

PROST

**Pittsburgh Regional Center
For Science Teachers**



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LOCAL ACCESS TO SCIENCE EDUCATION RESOURCES

WOW - From hottest fall/ year to the coldest fall/winter!

Perhaps 2011 will not bring us such extremes. One 2010 event will not be experienced for another 400 years though...did you see the lunar eclipse December 21st. This will not coincide with the winter solstice again for 400 years. So - lucky those of you who were witnesses this time around.

EDUCATION NEWS

City schools to count Keystone Exams

Thursday, December 16, 2010

By Eleanor Chute, Pittsburgh Post-Gazette

The Pittsburgh Public Schools board voted Wednesday night to adopt the Keystone Exams as a graduation requirement and count them as part of students' final grades.

The state is in the process of developing the end-of-course exams, the first three of which will be available in the spring. All school districts statewide will be required to adopt the Keystone Exams or a validated local assessment for graduation. Many are expected to rely on the Keystones to avoid the expense of developing local exams.

If they use the Keystones, districts have two choices: They must count the results for at least a third of the student's course grade, which could make it possible to pass a course without being proficient on the exam. Or they could require proficiency on the Keystones for graduation and not count the exams toward the course grade.

In Pittsburgh's case, the administration asked the board to make the exams one-third of the students' grades, with two-thirds of the grade assigned by the teacher. No student is to be denied a diploma based only on test scores. Students who score below proficient will be able to re-take the test or portions of the test. They also will be able to earn points through project-based assessments.

This spring, the state will offer Keystone Exams in Algebra 1, biology and literature. The number of correct answers needed to pass won't be determined until after the tests are given. Those who score below basic will receive a zero on the test. Other students will receive at least 50 points toward their grade, based on a scale, not a percentage.

The Pittsburgh plan calls for requiring students in the Class of 2014 to take the Keystones in Algebra 1, English composition and literature. In Pittsburgh, the plan calls for the classes of 2015 and 2016 to take four Keystones. The number of required exams will grow to six for the Class of 2017.

Ultimately, the state will make 10 Keystones available in English, math, science and social studies.

The state requirements for the Keystones or a validated local assessment begin with the Class of 2015. That class and the Class of 2016 must show proficiency in English composition, literature, Algebra and biology. The Class of 2017 and beyond must demonstrate proficiency in six areas: English composition, literature, two maths, one science and one social studies

Read more: <http://www.post-gazette.com/pg/10350/1111132-53.stm#ixzz18gQXlgyE>

Dear Colleague,

We are writing to update you on the status of our project "Conceptual Framework to Guide the Development of Next Generation Standards for K-12 Science Education". The authoring committee is hard at work revising the framework based on the extensive and thoughtful feedback received during the July public comment period. Once the committee has carefully considered all of the feedback and completed its revisions, the revised framework will undergo a confidential external review by a group of independent experts selected by the National Research Council. The report will be released once it has cleared this rigorous external review process.

At this point, we anticipate releasing the Framework in spring of 2011.

Background on the Framework:

The Framework is the first step in a process for revising existing standards in K-12 science education. In the second step, Achieve, Inc., an independent, bipartisan, non-profit education reform organization that works closely with states will develop a full set of internationally-benchmarked standards based on the Framework. The Framework will also be available for immediate use by states, curriculum and assessment developers, and leaders of professional development for teachers. Both efforts; creating a framework and developing standards based on this framework, have been funded by the Carnegie Corporation of New York.

The Framework is being developed by a committee of 18 experts convened by the NRC. The committee members are all unpaid volunteers and represent expertise in the natural sciences, engineering, learning sciences, learning and teaching, curriculum, assessment, and education policy.

The Framework describes the major ideas and practices in the natural sciences and engineering that all students should be familiar with by the end of high school. The Framework is designed to help realize a vision for education in the natural sciences in which students actively engage in science practices in order to deepen their understanding of core ideas in science over multiple years of school. This new vision of the key ideas and practices students should learn is vital as science influences virtually every decision a person makes today and is a key component of innovation, which drives U.S. competitiveness and economic growth.

