



The Environmental Synopsis

A Monthly Update from the Joint Legislative Air and Water Pollution Control and Conservation Committee

JULY 2016



The Chairman's Corner

**Senator Scott E. Hutchinson,
Chairman**

Last month, I had the pleasure of welcoming officials from three Pennsylvania schools to

the State Capitol where they were presented with the 2016 Green Ribbon Schools Award. This prestigious, national award recognizes schools, districts, colleges and universities from each state that are leading the way in environmental stewardship.

The Green Ribbon Schools program was established by the U.S. Department of Education in 2011 as a way to honor educational institutions that display a commitment to sustainability and resource conservation. The program came at the request of over 80 environmental and education non-profits, who were searching for a way to inspire schools and students to embrace best practices and innovative technology. The result is the popular award program, now in its fifth year, which gives credit to schools that have gone above-and-beyond in making the environment a focal point of their mission.

To be considered for the Green Ribbon Schools Award, institutions must demonstrate progress in three main areas known as "pillars." First, the institution must reduce environmental impacts and costs. Second, they must improve the health and wellness of their students and employees.

Finally, they must provide effective environmental education opportunities to their students. Together, these criteria support

the Department's broader goals of improving student engagement, academic achievement and workforce preparedness. It also assists our nation in achieving energy independence and economic security.

The application process for the award is primarily state-driven. Instead of directly

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Notes from the Director

Tony M. Guerrieri, Executive Director

Most destructive, invasive weeds did not start out that way. Typically, they developed in an area where other plants, animals or environmental conditions kept them in balance with the rest of the landscape.

But in a new setting, one without natural constraints, they can sometimes disperse uncontrollably and muscle their way to complete dominance, crowding out native plants to form a dense monoculture. One notorious example can be found right here in Pennsylvania: the Japanese knotweed.

Japanese knotweed is believed to have been introduced in the United States as an ornamental plant in the 1800s, according to the U.S. Department of Agriculture. Since then, it has developed a reputation as one of the most aggressive invasive plants in the eastern United States. Its botanical name is *Fallopia japonica*. Often called “killer bamboo,” it has a variety of other common names such as fleece-flower, Mexican bamboo and huzhang, among others.

Japanese knotweed is an herbaceous perennial. Its early spring shoots look a bit like asparagus, and surprisingly are edible as well. At full growth, however, the stalks become woody and look like thin bamboo. It has profuse foliage with many stems and heart-shaped leaves in varying shades of green. The late summer flowers are showy white panicles. These are followed by attractive seed sheaths that are greenish-white and papery. All that's left in the fall are bare, bamboo-like canes, which often pose a brushfire risk.

The aggressive plant tends to show up in disturbed areas, such as roadsides, railways and vacant lots. Japanese knotweed can grow to heights of almost 13 feet, form extensive dense colonies and crowd out native plants and habitat, limiting water access, damaging property

values, blocking views and causing insects and birds to vanish. It has a strong root system that can extend 15 feet deep, push through asphalt or concrete and damage building foundations. When describing it, the Japanese use the term *itadori*, which means “strong plant.”

Japanese Knotweed is one of Pennsylvania's most aggressive and destructive invasive plant species, blanketing riverbanks and vacant lots with dense bamboo-like foliage.

Knotweed is also well adapted to riverbanks. Water can quickly carry plants or fragments downstream to form new, nearly impenetrable patches that can line stream banks for hundreds of yards.

Japanese knotweed can be found in 30 of the 50 United States. While the plant easily establishes and spreads, it is difficult to control. If you leave any living root pieces at all, it springs back with vigor, according to information from the Penn State Extension website. The non-chemical approach combines cutting, covering and sometimes, digging.

If you choose to spray a mature knotweed, it is most effectively done in the fall, when the plant is sending food to the rhizomes for winter storage. Glyphosate herbicides have had good results, especially if you get good coverage of the leaves in the stand. This can be a challenge if the plants are 10 feet tall. Ladders help when spraying vigorous stands. Usually, there will be some re-growth the following year and possibly for several years afterwards. These need to be treated as well. It is strongly advised that you read label directions carefully before using any herbicide.

