



SEVERE WEATHER TIMES

What a spring! How severe the weather has been all Spring and into Summer!

Drought, floods, storms, tornadoes, fires ---across the nation –
we have all been affected in one way or another.

By Benjamin Mueller

July 18, 2013 2:19 p.m.

Cooler temperatures are approaching, but the year's worst heat wave continues to punish areas from South Dakota to coastal Massachusetts on Thursday, prolonging withering conditions that have already claimed one man's life in Kentucky.

Officials warn that persistent overnight heat, high humidity and intense sunshine threaten areas of the country, especially the Midwest, that aren't accustomed to near-tropical conditions. Excessive heat still blankets parts of 21 states and the District of Columbia, with temperatures reaching into the 100s when accounting for humidity.

"It's oppressive and dangerous for people exposed to this condition," warned Chris Vaccaro, spokesman for the National Weather Service headquarters in Silver Spring, Md. He said only a Miami resident vacationing in Minneapolis would be accustomed to the muggy conditions in the Midwest.

"This is the most significant heat wave of the year," Vaccaro said.

In Indianapolis, where temperatures reached 95 degrees Thursday, 300 people living in a senior community were evacuated after an electrical outage knocked out their air conditioning. The Indianapolis Fire Department said firefighters transported them to a ballroom nearby.

Experts attribute the heat wave to a high pressure system, called a “heat dome,” that is dominating the eastern two-thirds of the country. The high pressure also traps air pollutants closer to the ground, threatening air quality.

While cooler temperatures won’t reach the Northeast until the weekend, a cold front is dropping southward into the Great Lakes region. Relief from the heat may also be accompanied by severe thunderstorms starting Thursday afternoon in the Midwest.

The heat wave comes on the heels of June temperatures that a National Oceanic and Atmospheric Administration report released Thursday shows were the month’s fifth highest on record.

Dr. Jessica Blundon, one of the report’s authors, said the June temperatures are “consistent with what we expect to see in a warming world.”

She also said the near-record June heat created dry conditions in the Western U.S. that set the stage for devastating forest fires.

Bianca Nogrady
ABC

Heat wave: Previous understanding of climate change has been based largely on the northern hemisphere, but this study covers change in the southern hemisphere as well(*Source: anniegreenwood/iStockphoto*)

Related Stories

- [Oceans may explain climate change slowdown](#), Science Online, 08 Apr 2013
- [Coral cores tell different warming stories](#), Science Online, 02 Apr 2013
- [Arctic ice melts to record low](#), Science Online, 28 Aug 2012

Record heat Average temperatures around the world in the last thirty years of the 20th century were higher than any other time in nearly 1400 years.

That’s the conclusion of the first climate reconstruction to examine global climate change from a regional perspective by an international network of climatologists known as the [PAGES 2k network](#).

Their findings, based on climate data from eight continental scale regions, including Australasia, Europe, North and South America, are published today in [Nature Geoscience](#).

The data, which was derived from sources such as tree rings, glacier ice, pollen and corals, showed all regions except Antarctica experienced a long-term cooling trend that reversed abruptly in the 20th century.

Heat wave: Previous understanding of climate change has been based largely on the northern hemisphere, but this study covers change in the southern hemisphere as well.

Celebrating July 4th

It's worth the read!

Have you ever wondered what happened to some of the 56 men who signed the Declaration of Independence ?

Five signers were captured by the British as traitors, and tortured before they died.

Twelve had their homes ransacked and burned.

Two lost their sons serving in the Revolutionary Army; another had two sons captured.

Nine of the 56 fought and died from wounds or hardships of the Revolutionary War.

They signed and they pledged their lives, their fortunes, and their sacred honor.

What kind of men were they?

Twenty-four were lawyers and jurists.

Eleven were merchants,

nine were farmers and large plantation owners; men of means, well educated, but they signed the Declaration of Independence knowing full well that the penalty would be death if they were captured.

Carter Braxton of Virginia, a wealthy planter and trader, saw his ships swept from the seas by the British Navy. He sold his home and properties to pay his debts, and died in rags.

Thomas McKeam was so hounded by the British that he was forced to move his family almost constantly. He served in the Congress without pay, and his family was kept in hiding. His possessions were taken from him, and poverty was his reward.

Vandals or British soldiers looted the properties of Dillery, Hall, Clymer, Walton, Gwinnett, Heyward, Rutledge, and Middleton.

At the battle of Yorktown, Thomas Nelson, Jr., noted that the British General Cornwallis had taken over the Nelson home for his headquarters. He quietly urged General George Washington to open fire. The home was destroyed, and Nelson died bankrupt.

**Francis Lewis had his home and properties destroyed.
The enemy jailed his wife, and she died within a few months.**

**John Hart was driven from his wife's bedside as she was dying.
Their 13 children fled for their lives. His fields and his gristmill
were laid to waste. For more than a year he lived in forests and
caves, returning home to find his wife dead and his children vanished.
So, take a few minutes while enjoying your 4th of July holiday and
silently thank these patriots. It's not much to ask for the price they paid.**

As we celebrate the 150th Anniversary of the Battle of Gettysburg July 1-3, 1863, America's bloodiest battle - Pennsylvania has a role to remember too, supplying more than 300,000 troops and much material for the North during the Civil War.

Marking the 150th anniversary of the [Battle of Gettysburg](#)!

The Battle was a turning point in the Civil War, the Union victory that ended General Robert E. Lee's second and most ambitious invasion of the North. Often referred to as the "High Water Mark of the Rebellion", Gettysburg was the war's bloodiest battle with 51,000 casualties. It was also the inspiration for President Abraham Lincoln's immortal "Gettysburg Address."

EDUCATION NEWS

**The 19 April 2013 issue of SCIENCE – the AAAS Publication is devoted to
“ Grand Challenges in Science Education”**

This issue is worth reading and thinking about the “problems and exciting opportunities now facing science education on a global level.....my initial Grand Challenge 'Build education systems that incorporate the advice of outstanding full-time classroom teachers when formulating education policy' – A start has been made”.

Bruce Alberts, Editor in Chief of Science.

So finally teachers have been recognized as understanding, better than others, today's students ..and have valuable suggestions for improving our education systems!

So – think of the impact you have and how you can make a difference in today's education, and in the lives of your students.

