specialist Terri Hallesy, who helped design this resource. “Through involvement in this project, students serve as agents for change, educating their communities about action steps they can take to reduce harm to aquatic ecosystems from improper disposal of unwanted medicines.”

The impetus that serves as the centerpiece for this curriculum is participation in the Prescription Pill and Drug Disposal Program (P2P) established by Pontiac High School teachers. Jordyn Schara, a student at Reedsburg Area High School, initiated a P2P program in her Wisconsin community. Her goals include: providing proper free disposal of unused medications, keeping them from contaminating water in rivers, lakes and streams; and keeping young people from using these medications at parties to get high.

“Many people between the ages of 12 and 17 abuse prescription drugs more than cocaine, heroin and methamphetamine combined,” Schara said, citing a 2006 national survey on drug use and health.

Another collaboration with Windy City Earth Force in Chicago has also allowed IISG to work with Chicago teachers Laura Senteno and Rosamary Reddice and their seventh- and eighth-grade classes to get the word out. Their students were very enthusiastic about creating stewardship projects to inform adults in their community. Students wrote an informational brochure, a public service announcement, and made fliers and distributed them at the nearby train station for the Drug Enforcement Agency collection event in Chicago on April 30.

To download this free curriculum visit www.iisgcp.org/education/safe_disposal_curriculum.html.

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 Erie Times-NIE/GREAT LAKES SEA GRANT NETWORK: HIDDEN CHEMICALS IN YOUR WATER

Undo the environmental chemical brew
Protect Great Lakes water for future generations

Keep the chemicals in pharmaceuticals and personal care products (PPCPs) out of the environment!

Monitor PPCP purchase, use, storage and disposal.
Read labels, reduce use and replace products with safer alternatives.
Insist on standards that avoid toxic chemicals and encourage green chemistry.

Publication funding is provided by an EPA Great Lakes Restoration Initiative grant. To find a Great Lakes Sea Grant program near you, visit www.miseagrant.umich.edu/greatlakes