Knotweed has been a nuisance for many Pennsylvania communities, espe-

cially river towns like the small western Pennsylvania town of Blairsville in Indiana County. In an effort to launch a community-oriented festival, local planners came up with the idea for a Knotweed Festival – a tongue-in-cheek nod to the invasive species that grows in abundance near the Conemaugh River.

The event began in 2013 as a way to bring the community together and to educate residents on the importance of recognizing and controlling invasive plant species.

The festival is sponsored by the Blairsville Community Development Authority and includes bands, food, crafts, fireworks and environmental displays. The festival also includes Knotweed arts and crafts – items made from Japanese Knotweed or that have a knotweed theme – including knotweed soap, jam, tea and muffins, aprons, T-shirts and painted pictures of knotweed on slate. This year's Blairsville Knotweed Festival will be held on August 13th.

According to a recent article in the Wall Street Journal, Pittsburgh and many areas around it have so much knotweed that businesses are turning it into beer, paper, kimchi, tinctures, ice pops and honey, which are marketed under the more enticing name of “Red Bamboo”. At least a half-dozen upscale restaurants have served knotweed, which has the texture of asparagus and tastes like rhubarb. Knotweed can be harvested in the early spring from April to May – it's best to harvest when the shoots reach about 8 inches tall.

Despite its culinary value, this plant grows and spreads too quickly for eating to be an effective means of control. It is listed as an invasive weed in Pennsylvania, although the list is non-regulatory in nature.

Research Briefs

Each month, the committee's staff researches and prepares a number of "briefs" on several topics relevant to the committee's mission. Very often these briefs include references to reports and further research on the topics so that readers may pursue issues on their own. Please note that the information and opinions expressed in the Research Brief articles do not necessarily represent the opinions or positions of the Joint Legislative Air and Water Pollution Control and Conservation Committee, nor those of the Pennsylvania General Assembly.

Report Urges New York to Protect Farmland

Tony M. Guerrieri
Executive Director

Farming and food production are big business in New York State, contributing over \$39 billion annually to the state's economy. So when new homes and commercial development are built on prime farmlands, the state loses another piece of its top industry. Protecting farmland from development helps both the economy and the environment.

A report by the American Farmland Trust highlights the impacts of New York's Farmland Protection Program over the last 20 years, identifies new threats to the state's farmland and makes recommendations for action to protect the fertile soil needed to grow food and the economy in New York.

The report, *Cultivate New York: An Agenda to Protect Farmland for Growing Food and the Economy*, urges the state to renew its commitment to protecting 100,000 acres of threatened farmland over the next 10 years. It includes 14 comprehensive recommendations to make New York a national leader in protecting farmland to fulfill its critical role in growing local food and supporting the state's farm and food economy.

Since the 1980s, roughly 5,000 farms have been paved over by rapid non-agricultural development in New York. In 1996, New York's Farmland Protection Program began offering funds that were used to permanently protect farmland with agricultural conservation easements. The program has since provided

\$140,206,211 in funds to protect 232 farms encompassing 59,165 acres of farmland.

According to the report, however, New York has helped permanently protect less than 1 percent of the state's total farmland and the state lags far behind its neighbors in protecting the land needed for farming and growing food.

A new report found that New York's agricultural easement programs have permanently protected less than 1 percent of the state's total farmland.

As more farms are subdivided into building lots, developed and converted to other uses, communities lose a local source of food. Open spaces shrink, leaving less room for wildlife and fewer places where people can enjoy the countryside.

In addition, new threats are emerging to New York's farmland. Along with the recovery of the real estate market more than 2 million acres of New York farmland are owned by farmers over 65 and will be changing hands in coming years. In the past, many farm families have seen no alternative to selling their farm for development when they sought to retire. And, the report states, new and next generation farmers in New York face significant challenges in finding farmland at a price they can afford and conditions that will enable them to succeed in farming.