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Next Generation Science Standards

New Standards for a New Generation

NSTA Responds to Fordham Institute Report on NGSS

[Read the press release](#) »



NSTA welcomes new science education standards that provide a cohesive approach to K–12 science instruction. The [Next Generation Science Standards](#) (NGSS) establish learning expectations for students that integrate three important dimensions—science and engineering practices, disciplinary core ideas, and crosscutting concepts—effectively builds science concepts from kindergarten through 12th grade, and integrates important concepts of engineering. The NGSS are based on the NRC [Framework for K–12 Science Education](#).

Twenty-six states led the development of Next Generation Science Standards through a broad collaborative process including many teachers and stakeholders. NSTA was a partner in the standards development process. View the NGSS at www.nextgenscience.org. Locate [background information](#) from NSTA, as well as [Frequently Asked Questions](#), and [video clips](#).

NSTA: Supporting the Implementation of Next Generation Science Standards

NGSS has the potential to significantly improve science education by establishing educational goals for all students to prepare them to enter college or the STEM workforce and to be informed citizens. NSTA encourages states to adopt the standards and commit the resources and support structures needed to effectively implement the standards. NSTA is committed to supporting science educators, leaders, and states to help them prepare for NGSS implementation.



[Your Complete Guide to the Next Generation Science Standards](#)

[*View the Next Generation Science Standards and supporting materials from NSTA »*](#)

NSTA Resources are the Pathway to NGSS

Science educators can [access](#) web seminars, articles from peer-reviewed journals, NSTA Press books, short courses and face-to-face conference lectures and workshops, all designed to build an understanding of the standards and provide a pathway for incorporating the standards into classroom instruction.

- **Books and Publications:** NSTA is your complete source for credible and timely publications on NGSS. Purchase your own print copy of the standards from NSTA coming in September, or order the [*NSTA Reader's Guide to the Next Generation Science Standards*](#) now! Books on the scientific and engineering practices and elementary science instruction are coming soon!
- **Professional Development Opportunities:** From [short courses](#) to summer institutes, principal institutes to [conference sessions](#), NSTA is your source of teacher professional development opportunities on NGSS.
- **Web Seminar Series:** Learn about NGSS through NSTA's series of **free** interactive web seminars on NGSS. Register now for [upcoming programs](#) or view past programs in the [archive](#).
- **Journal Articles:** Learn about NGSS core concepts and ideas from NSTA's growing [collection of journal articles](#) authored by NGSS lead writers and others. Articles examine the practices, crosscutting concepts, connections to common core, and more.
- **Connect and Collaborate with Colleagues:** A vibrant conversation is always taking place on NSTA community networks. Discuss with colleagues, stay informed, and get answers in the [NGSS listserv](#) (members only), [NGSS discussion board](#), [NSTA blog](#), and [Facebook](#).

Get Ready for More

NSTA has much more in the works to help science educators realize the vision of NGSS. The NGSS@NSTA Portal is coming soon. It will be the NGSS home base for science educators, providing access to vetted and aligned resources, tools to help plan instruction and professional development, and more. Look for multiday teacher and principal institutes that will help leaders gain a clear understanding of the NGSS and what will be necessary to effectively implement them at the district, school, and classroom levels, and an NGSS SciPack that will use the standards to inform instruction.

QUESTIONS? E-mail your questions or concerns about the NGSS to ngss@nsta.org.

STEM education: While changes are afoot in a reshuffling of agency responsibility and funding, three lead agencies plan to expand existing programs in STEM education: The Smithsonian plans to offer easy access to their materials aligned with state standards in STEM fields; The Department of Education wants to launch a grand competitive grants program to help high school districts prepare HS graduates for STEM

majors and careers; NSF wants to grow its graduate research fellowship program | collaboration with mission agencies.

The Environmental Doomsday Clock

This clock displays the level of anxiety felt about the ultimate fate of the Earth. 12:00 represents the highest level of concern – when time runs out. Currently the clock is set at 9:24! The clock must not strike midnight.

There is a questionnaire with a survey for all who are concerned about maintaining a healthy and sustainable diversity of life on Earth. Register to receive the questionnaire at: www.af-info.or.jp

DIRECTIONS

The 2013 PRCST STEM in Action Series is underway.

This series of Mini-Workshops will be open through the fall. Each workshop offers educators a primary experience in where STEM jobs are available, and what kinds there are.

Reservations are to be made through Jackie Pfeiffer: pfeifferjc@aol.com

JUNE 24	JUNE 27 NASA-	JULY 19	July 22	JULY 25	AUG.7	OCT.12	OCT. 23	NOV
AQUATECH	ERC	CCI	Outdoor	ALCOSAN	NETL	CMNH	PHIPPS	AVI.

From the NSTA Calendar: Project Ideas for Young Entomologists

Are crickets scared of the dark? Are flying insects differentially attracted to certain colors? How do the patterns on butterfly wings develop? Not only are these questions that might inspire students' curiosity about insects, but they're also the titles of previous winning entries in the Entomological Foundation's Science Project Contest.

The contest seeks to identify the top 5 to 10 science project ideas for grades K–12. Winners will receive \$100 for each winning project. The foundation is especially eager for project ideas submitted by K–12 educators and entomology student clubs. Any project idea related to insects, spiders, or related arthropods may be submitted.

Winning project ideas will be posted on the Entomological Foundation's website, with authorship credit cited for each project. To learn more, consult the [contest website](#). Entries will be due on August 31.

Looking for other ways to have your project and lesson plan ideas recognized? Explore the many awards and competitions on the [NSTA Calendar](#).

12th annual Ohio River Watershed Celebration

Thursday, September 19th, 2013

Gateway Clipper Fleet

Station Square

Our Theme this year is

"Working Together for Clean Water"

The event is free and open to the public, thanks to generous donations from our many sponsors.

Learn what is happening in your watershed while cruising on Pittsburgh's three rivers!!

Join us at the

12th annual Ohio River Watershed Celebration

Registration will begin in July 2013

Register at our website <http://www.orwc.org/>

We look forward to seeing you!

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Tuesday August 13, 2013 from 10:00 AM to 2:00 PM

Join us for a morning of accessible astrophysics and local history

at the History Center!