As the Framework is not a set of fully elaborated standards, it does not include an articulation of the ideas and practices at every grade level. Instead, it offers assumptions only at some key grade level “anchor points” and provides a few examples of performance expectations to serve as illustrations for standards development.

We thank you for your interest.

Sincerely,

Helen Quinn, Chair

Status of Professional development

Professional Development for Teachers at Crossroads

To Influence Policy, the Field Must be Able to Articulate Both What It Is and How It Can Help Teachers Improve Student Achievement (an excerpt) By [Stephen Sawchuk](#)

Perhaps no other aspect of the teacher-quality system in the United States suffers from an identity crisis as severe as that of professional development.

Few in the education field discount the eminently logical idea that teachers should be supported in the continuous improvement of their craft. But as a term for describing ongoing training investments in the teaching force, “professional development” has become both ubiquitous and all but meaningless.

Though frequently invoked by lawmakers and consultants, most recently in states’ applications for the federal Race to the Top competition, professional development plans generally incorporate little context about who will provide the training and for what purpose. That this situation endures, despite a focus during

the past decade on data analysis and research to improve instruction, is both a testament to the complexity of the professional-development enterprise, and its greatest problem: Mediocre, scattershot training, apart from doing little to help students, is a burden for teachers.

TEACHER EFECIVENESS

New developments in education policy portend a crossroads of sorts for the field of professional development. For one, the idea of “teacher effectiveness” is now front and center on the state and national policy agenda. In theory, the idea dovetails with the goal of professional development: to ensure that teachers have opportunities to improve their craft and are given tools with which to do so, and that school systems have a way of determining whether students learn more as a result.

Yet advocates acknowledge that professional development risks marginalization in the teacher-effectiveness conversation unless it is able to articulate clearly its place in producing better teachers.

“The hard truth is that, until recently, the field of professional development has been underdeveloped and immature,” said M. Hayes Mizell, a distinguished senior fellow at Learning Forward, a nonprofit group and membership organization that works to improve the quality of ongoing training. “It has tolerated a lot of sloppy thinking, practice, and results. It has not been willing to ‘call out’ ineffective practice and ineffective policy. ... It has not devoted attention to outcomes.”

In this special report, *Education Week* takes a detailed look at some of the critical issues faced by those charged with upgrading the quality of post-preparation teacher training.

Changing Landscape

Teacher-quality policy has evolved dramatically since 1996, when *Education Week* last examined professional development in a special report.

At that time, teacher quality was still largely defined by teachers’ characteristics, such as the selectivity of teacher education program attended, credentials held, educational attainment, and state licensing status. But as analyses of longitudinal data linking teachers to student test scores have become common, researchers have discovered that such individual characteristics are by themselves only weakly predictive of student academic success.

“We’ve recognized professional development as important, but we don’t have very clear standards for what we’re looking for and we don’t have much accountability for what teachers engage in,” said Jennifer King Rice, a professor of education policy at the University of Maryland College Park. “It opens the floodgates for just about anything to be called professional development.”

Practices that fall under the broad heading conceivably include everything from teacher induction and contractually set in-service days to content coaching, recertification credits, and participation in professional associations and networks.

Obstacles Abound - In addition, scholars point to problems with how the training is selected and provided. “Every time the superintendent goes to a conference, the teachers get worried, because they know he’s going to come back with something he wants to try,” said Thomas R. Guskey, a professor of educational psychology at the University of Kentucky, in Lexington. “We should start where students’ weaknesses and shortcomings are and then seek strategies or techniques to help [teachers] understand those shortcomings.”

"The hard truth is that, until recently, the field of professional development has been underdeveloped and immature."

M. Hayes Mizell

Distinguished Senior Fellow, Learning Forward

As with all teacher training, the team-based approach can be done well or poorly. Supporters of the model stress that merely putting teachers in a conference room once a week doesn’t, by itself, yield better professional development.