New York farmers increasingly grapple with severe weather events related to

climate change. Severe weather has hurt farmers across the state but New York is better positioned for resilient farming given the state's fertile land and abundant fresh water. According to the report, protecting highly-productive farmland will not only give New York farmers the best opportunity to adapt to a changing climate, there is new evidence that keeping land in farming can help maintain lower levels of greenhouse gas emissions.

The 2015-16 State Budget allocated \$35 million for protecting farmland – the most in New York's history and the fourth highest amount of state farmland protection funding in the nation.

The AFT report outlines four major goals for future action, including:

- Allocate \$300 million to permanently protect 100,000 acres of high-quality, threatened farmland over the next 10 years.



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- Provide greater flexibility to local partners working with the state's Farmland Protection Program to allow quick and efficient completion of state-funded farmland protection projects in less than two years.
- Help 5,000 new and next generation farmers find land in New York over the next 10 years by creating a state capital gains tax deferral for farmland sold to new and next generation farms.
- Develop a long-term plan for protecting the state's food production resources and adopting supporting state policies by 2020.

Additional information and the full report, *Cultivate New York: An Agenda for Protecting Farmland for Growing Food and the Economy*, is available at: www.farmland.org/cultivateNY.

Food Waste and Expiration Dates

Coleen P. Engvall
Research Analyst

The debate surrounding food waste has shifted in recent years from focusing mainly on poverty to encompassing economic and environmental issues as well. After all, the U.S. throws almost half of all food produced into the garbage. Globally, a third of the food grown for human consumption is wasted. With over 62 million tons of vegetables, cereals and meat ending up in landfills, it is no wonder that the consequences are becoming too important to ignore.

What makes food waste so devastating? Well, for starters, the University of Arizona calculated that a family of four throws away almost \$600 away annually in uneaten food. The country as a whole spends 1.3 billion dollars just to dispose of this waste. Environmentally, each acre of food grown consumes expensive resources like oil, water and fertilizer and once the waste ends up in a landfill, it produces tons of methane gas as it decomposes.

According to the Economic Research Service, consumers make up a large part of the food waste problem. One of the reasons that Americans in particular are guilty of throwing away so much food is misconceptions about expiration date labels. In fact, these misconceptions are so widespread that there is a 99 percent chance that you believe at least one of them.

Only 1 percent of consumers knew that only specific foods are required to have expiration date labels and most Americans incorrectly believe the labels are an indicator of food safety.

Researchers from the National Consumers League, the Harvard Food Law and Policy Clinic and Johns Hopkins University released a report entitled *Consumer Perceptions of Date Labels: National Survey*.

The survey was aimed at finding out how people interpreted food labels and



how they used this information to make decisions. Questions gauged what people believe the dates are for, how they are regulated and how they influence decisions about discarding food.

While the researchers expected there to be confusion about the labels, the results painted a clear picture of why so much food is thrown away in America. Of the respondents, 84 percent said they discard food after the date has passed.

Why is this a problem? Well, date labels are not federally-regulated with the exception of infant formula, so the expiration date is simply the manufacturer's best guess at when the product will be at peak quality. For most products, it is not meant to indicate food safety at all. The researchers add that most foods are safe to consume long after the date on the package has passed. This means that the 84 percent of respondents are throwing safe, edible food into the trash on a regular basis.

Interestingly, younger respondents were more likely to view date labels as food safety indicators than the older respondents. Different phrases on the labels also changed the results. "Best if used by" was largely interpreted correctly as an indicator of quality, but "expires on" and "use by" were seen as safety labels in most cases.

The researchers highlighted the main concerns in their results. First, they note that propensity for discarding food based on date labels goes up as the respondents get younger. This means that people are wasting more food based on misconceptions as time goes on. They emphasize that education should try to reverse this trend for future generations. Second, they note that certain date labels are clearer about their purpose. Identifying which phrases are misleading can help people make better choices.

A summary of the study is available at: <http://www.buffalo.edu/news/releases/2016/02/020.html>.