The morning begins with presentations by astrophysicist Dr. Andrew Zentner, of the University of Pittsburgh's Physics and Astronomy Department, and Art Glaser, Allegheny Observatory historian. Dr. Dan Handley, maker of "[Undaunted: The Forgotten Giants of the Allegheny Observatory](#)," will teach participants to make their own student-friendly spectroscopes. The workshop includes a tour of the Allegheny Observatory gallery of our [Pittsburgh: A Tradition of Innovation](#) exhibit, a boxed lunch, materials for the spectroscopes, and museum admission for the rest of the day.

RSVP

"Undaunted: The Forgotten Giants of the Allegheny Observatory Professional Development for Educators" is \$13 for History Center members and \$18 for non-members. Please click here to [register online](#). Please

contact Kate Lukaszewicz at kalukaszewicz@heinzhistorycenter.org for more information, including the member discount code.

Forest Service Announces Distance Learning Climate Change Program

The Forest Service and others have announced a new distance learning adventure, ClimateChangeLIVE to educate, engage, and inspire students to be part of the climate change solution. It includes

- Climate education resources from 18 partners
- An interactive [website](#)
- A dynamic partner webinar schedule
- Two televised webcasts to engage secondary school students in climate solutions

Register at ClimateChangeLIVE.org to get updates as this resource gets underway.

NASA Galileo Educator Institute

Paulo Oemig Instructor

July 23-24, 2013

NASA Goddard Space Flight Center's Educator Resource Center in Greenbelt, MD.

9:00am-4:00pm.

The NASA Galileo Educator Network (GEN) Professional Development Institute (PDI) is a two-day workshop emphasizing inquiry-based strategies, the nature and practice of science aligned through the Framework for K-12 Science Education and the NGSS. Participants will engage in activities and strategies for teaching Galileo-themed space science content using NASA-developed and supported resources. A follow-up session will allow educators to refine lessons and share feedback with fellow participants. Upon completion of the two-day institute each participant will receive a NASA Galileo Educator certificate, and the award winning collection of activities and resources for teaching astronomy on DVD-ROM *The Universe at Your Fingertips 2.0*. Meets DC, MD, VA, and PA State Science and Technology Standards.

Email registration requests to Leslie Garrison, GSFC-ERC Educator Specialist, leslie.garrison@nasa.gov.

Rapping About Darwin, for Knowledge and Glory

By [JOHN LELAND](#)

School was out for the week, but the lessons were just starting. Jahleel Cephus, 17, a sophomore from Validus Preparatory Academy in the Bronx, swayed to a hip-hop beat and dropped science: "Bioclast, foliation, and that granite," he rhymed. "I can tell you something 'bout an aphanitic." On a screen behind him, the last word linked to a note explaining that it meant a volcanic rock. Students whooped in appreciation.

Jahleel was one of about 300 students from nine New York public high schools who participated this semester in an experimental pilot program called Science Genius, which used [hip-hop to teach science](#) to urban teenagers. On Friday night, the best students from each school met at Teachers College, Columbia University, in a final battle for citywide supremacy.

Ruby Washington/The New York Times Jabari Johnson, a senior from Urban Assembly for the Performing Arts High School in Harlem, won for his rhyme about the formula, work equals force times distance.

At stake were pride, bragging rights and some serious swag – the winner got a full day at the Museum of Natural History and a full day in a recording studio with the rapper GZA, of Wu-Tang Clan, who has been a vocal advocate of science education and a figurehead for the Science Genius program.

“Going into schools, I’m just as nervous to be around them as they are to be around me,” GZA said. “There’s no difference.”

Onto the stage the students filed, spitting rhymes about DNA, mitochondria, the big bang, natural selection, reproduction, digestion, the solar system and a “burner named Bunsen.” Lyrics for all the raps appeared on the popular lyrics Web site [Rap Genius](#).

Tara Ware, 27, who teaches earth science at Validus, said she had hoped using hip-hop would help her students retain vocabulary, especially those who spoke English as a second language. But other benefits soon became apparent.

“They learned problem-solving skills,” Ms. Ware said. “And it really tested their work ethic. All my kids love rap, but some aren’t good at it, so they really had to work at it. It took more time to write a rap than write a three-page paper.”

The program was developed by Christopher Emdin, an assistant professor of science education at Teachers College, as part of what he calls “reality pedagogy” – reaching minority students through their culture. Eight volunteers, mostly graduate students, worked with teachers to incorporate hip-hop into the curriculum. In a very limited study, Mr. Emdin said the students in the classrooms that used hip-hop outperformed those who did not.

Musa Kaira, 20, an immigrant from Gambia, West Africa, was one of those who benefited. A senior at English Language Learners and International Support (ELLIS) Preparatory Academy in the Bronx, Mr. Kaira said he had not liked science and had struggled with the class work.

But once rap was added to the mix, “I started staying after school, and used the lab to make a rhyme about freezing and melting,” he said.

His teacher, Jeremy Heyman, 27, said his students learned as much about themselves as they learned about science. “But their enjoyment and appreciation of science were definitely improved.”

From Bronx Compass High School, three freshman girls calling themselves Dreams Divided were sure their rap about DNA and Darwin was going to win.

“We all hated our science class before,” said Victoria Richardson, 14. “Now I can’t wait till Friday to go to science class.” The challenge of writing credible raps – which require dense allusions – meant that they had to do extra research, and to work together. “You can’t just say, ‘DNA, I want to play,’” Victoria said. “You have to make sense.” After the last rhyme, the six judges, who included GZA, deliberated long over the winner. Some students had been ragged but charming; some used elaborate metaphors, a trait shared by scientists and rappers, Mr. Emdin said. Finally the judges returned with a winner: Jabari Johnson, a senior from Urban Assembly for the Performing Arts High School in Harlem, for a rhyme about the formula Work equals Force times Distance. With a derby hat pushed back on his head, he brought academic rigor with a touch of hip-hop braggadocio.

“I’ve been rapping since I was 9,” said Jabari, who plans to pursue a musical career next year rather than attending college. “It came naturally. When you put science and rap together, you get something beautiful.”

Or, as he rhymed it onstage:

“And now I’m progressing, a natural rap genius

And I'ma get an A if I see this on the regent"

Just in case anyone was wondering whether hip-hop would be on the standardized test.