“There’s probably not a district out there that doesn’t think it’s doing PLCs,” said Judy Haptonstall, the superintendent of the 5,000-student Roaring Fork district, in Colorado, which for eight years has set aside time each month for teachers to work together. “But the heart of it has to be about planning for good instruction and evaluating teaching.”

What all the spending on personnel, programming, and teacher release time actually buys remains hard to determine, because districts typically amalgamate federal, state, and local dollars for those purposes—and do little to track their impact on teacher and student learning.

Despite all the challenges in the field, there are signs of rejuvenation, too. Providers of all sorts are creating new programming to respond to new needs, such as helping general teachers work with special populations of students.

On the cutting edge is a way of thinking about professional development that focuses not just on content but also on the minute-by-minute ways teachers make pedagogical decisions in classrooms.

And finally, there are teachers in every building and every school who are dedicated to constant improvement. They include teachers like Corey R. Sell, an 11-year veteran of the field who for years has grabbed bits and pieces of everything from academic journals to in-service workshops that he felt would make him a better teacher.

Now all that remains is figuring out how to get all teachers to share that degree of professional commitment.

NOTE: PRCST has provided outstanding professional development opportunities for 26 years – programs that bring current, accurate, and relevant information to teachers for integration into their curriculum.

SCIENCE SNIPPETS:

Materials: An Updated Review of Exposure; Effect and Risk Assessment.

Muncke J.Emhart Glass SA, Hinterbergstrasse 22, P.O. box 2251, 6330 Cham, Switzerland.

Abstract

Food contact materials (FCM) are an underestimated source of chemical food contaminants and a potentially relevant route of human exposure to endocrine disrupting chemicals (EDCs). Quantifying the exposure of the general population to substances from FCM relies on estimates of food consumption and leaching into food. Recent studies using polycarbonate plastics show that food simulants do not always predict worst-case leaching of bisphenol A, a common FCM substance. Also, exposure of children to FCM substances is not always realistically predicted using the common conventions and thus possibly misjudged. Further, the exposure of the whole population to substances leaching into dry foods is underestimated. Consumers are exposed to low levels of substances from FCM across their entire lives.

Effects of these compounds currently are assessed with a focus on mutagenicity and genotoxicity. This approach however neglects integrating recent new toxicological findings, like endocrine disruption, mixture toxicity, and developmental toxicity. According to these new toxicology paradigms women of childbearing age and during pregnancy are a new sensitive population group requiring more attention.

Furthermore, in overweight and obese persons a change in the metabolism of xenobiotics is observed, possibly implying that this group of consumers is insufficiently protected by current risk assessment practice. Innovations in FCM risk assessment should therefore include routine testing for EDCs and an assessment of the whole migrate toxicity of a food packaging, taking into account all sensitive population groups. In this article I focus on recent issues of interest concerning either exposure to or effects of FCM-related substances. Further, I review the use of benzophenones and organotin, two groups of known or suspected EDCs, in FCM authorized in the US and EU.

<http://www.ncbi.nlm.nih.gov/pubmed/21073950>

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EPA to Expand Chemicals Testing for Endocrine Disruption

WASHINGTON - The U.S. Environmental Protection Agency (EPA) has identified a list of 134 chemicals that will be screened for their potential to disrupt the endocrine system. Endocrine disruptors are chemicals that interact with and possibly disrupt the hormones produced or secreted by the human or animal endocrine system, which regulates growth, metabolism and reproduction. Administrator Lisa P. Jackson has made it a top priority to ensure the safety of chemicals, and this is another step in this process.

“Endocrine disruptors represent a serious health concern for the American people, especially children. Americans today are exposed to more chemicals in our products, our environment and our bodies than ever before, and it is essential that EPA takes every step to gather information and prevent risks,” said EPA Administrator Lisa P. Jackson. “We are using the best available science to examine a larger list of chemicals and ensure that they are not contaminating the water we drink and exposing adults and children to potential harm.”