GAO: EPA Lax on Drinking Water Oversight

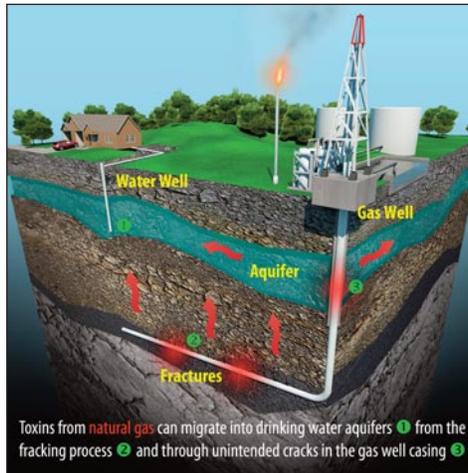
Tony M. Guerrieri
Executive Director

A report by the U.S. Government Accountability Office (GAO) has faulted the U.S. Environmental Protection Agency for not taking sufficient steps to safeguard underground drinking water supplies from the wastewater generated by the oil and gas industries.

The GAO report, *Drinking Water: EPA Needs to Collect Information and Consistently Conduct Activities to Protect Underground Sources of Drinking Water*, states that the agency has failed to adequately collect information from state and regional regulators about inspections or their enforcement actions to protect underground sources of drinking water. It also found the EPA has not consistently carried out oversight of programs that regulate injection wells where oil and natural gas companies send streams of wastewater into the ground.

An increase in U.S. oil and gas production since the 2000s has led to growing amounts of wastewater and much of that water ends up routed back into aquifers through a type of injection wells called “Class II” wells. The GAO said that as of 2013, there were more than 176,000 of these wells across the country, in states such as Pennsylvania, Virginia, Texas, Oklahoma, New Mexico and California.

Forty states are currently approved to have primary responsibility for maintaining their injection sites, leaving 10 states to be managed by five EPA regional offices. State agencies and the EPA regional offices are supposed to report information to the EPA about their regulatory programs relating to the injection of oil and gas wastewater into aquifers. The EPA is charged with assessing whether those programs are effectively preventing po-



tential contamination of drinking water. However, GAO auditors found the federal agency “has not consistently conducted oversight activities necessary to assess whether state and EPA-managed programs are protecting underground sources of drinking water.”

The GAO report recommended the EPA take steps including:

- Collect well-specific data on inspections.
- Complete a database of aquifers that have been exempted from protections under the federal Safe Drinking Water Act.
- Clarify the agency’s instructions to regulators on the data they report on forms.
- Carry out an analysis to determine the staff and other resources needed to adequately carry out oversight.

Various oil and gas extraction processes generate wastewater, including hydraulic fracturing, which involves injecting water, sand and chemicals under high pressure.

In order to have aquifers exempted for the requirements of the Safe Drinking Water Act, oil and gas companies can apply to the EPA – a process that in many states begins with a review by state regulators. When an aquifer is declared exempt, the lifting of protections allows companies to inject fluids or wastewater into aquifers.

The GAO report said the EPA annually collects data from state and regional EPA regulators on the types of inspections they conduct. But the report said the information collected is not “specific enough to determine the number of different types of inspections” those agencies are supposed to be conducting each year.

Less than a quarter of all safe drinking water violations by oil and gas companies were properly reported between 2008 and 2013 due to inconsistent EPA guidelines.

The federal agency’s procedures also include collecting information on “unresolved significant violations” to determine if enforcement actions are necessary. But when government auditors looked at a sample of 93 significant violations between the federal budget years 2008 and 2013, they found the “state and EPA-managed programs did not report data on such violations completely or consistently.”

Officials examined types of violations ranging from “unauthorized injections” to lapses in reporting and “failure to plug” a well in seven states – Colorado, Kentucky, North Dakota, Ohio, Oklahoma, Pennsylvania and Texas. They found 29 of the 93 significant violations should have been reported to the EPA on a form. Only seven, however, were properly reported.

The report made an example of California, which is the country’s third largest oil-producing state, noting that federal and state regulators have acknowledged since at least 2014 that oilfield operations sanctioned by state officials were violating federal safe drinking water standards.

Included among the list of violations were instances where oilfield companies were dumping wastewater into at least

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11 underground aquifers that were supposed to be under protection of federal laws and were potential drinking water sources.