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Teacher Expertise Needed for Educational Material Review:

WNV and Environmental Justice

Dear Teachers,

Middle and high school science and geography teachers are requested to provide their expertise and advice on educational materials. Information about the program is listed below. Please contact Meg (Margaret.winchester@gmail.com) or Brian (bhk2@psu.edu) with questions or if you'd like to participate.

What

A 1-day teacher session to provide your expert advice on educational materials which have been developed for Pennsylvania schools and the My Community Our Earth (MyCOE) initiative. Teachers would receive \$200 for their time and a hotel room the night before if necessary.

Where

Penn State: UP Campus for 1-day (9 am – 4pm) during the week of August 8-14, 2013.

How

Materials would be sent to the participants in advance and asked to come prepared to provide feedback on the quality, fit to standards, potential integration with Pennsylvania schools, and suggestions for improvement. The developers do not want to generate content that would not be used in the classroom, so expert advice at this early stage would be invaluable in guiding their development of the educational units. The units address West Nile Virus and environmental justice to get students to think about human relationships with the social environment and how this influences the spread of disease and possibilities for human health.

They are open to making changes and intend to create at least one additional unit and would be looking for topics that would be particularly useful for teachers. There is a possibility to help test some of the units in their own classrooms during academic year 2013-2014, which would provide developers with the opportunity to make changes based upon their experiences with the materials.

Other Information

The creation of these educational materials is part of a larger National Science Foundation funded research project on health and environment interactions. The research that is occurring within South Africa is examining the relationships between disease, health-decision making, and environmental resource patterns. We are focusing upon HIV in particular, however this falls within a larger framework that considers human health in a broad and holistic manner. The educational units that are being created do not focus upon HIV or South Africa at this time; rather, they are intended to provide an educational expansion of the research project. As such, we have created units that address West Nile Virus and environmental justice to get students to think about human relationships with the social environment and how this influences the spread of disease and possibilities for human health.

Margaret S. Winchester, Ph.D.
Postdoctoral Scholar in Health and Environment
Department of Geography
The Pennsylvania State University
202 Walker Building
University Park, PA 16802
msw23@psu.edu

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NASA NEWS:
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MAVEN Workshop -- Red Planet: Read, Write, Explore!

Audience: Teachers of Grades 3-5
Application Deadline: July 24, 2013
Workshop Date: Aug. 24, 2013

NASA Night Rover Energy Challenge

Audience: Higher Education Educators and Students
Early Registration Deadline: July 26, 2013
Regular Registration Deadline: Oct. 25, 2013

NASA Partners With the LEGO Group for Design and Build Contest

Audience: Anyone Age 13 or Older
Entry Deadline: July 31, 2013

REGISTRATION OPEN: Zero Robotics High School Tournament 2013

Audience: 9-12 Educators and Students
Competition Begins: Sept. 7, 2013

NASA Exploration Design Challenge

Audience: K-12 Educators and Students
Virtual Crew Registration Deadline: March 14, 2014

Don't miss out on upcoming NASA education opportunities.

For a full list of events, opportunities and more, visit the Educator and Student Current Opportunity pages on NASA's website:

-- Educators <http://www.nasa.gov/audience/foreducators/current-ops-index.html>

-- Students <http://www.nasa.gov/audience/forstudents/current-ops-index.html>

Looking ahead:

Space Week NASA Workshop: October 5, 2013 to be held at the Carnegie Science Center

Sponsored by the PA NASA Education Resource Center (ERC) and PRCST in collaboration with the Carnegie Science Center.

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Topic: "Mapping"		
Free Space Week kits	6 Act 48 Hours	Fee \$30.00

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SCIENCE SNIPPETS

Chemical Risk Assessment Network

"Enhanced global efforts are needed to share expertise, to assess, and to manage the risks associated with exposure to hazardous chemicals," according to the agency. Jul 02, 2013

The World Health Organization announced its launch of a new, voluntary chemical risk assessment network on July 1. While chemicals are vital to humanity, some can cause harm to human health, and chemical exposures are linked to the global burden of disease, according to WHO, which reports the production and use of chemicals continues to rise worldwide, particularly in rapidly developing economies.

With all of this in mind, "enhanced global efforts are needed to share expertise, to assess, and to manage the risks associated with exposure to hazardous chemicals," according to the agency. "There is a need to identify knowledge gaps and emerging issues, and to provide a forum for scientific exchange and collaboration on risk assessment."

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Human Hazard Characterization

At first glance, the guidelines for the revised testing for human hazards may be a decade or more behind peer-reviewed findings regarding p450 enzymes in humans and may be intended as a go-really-slowly strategy that doesn't rock the proverbial boat.

"Phase I focused on evaluating how assays performed and the extent to which they could be optimized. The percentage of compounds classified as active by the assays ranged from 0.07% for an epigenetics cell-based assay to 41% for an assay that tested the ability of compounds to interact with the cytochrome P450 enzyme CYP1A2, which is involved in the metabolism of foreign substances." (1)

"The efforts thus far reflect the initial stage of an exceedingly complicated program, one that will likely take decades to fully achieve its goals." (2)

In contrast, microarray analyses based upon known human p450 and glutathione-related genes could be enacted in regard to various chronic diseases and pollutants (eg, 3-4).

· (1)

[Steps toward modernizing human hazard characterization.](#)

A new review describes the first phase of the U.S. government's Tox21 collaboration, which is attempting to establish alternatives to the time-consuming and expensive animal testing used to evaluate chemical toxicity. ~Environmental Health Perspectives [via EHP]

(2) Improving the Human Hazard Characterization of Chemicals: A Tox21 Update

Raymond R. Tice,¹ Christopher P. Austin,² Robert J. Kavlock,³ and John R. Bucher¹

Environ Health Perspect 121:756–765 (2013).