The list includes chemicals that have been identified as priorities under the Safe Drinking Water Act (SDWA) and may be found in sources of drinking water where a substantial number of people may be exposed. The list also includes pesticide active ingredients that are being evaluated under EPA’s registration review program to ensure they meet current scientific and regulatory standards. The data generated from the screens will provide robust and systematic scientific information to help EPA identify whether additional testing is necessary, or whether other steps are necessary to address potential endocrine disrupting chemicals.

The chemicals listed include those used in products such as solvents, gasoline, plastics, personal care products, pesticides, and pharmaceuticals, including benzene, perchlorate, urethane, ethylene glycol, and erythromycin.

After public comment and review, EPA will issue test orders to pesticide registrants and the manufacturers of these chemicals to compel them to generate data to determine whether their chemicals may disrupt the estrogen, androgen and thyroid pathways of the endocrine system.

EPA is already screening an initial group of 67 pesticide chemicals. In October 2009, the agency issued orders to companies requiring endocrine disruptor screening program data for these chemicals. EPA will begin issuing orders for this second group of 134 chemicals beginning in 2011.

EPA has the most comprehensive mandated testing program for hormone effects in the world. The program is the result of a multi-year effort that includes validation of the science through a transparent scientific review process.

More information: <http://www.epa.gov/endo>

Basic Information about Chromium in Drinking Water

Ensuring safe drinking water for all Americans is a top priority for EPA. EPA has a drinking water standard of 0.1 mg/L for total chromium, which includes chromium-6, and we require water systems to test for chromium. This standard is based on the best available science and is enforceable by law. EPA regularly re-evaluates drinking water standard and, based on new science on chromium-6, had begun a rigorous and

comprehensive review of its health effects in 2008. In [September 2010](#), we released a draft of that scientific assessment for public comment. When this human health assessment is finalized in 2011, EPA will carefully review the conclusions and consider all relevant information to determine if a new standard needs to be set.

Chromium may cause health problems if present in public or private water supplies in amounts greater than the drinking water standard set by EPA.

- [What is chromium \(total\)?](#)
- [Uses for chromium \(total\).](#)
- [What are chromium \(total\)'s health effects?](#)
- [What are EPA's drinking water regulations for chromium \(total\)?](#)
- [How does chromium \(total\) get into my drinking water?](#)
- [How will I know if chromium \(total\) is in my drinking water?](#)
- [How will chromium \(total\) be removed from my drinking water?](#)
- [How do I learn more about my drinking water?](#)

What is chromium (total)?

Chromium is a metallic element in the periodic table. It is odorless and tasteless. Chromium is found naturally in rocks, plants, soil and volcanic dust, humans and animals. The most common forms of chromium in the environment are trivalent (chromium-3), hexavalent (chromium-6) and the metal form, chromium-0. Chromium-3 occurs naturally in many vegetables, fruits, meats, grains and yeast. Chromium-6 and -0 are generally produced by industrial processes.

Uses for chromium (total).

Chromium-0 is used mainly for making steel and other alloys. Chromium compounds, in either the chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather and wood preservation

If you are concerned about chromium (total) in a private well, please visit:

- [EPA's private drinking water wells Web site](#)
- [Water Systems Council Web site](#) 

What are chromium (total)'s health effects?

Chromium-3 is a nutritionally essential element in humans and is often added to vitamins as a dietary supplement. Chromium-3 has relatively low toxicity and would be a concern in drinking water only at very high levels of contamination, unlike chromium-6 and -0, which are more toxic and pose potential health risks to people. Some people who use water containing chromium (total) well in excess of the maximum contaminant level (MCL) over many years could experience allergic dermatitis.

This health effects language is not intended to catalog all possible health effects for chromium (total). Rather, it is intended to inform consumers of some of the possible health effects associated with chromium (total) in drinking water when the rule was finalized.