The EPA said it generally agrees with much of the GAO's analysis and findings and has agreed to "take actions to best advance our data collection and oversight efforts."

The GAO report, *Drinking Water: EPA Needs to Collect Information and Consistently Conduct Activities to Protect Underground Sources of Drinking Water*, is available at: <http://www.gao.gov/assets/680/675439.pdf>.

Atmospheric Sulfur Compounds in Agriculture

Coleen P. Engvall
Research Analyst

Air pollution standards have come a long way since the industrial revolution. Industries are using more efficient technology with less waste and less emissions and governments are setting tougher standards. With studies increasingly linking air pollution to strokes, heart disease and many other illnesses, the importance of these measures is clear.

Reducing air pollution is positive step for public health and for the environment but these changes in our atmosphere will also have some less-obvious impacts.

Researchers at the University of Illinois College of Agricultural, Consumer and Environmental Sciences asked what impact this will have on soil, a question that may seem obscure to those unfamiliar with air pollution issues. The article is entitled *Riverine Response of Sulfate to Declining Atmospheric Sulfur Deposition in Agricultural Watersheds*.

Sulfur is a mineral found in coal seams and other fossil fuel deposits. In the past, when coal was burned in industrial

applications, the sulfur was released directly into the atmosphere due to a lack of governmental emissions standards and a lack of emissions-capturing technology. The atmospheric sulfur dioxide accumulates and eventually leads to acid rain. Acid rain is harmful to the environment, aquatic environments in particular. The sulfur changes the acidity of ecosystems and can also leach metals, such as aluminum, into the water. Both of these impacts can be harmful to plants and animals, killing trees and disrupting biodiversity.

Researchers at the University of Illinois predict that some farmers will need to apply sulfur to their crops in the future due to atmospheric reductions of the mineral.

Sulfur and nitrogen, however, are byproducts of coal combustion and are essential minerals for plant life and agriculture. In nature, water can pick up sulfur when it encounters coal or pyrite seams. It can then be deposited into the soil for plants to use as nutrients.

In agriculture, harvesting plants that have absorbed these minerals means that they cannot be recycled into the soil, leading to a net loss of sulfur over time. However, researchers observed that agricultural plots in Illinois that traditionally did not suffer a sulfur shortage are now seeing a net loss.

The researchers noted that in the 1980s, it was unnecessary for some farmers to amend their soil with sulfur due to the high concentrations in the air. After analyzing how sulfur is deposited into soil without this atmospheric sulfur dioxide, the researchers determined that artificially adding this mineral may become necessary in the future.

Part of this problem is also influenced by the higher crop yield, which carries the sulfur-laden produce away from the soil. Additionally, certain drainage systems commonly used in agriculture, such as "tile" drainage systems, appear to leach sulfur from the soil further. The researchers say that this interaction should be examined in more depth.



While adding sulfur compounds to soil will be an additional cost to farmers, it is important to remember that atmospheric sulfur dioxide is a known health hazard. It has demonstrated links with respiratory illnesses such as asthma and bronchitis, as well as heart disease and premature death. Due to this, we are unlikely to see governments allowing more sulfur dioxide into the air, but the researchers' work shows the complex relationship between human activity and the environment.

While a great deal of research has been done on the negative impacts of sulfur dioxide in natural environments, such as lakes and forests, agriculture has been excluded for the most part. The researchers believe that more research should be done to paint a more complete picture of sulfur dioxides role in agricultural production.

To read *Riverine Response of Sulfate to Declining Atmospheric Sulfur Deposition in Agricultural Watersheds*, go to: <https://dl.sciencesocieties.org/publications/jeq/articles/45/4/1313>.

On the Horizon *A Look at Upcoming Events*

Friday, July 29, 10 a.m.

Tour of Hawk Mountain Sanctuary

1700 Hawk Mountain Rd, Kempton, PA

Committee members and staff will tour Hawk Mountain, a non-profit wild bird sanctuary located in Berks and Schuylkill counties. Spanning over 2,600 acres, the sanctuary boasts approximately 60,000 visitors each year and was voted the second-best bird-watching destination in the country. The tour will highlight the conservation efforts of Hawk Mountain and how this internationally-acclaimed raptor sanctuary is positively impacting the local community.