¹Division of the National Toxicology Program, National Institute of Environmental Health Sciences, National Institutes of Health, Department of Health and Human Services, Research Triangle Park, North Carolina, USA; ²National Center for Advancing Translational Sciences, National Institutes of Health, Department of Health and Human Services, Bethesda, Maryland, USA; ³National Center for Computational Toxicology, Office of Research and Development, U.S. Environmental Protection Agency, Research Triangle Park,

North Carolina, USA

Conclusion: Tox21 faces some very difficult issues. However, we are making progress in integrating data from diverse technologies and end points into what is effectively a systems-biology approach to toxicology. This can be accomplished only when comprehensive knowledge is obtained with broad coverage of chemical and biological/toxicological space. ***The efforts thus far reflect the initial stage of an exceedingly complicated program, one that will likely take decades to fully achieve its goals.*** However, even at this stage, the information obtained has attracted the attention of the international scientific community, and we believe these efforts foretell the future of toxicology.

3. [Pharmacogenetics: detecting sensitive populations.](#)

Shields PG.

Environ Health Perspect. 1994 Dec;102 Suppl 11:81-7.

[open access]

"Current risk assessment models fail to consider genetic predispositions that make people more sensitive or resistant to exogenous exposures and endogenous processes."

4. [Genetic polymorphism of cytochrome P450 as a biomarker of susceptibility to environmental toxicity.](#)

Hong JY, Yang CS.

Environ Health Perspect. 1997 Jun;105 Suppl 4:759-62.

[open access]

Agriculture Secretary Tom Vilsack announced that the U.S. Department of Agriculture has designated eight new biobased product categories for preferred Federal procurement. The announcement furthers the goals of last year's presidential memorandum designed to increase rural job creation through procurement of biobased products and increase the number of biobased product categories and individual products eligible for preferred purchasing. There are now 97 designated categories representing approximately 10,000 unique types of products.

"Every day, companies across the nation are creating incredible new products from crops grown here at home, expanding markets for agriculture and growing job opportunities in rural America," said Vilsack. "

USDA has designated the following new categories: aircraft and boat cleaners; automotive care products, engine crankcase oil; gasoline fuel additives; metal cleaners and corrosion removers; microbial cleaning products; paint removers; and water turbine bearing oils. A full list was published in the June 11, 2013 Federal Register.

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Environmental Issues

The U.S. Food & Drug Administration (FDA) made two moves in recent days that seemingly address consumer concerns on some hot button issues. First, it banned the use of bisphenol A (BPA) based epoxy resins in coatings for baby formula packaging. Second, it proposed a limit on how much arsenic is allowed in apple juice. Looking more closely at these decisions, however, it seems that FDA is really more interested in appeasing industry, than doing its duty to protect the public.

So what action is the FDA really taking? Due to intense consumer demand, manufacturers of infant formula packaging have already stopped using BPA. And, based on the new standard for arsenic levels, 95 percent of companies that make apple juice are already in compliance.

The FDA made a similar move last year when it [banned](#) BPA from baby bottles and sippy cups when nearly all U.S. manufacturers had already stopped using BPA for those products. The move was mainly said to be about “boosting consumer’s confidence.”

Both the [FDA](#) and the [American Chemistry Council](#), an industry trade group, have said that the BPA ban is in response to marketplace demands, not due to safety concerns regarding the ubiquitous substance. And there are an abundance of safety concerns regarding BPA as well as increased public awareness about the potential dangers of BPA. The American Chemistry Council has repeatedly dismissed the hundreds of peer-reviewed studies that link BPA to a wide range of health concerns including various types of cancer, impaired immune function, early onset of puberty, obesity, diabetes, and hyperactivity. In addition, a [recent study](#) published this June in the journal *Environmental Health Perspectives* changes our understanding of how BPA is absorbed by the body. Researchers found that BPA is absorbed under the tongue and goes directly to the bloodstream, resulting in a much higher exposure to the chemical. Of further concern is the fact that without clear government regulations, manufacturers can replace BPA with other chemicals that may be just as harmful. (I wrote about this in a previous [article](#) for Civil Eats). “Anything that substitutes for BPA should have to go through a screen for hormonal activity,” Hansen said. “There is a report that looks at 16 different replacements for BPA and I would suspect all of these have the same hormonal activity.”

Hansen was more optimistic about the FDA’s new federal limits on arsenic in apple juice. The new regulation says that apple juice containing more than 10 parts per billion could be removed from the market and companies could face legal action. But the FDA stressed that most companies on the market are already below that threshold.

Much of the concern around apple juice stems from a *Consumer Reports* [finding](#) published last year in which researchers tested 28 different apple juices bought from stores in Connecticut, New Jersey and New York. Five samples of apple juice tested and four of grape juice had total arsenic levels exceeding the 10 parts per billion federal limit for bottled and drinking water, according to the report.

Consumer Reports also found high levels of lead in apple juice and grape juice as a result of insecticide use. The report also brought to light the fact that for the past decade, [most concentrate has come from China](#) (PDF) and concerns have been raised about the possible continuing use of arsenical pesticides there.

Hansen said the new limit is important because, for the first time, it puts a federal limit on the amount of arsenic in a juice product. But the limits don’t address the arsenic found in grape juice, nor the levels of lead in any juice products. “Yes, that is problematic,” Hansen said. “It’s good that they’ve done it for apple juice but they should be doing it in other juices as well. We found [arsenic] in grape juice and FDA’s own data has found it can show up in pear juice as well.”

While inorganic and organic arsenic are both found in these juices, it was originally thought that inorganic arsenic was of greatest concern, since it is a known carcinogen. According to the FDA, inorganic [arsenic](#) has also been associated with skin lesions, developmental effects, cardiovascular disease, neurotoxicity and diabetes.

Organic arsenic was once thought to pass through the body more quickly and not cause harm. However, the FDA now states that organic arsenic may cause harm as well. “Some organic forms can be even more toxic than the inorganic,” Hansen explained.

The arsenic found in apple juice is largely the result of years of arsenical insecticides being applied to apple orchards, Hansen said. He added that the science on arsenic is evolving so that scientists now believe it is far more toxic than was previously thought.

Consumers Union, the advocacy arm of *Consumer Reports*, wanted a limit as low as three parts per billion, but the FDA is putting that limit at 10 parts per billion, a threshold that the vast majority of manufacturers already meet.

According to an Associated Press [article](#), “All of the experts—including the government and the consumer advocates—agree that drinking small amounts of apple juice isn’t harmful. The concern involves the effects of drinking large amounts of juice over long periods of time.” But for the public, that language is vague—especially for an overburdened consumer scanning labels and reading ingredients for products on grocery store shelves.