In a [Sept 2010 draft human health assessment for chromium-6](#), EPA is proposing to classify chromium-6 as likely to be carcinogenic to humans via ingestion. The Agency expects to complete the health risk assessment and make a final determination about the carcinogenicity of chromium-6 in 2011.

What are EPA's drinking water regulations for chromium (total)?

In 1974, Congress passed the Safe Drinking Water Act. This law requires EPA to determine the level of contaminants in drinking water at which no adverse health effects are likely to occur. These non-enforceable health goals, based solely on possible health risks and exposure over a lifetime with an adequate margin of safety, are called maximum contaminant level goals (MCLG). Contaminants are any physical, chemical, biological or radiological substances or matter in water.

The MCLG for chromium (total) is 0.1 mg/L or 100 ppb. EPA has set this level of protection based on the best available science to prevent potential health problems. EPA has set an enforceable regulation for chromium (total), called a maximum contaminant level (MCL), at 0.1 mg/L or 100 ppb. MCLs are set as close to the health goals as possible, considering cost, benefits and the ability of public water systems to detect and remove contaminants using suitable treatment technologies. In this case, the MCL equals the MCLG, because analytical methods or treatment technology do not pose any limitation.

The Phase II Rule, the regulation for chromium (total), became effective in 1992. The Safe Drinking Water Act requires EPA to periodically review the national primary drinking water regulation for each contaminant and revise the regulation, if appropriate. EPA reviewed chromium (total) as part of the second Six Year Review in a [March 2010](#) (75 FR 15499). The Agency noted in its March 2010 FR that EPA had initiated a reassessment of the health risks associated with chromium exposure and determined that the 0.1 mg/L or 100 ppb MCLG and 0.1 mg/L or 100 ppb MCL for chromium (total) is still protective of human health. When this human health assessment is finalized in 2011, EPA will carefully review the conclusions and consider all relevant information to determine if the current standard should be revised.

Coal Ash Disposal

Right now local communities like Greene Township, Pennsylvania are exposed to heavy metals such as arsenic, lead and mercury when hazardous materials from coal ash disposal sites seep into our drinking water. The result: increased risk of cancer, learning disabilities, birth defects and other illnesses.

In 2008, just days before Christmas, a dam in Harriman, Tennessee failed, spilling more than a billion gallons of toxic coal ash onto nearby communities. In Greene Township, Pennsylvania, **a 400 foot dam is all that stands between the Ohio River and a reservoir of toxic material.**

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Hungary Toxic Sludge

A flood of toxic red sludge, some 35.3 million cubic feet from an aluminum plant, engulfed several towns and burned people through their clothes, after a reservoir failed at the Ajkai Timfoldgyar plant in Ajka, a town 100 miles southwest of Budapest, the capital. The red sludge flowed into the river Danube, threatening one-half dozed nations along one of Europe's key waterways.

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Climate Changes and Migration Patterns

European researchers indicate that the climate is changing so fast that migratory birds are not keeping up with the earlier arrival of spring. This “ecological mismatch” could be the reason birds’ populations are declining.

Climate Change Grows More Allergen-Producing Plants and Fungi - Rising CO2, Temperatures Can Raise Allergen Levels

Released: 11/4/2010 2:00 PM EDT

Embargo expired: 11/12/2010 12:00 AM EST

Source: American College of Allergy, Asthma and Immunology (ACAAI)

Newswise — Bad news for 35 million allergy sufferers – ragweed, fungal spores and poison ivy are thriving due to rising carbon dioxide levels. At the annual scientific meeting of the American College of Allergy, Asthma and Immunology (ACAAI) in Phoenix, Nov. 11-16, allergists and scientists discussed the effects of rising CO2 levels and a changing climate on plant biology and public health.

“Plant-based respiratory allergies are on the rise and increased levels of ragweed pollen are in the air,” said ACAAI symposium presenter Lewis Ziska, PhD, a plant physiologist with the USDA Agricultural Research Service. “Climate change is affecting plants and human health, especially allergy sufferers.”