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This Month in Conservation History

Exploring the evolution of environmental stewardship

July 14, 1955

Congress passes the Air Pollution Control Act, the first piece of legislation to address air pollution in the United States. The original role of the federal government was purely informational, allowing the Surgeon General to conduct research and distribute information on the severity of the problem and suggest possible remedies. Regulation and prevention of air pollution was left to the discretion of state and local governments.



July 9, 1970

President Richard Nixon and Congress establishes the U.S. Environmental Protection Agency (EPA). The goal of the new agency was to consolidate the federal government's existing environmental responsibilities under one single authority. The EPA's primary role was to promulgate regulations, establish ecological programs and conduct environmental research. In its first year, the agency employed more than 4,000 Americans.





JOINT LEGISLATIVE CONSERVATION COMMITTEE

CONTACT INFORMATION

LOCATION

Room 408
Finance Building
Harrisburg, PA 17120

PHONE

717-787-7570

WEBSITE

jcc.legis.state.pa.us

MAILING ADDRESS

Joint Legislative
Conservation Committee
PA House of Representatives
P.O. Box 202254
Harrisburg, PA 17120-2254

The Chairman's Corner

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applying to the U.S. Department of Education, schools apply to their state education agency. It is then up to each state to determine which institutions they will nominate for the national award. States are allowed up to six nominations per year; five schools or school districts and one college or university, all of which may be public or private. The nominees must have made significant progress in all three pillars, not just one particular area, in order to be eligible for the award.

Aside from these guidelines, states are free to evaluate applications using their own criteria. The U.S. Department of Education does encourage states to take into consideration the diversity of the school or district, as well as those applicants from underserved communities. Once the states have submitted their nominees, the Department conducts a final review of the applications to ensure they meet the program requirements. To date, 30 states, 295 schools, 67 districts and 20 colleges and universities have participated in the Green Schools program, and that number is rapidly growing as the program becomes more established.

This year, Pennsylvania was fortunate enough to have three institutions selected as Green Ribbon School honorees. The School District of Jenkintown, Montgomery County; Park Forest Elementary, Centre County; and Slippery Rock University, Butler County, were all recognized for their extensive work toward sustainability, public health and environmental education. Each school completed a unique set of projects that exhibited a commitment to bettering our natural surroundings.

The School District of Jenkintown, for example, was recognized for projects that were not just educational but fiscally responsible. The school district implemented erosion and stormwater management practices around its baseball and outdoor basketball facilities, upgraded their buildings

with more energy efficient doors and windows, and sponsored a Walk to School Week to promote exercise and alternative transportation. Students also got the opportunity to visit Lincoln Financial Field and learn about the recycling plan used by the Philadelphia Eagles.

Park Forest Elementary, located in State College, also compiled a remarkable list of accomplishments. The school reduced energy use and tracked consumption using the Energy Star Portfolio Manager, starting with a score of 73 and progressing to 84. The school drastically cut down on waste, earning nine Waste Watcher Awards through the Professional Recyclers of Pennsylvania. Partnering with Penn State, the school also constructed a greenhouse that served as a model for two built at a school in Rwanda.

I was particularly proud to learn about the efforts of Slippery Rock University, located within my district. The university represented our community well, boasting several new outdoor classrooms, including 150 acres of Audubon Society bird sanctuaries, and achieving LEED certification in over a third of their campus facilities. Slippery Rock has reduced energy consumption by 22 percent since 2005, despite a 32 percent increase in campus facilities during that time period – quite an impressive feat in itself!

If you know a school in your area that has set a positive example in environmental stewardship, encourage them to apply for the Green Ribbon Schools program. Applications for the award are due to the Pennsylvania Department of Education each December, with the final honorees being announced each April on Earth Day. Honorees are invited to attend a national ceremony in D.C., where they are presented with a plaque and flag to display at their school.

More information on the Green Ribbon Schools program, including application instructions, can be found by visiting the Pennsylvania Department of Education's website at www.education.pa.gov.



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