Furthermore, a new [study](#) found that the combined effect of estrogen and arsenic significantly increases the risk of prostate cancer. BPA is one of the many endocrine disrupting chemicals in our food supply that has an estrogen-like effect in the body. Therefore, it is possible, that within that plastic bottle of apple juice is a potent concoction of chemicals that may lead to prostate and other forms of cancer.

- See more at: <http://civileats.com/2013/07/23/the-fda-working-hard-to-protect-industry/#sthash.4jSnH8Fd.dpuf>

DATABASE

The Project WET Curriculum and Activity Guide

The Project WET Curriculum and Activity Guide 2.0 was awarded an [Independent Publishers Gold Medal](#).

The centerpiece of Project WET is the [Project WET Curriculum and Activity Guide 2.0](#), published in 2011.

This full-color, fully revised 616-page guide contains 64 multidisciplinary water-related activities for students from Kindergarten through 12th grade. The guide features cross-reference and planning charts, a glossary and background material on activity development and field testing.

The cornerstone of Project WET is its [methodology](#) of teaching about water resources through hands-on, investigative, easy-to-use activities.

Guide activities are organized based on the following [conceptual framework](#):

- Water has unique physical and chemical characteristics.
- Water is essential for all life.
- Water connects all Earth systems.
- Water is a natural resource.
- Water resources are managed.
- Water resources exist within social constructs.
- Water resources exist within cultural constructs.

Project WET activities are designed to complement existing curricula rather than displace or add additional concepts. Activities fulfill objectives and educational standards in the sciences, as well as other disciplines, from fine arts to health.

Because water is ubiquitous, water-related concepts can be found in almost any field of study. In addition, the **Guide** has been correlated with the educational standards of most states.

Activities within the **Project WET Curriculum and Activity Guide** are universal in their methods of teaching about water. More than 40 countries in addition to the United States use **Project WET Curriculum and Activity Guide** activities.

The first edition of the **Project WET Curriculum and Activity Guide** is currently available in English, Spanish, and Japanese, and a version also has been localized for the Philippines.

The **Project WET Curriculum and Activity Guide** is available to all teachers and community educators (e.g., youth leaders for scouts, Boys and Girls Clubs, 4-H) through community workshops provided by coordinators or trainers (facilitators) from Project WET Host Institutions. In addition to the book, workshop participants receive a minimum of six hours of training through workshops

Reduce Food Waste!

Farmers, retailers, communities challenged to help reduce, reuse, and recycle food waste. Americans send 35 millions tons of food waste to landfills and incinerators - contributing to transportation costs, methane release, and pollution.

<http://1.usa.gov/11dOK1k>

VIDEOS - JUNE RELEASES

Ovie Mughelli: Make a change for our environment

<http://www.youtube.com/watch?v=qRZOSUvURM4>

Series "Take a second. Make a difference."

-Turn it down (thermostat)

<http://www.youtube.com/watch?v=N1M3YBpUasU>

-Shut it down (electronics)

<http://www.youtube.com/watch?v=3tXAJjt-4DE>

-Shut it off (the faucet)

<http://www.youtube.com/watch?v=ZZ1MqGhriSM>

-Reduce, Reuse, Recycle

<http://www.youtube.com/watch?v=YrV35iHuGt4>

It All Leads To The Ocean PSA

<http://www.youtube.com/watch?v=44GII-AHLBs>

Federal Partnership supports Bridgeport 2020 Sustainability Vision

<http://www.youtube.com/watch?v=hwbai66DaD0>

More at: <http://youtube.com/usepagov>

Green Apps!

A new EPA web site helps you find apps for your mobile device, submit ideas for new apps, or discover how to use EPA data if you develop your own apps.

<http://epa.gov/mygreenapps>

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NANOPARTICLES AND HEALTH IMPACTS

Ingestion of commonly encountered nanoparticles at typical environmental levels is unlikely to cause overt toxicity, according to US researchers. Nevertheless there is insufficient evidence to determine whether chronic exposures could lead to subtle alterations in intestinal immune function, protein profiles, or microbial balance.

"Nanoparticle toxicity by the gastrointestinal route: evidence and knowledge gaps" in Int. J. Biomed Nanosci Nanotechnol, 2013, 3, 163-210

www.inderscience.com/dev/search/index.php?action=record&rec_id=54515

EPA defends chemical testing of low-dose hormone effects

The U.S. Environmental Protection Agency has concluded that current testing of hormone-altering chemicals is adequate for detecting low-dose effects that may jeopardize health. This comes in response to a report written last year by 12 scientists who criticized the government's decades-old strategy for testing the safety of many chemicals found in the environment and consumer products. The scientists specifically focused on a phenomenon called "nonmonotonic dose response," which means that hormone-like chemicals often do not act in a typical way; they can have health effects at low doses but no effects or different effects at high doses. The EPA's conclusion was commended by the chemical industry, which called the evidence "at best, very weak." But a Tufts University scientist said it "flies in the face of our knowledge of how hormones work."

The scientists specifically focused on a phenomenon called "nonmonotonic dose response," which means that hormone-like chemicals often do not act in a typical way; they can have health effects at low doses but

no effects or different effects at high doses. The EPA frequently evaluates the risks of chemicals with tests that expose lab animals to high doses, then extrapolating to lower doses that people and wildlife encounter.

Dozens of substances that mimic or block estrogen, testosterone or thyroid hormones are found in the environment, food, pesticides and consumer products. The idea that these chemicals harm people at tiny doses remains controversial.

The EPA's [draft "State of the Science" report](#), completed last week, found that such low-dose responses "do occur in biological systems but are generally not common."

Laura Vandenberg, Tufts University, was lead author of a report that criticized current testing.

The EPA's belief that high dose testing can predict safety at low doses "flies in the face of our knowledge of how hormones work," Vandenberg told EHN in an email. "They [endocrine disrupting chemicals] are overtly toxic at high doses but act like hormones, with completely different actions, at low doses."

The EPA's belief that high dose testing can predict safety at low doses "flies in the face of our knowledge of how hormones work." - Laura Vandenberg, Tufts University In the 2012 report, Vandenberg and colleagues pointed to chemicals such as bisphenol A (BPA) – which is found in polycarbonate plastic and some canned foods and paper receipts – and atrazine, a pesticide used mostly on corn, as examples of chemicals that are inadequately tested to protect human health.

"Whether low doses of endocrine-disrupting compounds influence human disorders is no longer conjecture, as epidemiological studies show that environmental exposures are associated with human diseases and disabilities," the scientists said in their report published in the journal *Endocrine Reviews*.

They cited evidence of a wide range of health effects in people – from fetuses to aging adults – including links to infertility, cardiovascular disease, obesity, cancer and other disorders.

Vandenberg said the EPA used out-of-date studies on atrazine, when they should have used a new publication with dozens of authors from around the world showing the "consistent, low-dose effects of this chemical on amphibians, reptiles, fish, birds and mammals."

Research Shows that Monsanto's Big Claims for GMO Food Are Probably Wrong

It's going to be a tough row to hoe, from here on out for Monsanto.

By Jill Richardson

<http://www.alternet.org/food/why-monsanto-wrong-about-gm-crop-promises>

[excerpt]

But that's not actually the case. A new peer-reviewed study published in the [International Journal of Agricultural Sustainability](#) examined those claims and found that conventional plant breeding, not genetic engineering, is responsible for yield increases in major U.S. crops. Additionally, GM crops, also known as genetically engineered (GE) crops, can't even take credit

for reductions in pesticide use. The study's lead author, Jack Heinemann, is not an anti-biotechnology activist, as Monsanto might want you to believe. "I'm a genetic engineer. But there is a difference between being a genetic engineer and selling a product that is genetically engineered," he states.

Internet Use in America: Where, Why, and How?

Earlier this month, the National Telecommunications and Information Administration ([NTIA](#)) released a new report, [Exploring the Digital Nation: America's Emerging Online Experience](#), co-authored with the Economics and Statistics Administration ([ESA](#)). The report is based on the U.S. [Census Bureau's](#) July 2011 Current Population Survey ([CPS](#)), Computer and Internet Use Supplement and includes information collected from 53,500 households. Report data reveal dramatic growth in the number of Americans going online and the extent to which they depend on the Internet to engage in a wide range of activities—such as applying for jobs, looking up health information, and civic engagement.

The report shows that 72.4 percent of American households (88 million households) have high-speed Internet. While most Americans still use a desktop or laptop computer to go online, mobile device use grew significantly. Further, almost all home Internet use came via a broadband connection.

Exploring the Digital Nation, showed that digital service adoption rates varied by location. Urban households have higher rates of computer ownership and broadband adoption than rural areas. White, Asian-American, high-income, and highly educated households also had higher rates of ownership and adoption rates compared to rural African American and Hispanic households. Despite an increase in the overall percentage of Americans who use the Internet, and the fact that 90 percent of Americans live in areas where high-speed Internet is available, only about seven out of 10 American households are now online at home. About half of the households that chose to not have home Internet connections said it was due to a lack of affordability, and inadequate computing equipment.

Households with school-age children were more likely than those without children to own a computer and to adopt broadband. The overwhelming majority (92 percent) of people who accessed the Internet did so from home with the remaining Internet users going online at public libraries, workplaces, school, other people's houses, cafés, and community centers.

The report shows that widespread Internet use benefits society. Even so, approximately 30 percent of the 119 million households represented in the CPS did not use the Internet at home, which contributed to the persistence of a "digital divide." In light of that, an ongoing focus of the CPS data collections in the Digital Nation series will be to examine households that do not have broadband Internet service to assess why they do not. Broadband adoption is seen as key to ensuring that all Americans can take full advantage of the opportunities presented by the digital economy.

[Insecticide temporarily banned by Oregon Department of Agriculture.](#)

In response to a massive bumblebee die-off blamed on pesticides, the Oregon Department of Agriculture issued a temporary restriction Thursday on 18 insecticides with the active ingredient dinotefuran. [Portland Oregonian](#), Oregon.
<http://bit.ly/111pGzN>

[A Healthier Generation Through Smart Snacks in Schools](#)

Today, USDA is furthering its commitment to improving the way that our youngsters eat by establishing science-based, common-sense standards for snacks sold in schools. The new "[Smart Snacks in School](#)" nutrition standards will positively impact more than 50 million American youngsters by ensuring that they are offered only healthier foods at school.

Based on feedback from nearly 250,000 parents, teachers, school food service professionals, and the food and beverage industry, we carefully balanced science-based nutrition standards, based on recommendations from the Institute of Medicine and the Dietary Guidelines for Americans, with practical and flexible solutions to promote healthier eating at school.

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[New FREE Site Features Open Data and Mobile-Friendly Design](#)

Last week a beta version of FREE's new website was launched. The new [Federal Registry for Educational Excellence](#) (FREE) is powered by the [Learning Registry](#), an open database for sharing digital learning resources. This partnership will provide educators, parents and students with a broader inventory of educational materials from federal agencies and public and private organizations. More than 200,000 freely available resources are included. The site incorporates responsive design for mobile devices. This means FREE looks great and works well for users on smartphones and tablets. Learn [more](#).

[Celebrating 90 Years of C&EN](#)

As the celebration of C&EN's 90th anniversary continues, two special anniversary events are coming up quickly: [the C&EN Anniversary Issue \(September 9\)](#) will be a keepsake issue with nine editorial features profiling significant developments in the chemistry enterprise and much more! Also included in the issue will be a removable C&EN commemorative poster leading you through the chemistry timeline with interesting dates, colorful graphics, and archived photographs. The poster is sure to be a keepsake item for C&EN readers. Also scheduled is the [free C&EN Webinar, "Food Fraud: How Scientists Detect It & What You Should Know,"](#) to be held on September 10, 2013; if you'll be at the ACS Fall National Meeting in Indianapolis, stop by the ACS Booth and be a participant in the live Q&A for the webinar. Keep up with all the C&EN anniversary events at cen.acs.org/ninety.html.

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[USDA and DOI Highlight Successes of Protecting Bird Habitat on Private Lands](#)

WASHINGTON, July 2, 2013 -- Agriculture Secretary Tom Vilsack and Interior Secretary Sally Jewell today announced the release of the *State of the Birds 2013 Report on Private Lands*. A collaborative effort as part of the U.S. North American Bird Conservation Initiative, involving federal and state wildlife agencies and scientific and conservation organizations, the report shows how private land conservation incentives positively impact bird habitat.

“Sixty percent of U.S. land is in private hands, making the efforts of farmers, ranchers and landowners critical when it comes to creating, restoring and protecting bird habitat,” Secretary Vilsack said. “Today’s report highlights the positive impact of voluntary conservation measures for birds, including those made possible by Farm Bill programs. The need for a long-term commitment to conservation is just one more good reason why we need Congressional passage of a multi-year Food, Farm and Jobs Bill as soon as possible.”

Individuals, families, organizations and corporations, including two million ranchers and farmers and about 10 million woodland owners, own and manage 1.43 billion acres, roughly 60 percent of the land area of the United States. Private lands are used by virtually all of the terrestrial and coastal birds of the United States, 251 of which are federally threatened, endangered or of conservation concern. Many privately owned working lands that produce a bounty of food, timber, and other resources for society also provide valuable habitat for birds.

“Our nation’s most effective conservation efforts are partnerships in which federal, state and local governments work hand-in-hand with private landowners and other stakeholders,” said Secretary Jewell. “The programs highlighted in this report help build these voluntary partnerships to conserve the vital habitat of our many bird species. In addition, many of these partnerships provide direct benefits to people such as improving water quality and supporting jobs and economic growth.”

The State of the Birds 2013 Report on Private Lands shows that private lands have critical conservation value, and that landowners and managers can measure their yield not only in bushels and head and cords, but also in bluebirds, hawks and canvasbacks.



SSP Scholarships and Grants

SSP is dedicated to educating members of the scientific community, students, and teachers about spectroscopy and science. We achieve this goal by providing schools in need with equipment necessary to educate students on science. Below is a list of grants we are currently offering.

Each grant has its own set of application guidelines, so make sure to review the application instructions. Check back often, as new grants will be continuously posted throughout the year.

SSP sponsors the following the grants:

 [Elementary School Science Olympiad Program \(ESSOP\)](#)

 [High School Equipment Grants \(HSEG\)](#)

 [Pittsburgh Conference Memorial National College Grants Program \(PCMNCG\)](#)

 [College Equipment Grant Program \(CEGP\)](#)



Scholarships & Grants

The SACP is dedicated to educating members of the scientific community, students, and teachers about spectroscopy and science. We achieve this goal by providing schools in need with equipment necessary to educate students on science. Below is a list of grants we are currently offering.

Each grant has its own set of application guidelines, so make sure to review the application instructions. Check back often, as new grants will be continuously posted throughout the year.

SACP sponsors the following the grants:

 [ES/MS Equipment Grants Program](#)

 [Pittsburgh Conference Memorial National College Grant \(PCMNCG\)](#)

 [Elementary School Science Olympiad Program \(ESSOP\)](#)

 [Starter Grant](#)

 [College Chemistry Scholarship](#)

Welcome to CTSI!

What is CTSI?

The mission of the Clinical and Translational Science Institute (CTSI) at the University of Pittsburgh is to improve the efficiency with which biomedical advances translate to improvements in the health of the community. CTSI is transforming the process of clinical and translational research through the provision of research and educational resources, thus training and enabling scientists to generate and translate new biomedical knowledge.

How CTSI Can Help You

CTSI helps researchers to conduct visionary and relevant clinical and translational research and to move actionable research findings into practice and prevention settings.

CTSI offers assistance and services to researchers in all stages of the research spectrum, ranging from basic biomedical investigations to outcomes and community based research. Please use the links to the left to explore what CTSI can do for you and your research.



Click this button, anywhere on the CTSI website, to contact a CTSI Research Facilitator and begin to access CTSI resources!

Mobile Lab available for school visits: Barbara Paul - Educator

CALENDAR OF EVENTS

July 17-18 PRCST STEM Series Workshops

<p align="center">NEW STEM 2-Day WORKSHOP Sponsored by The Pittsburgh Regional Center for Science Teachers (PRCST) in collaboration with the Tri-State Area School Study Council</p>

Join in exploring REAL STEM job applications
Beyond the "talk"

All educators invited: teachers, administrators, curriculum coordinators, principals, central office

July 17-18, 2013

Thermo Fisher Scientific Inc, 100 Technology Drive #100, Pittsburgh, PA 15219

Just off Second Avenue near the Hot Metal Bridge

Free parking available

12 Act 48 Hours

Fee: \$50 (includes continental breakfast and luncheon both days)

NSTA Conferences

Oct. 24-26 Portland, OR
Nov. 7-9 Charlotte, NC
Dec. 12-14 Denver, CO

See: www.nsta.org/conferences

Continuing PRCST STEM 2013 Mini-Workshop Series:

Throughout the fall of 2013. Contact Jackie Pfeiffer: Pfeifferjc@aol.com

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Saturday, September 21, 2013

The ALCOSAN Open House

9:00 am - 4:00 pm

Free parking, Free Food, Extra Credit Activities for school, Tour of the Plant.

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2013 TRET – November 19 / 20 The Three Rivers Educational Technology Conference

The 2013 conference planning is just getting started! Put November 19 and 20, 2013 on your calendar and watch for more news about this year's event.

NEW location this year: Four Points by Sheraton, Cranberry Township

Cost: \$99. Registration to open shortly.

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December 4-6, 2013, PSTA Annual Conference, State College, PA

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Mar.14-15, 2014

Spheres of Influence: Shaping the Curve of Environmental Education

Antiochian Village near Ligonier, PA

March 14-15, 2014

Contact: Ruth Roperti roperti@zoominternet.net or mail

to Ruth Roperti 965 Edgewood Road, Beaver Falls, PA 15010 Any questions to Ruth 724
843 7046 or 412 974 7859

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National Energy Technology Laboratory (NETL)

PAEE – PA Association for Environmental Educators

PASA – Education Program

PSBR – PA Society for Biomedical Research

Phipps Conservatory and Botanical Gardens

Pittsburgh Geological Survey

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PA NASA Educator Resource Center (ERC)

Spectroscopy Society of Pittsburgh (SSP)

Society for Analytical Chemists of Pittsburgh (SACP)

The Pittsburgh Foundation – Nancy Hannon Gordon Fund

University of Pittsburgh – School of Education

Western PA Unit – Herb Society of America – Gardens workshops

Women in Chemistry