Additionally, leaves fed by heightened levels of carbon dioxide enable fungi to reproduce more rapidly and spread more allergenic spores, leading to higher rates of allergies and asthma.

Climate change also affects allergen levels in homes, schools and offices. Not only are people allergic to outdoor allergies going to experience more symptoms, so are people with indoor allergies.

“Climate change causes indoor humidity levels to increase, which may contribute to the proliferation of dust mite and mold – allergy triggers for many people,” said allergist and ACAAI member Wanda Phipatanakul, MD. “Furthermore, people stay indoors with higher humidity levels and allergic individuals then have more exposure to indoor allergens.”

Symptoms of these pesky allergens include sneezing, inflammation of the nose and eyes, and wheezing. Complicating factors, including nasal polyps or secondary infections of the ears, nose, and throat, may also occur. Severe complications include asthma, cardiac distress, chronic obstructive pulmonary disease (COPD), and anaphylaxis.

Also, high temperature and humidity decomposes discarded food faster which makes garbage more attractive to insects which can be allergens.

“Cockroaches can trigger allergies and asthma,” said Dr. Phipatanakul. “These pests should be suspected when allergy symptoms – stuffy nose, inflamed eyes or ears, skin rash or bronchial asthma – persist year round.”

Allergists have the training and expertise to treat more than just the symptoms of these allergens. Allergists can identify the source of your suffering and stop it.

The “Climate Change and Its Impact on Respiratory Health” Symposium is presented by ACAAI under contract with the U.S. Environmental Protection Agency.

Investigation shows elevated levels of lead in grocery bags

By [RICHARD MULLINS](#) | The Tampa Tribune

Publix officials will revamp their lineup of re-usable grocery bags sold in their stores after a Tampa Tribune investigation found elevated levels of lead in material of some bags.

Tribune tests showed certain bags from Winn-Dixie and Publix stores had levels of lead that concerned health officials. And some bags had enough lead that they could be considered hazardous waste if residents put them in their household trash.

This follows a similar issue that led the Northern grocer Wegmans to voluntarily exchange thousands of their bags. Lead is considered a toxin, and can cause learning disabilities in children and fertility problems in adults.

The lead in the bags appears to be in a form that's not easily extracted or "leached" out. So there is less concern the lead would easily rub off on food when the bags are new. But over time lab experts note the bags wear down and paint can flake off, and eventually re-usable bags would accumulate in landfills, presenting another ecological issue.

EPA Identifies Areas Violating Lead Standards

Reducing lead emissions will improve public health, especially for children

WASHINGTON – The U.S. Environmental Protection Agency (EPA) has determined that 16 areas across the country are not meeting the agency's national air quality standards for lead. These areas, located in 11 states, were designated as “nonattainment” because their 2007 to 2009 air quality monitoring data showed that they did not meet the agency's health-based standards. Exposure to lead may impair a child's IQ, learning capabilities and behavior.

Areas designated today as not meeting the standard will need to develop and implement plans to reduce pollution to meet the lead standards. Nonattainment areas must meet the standards by Dec. 31, 2015. No areas in Indian Country are being designated as nonattainment.

EPA will designate areas as meeting or not meeting the standards in two rounds. In the first round announced today, EPA is designating areas that do not meet the standards based on air quality monitoring data from the existing lead monitoring network. In October 2011, EPA will use data from new monitors to complete a second round of designations that will classify the remaining areas in attainment, unclassifiable or nonattainment.

In October 2008, EPA strengthened the nation's air quality standards for lead tenfold to 0.15 micrograms of lead per cubic meter of air. The agency also finalized requirements for new monitors to be located near large sources of lead emissions. EPA has data from existing monitors indicating violations of the standards, and is currently collecting data from new monitors that began operation in January 2010.

Lead emitted into the air can be inhaled or can be ingested after it settles. Ingestion is the primary route of human exposure. Children are the most susceptible because they are more likely to ingest lead and their bodies are developing rapidly. There is no known safe level of lead in the body.

National average concentrations of lead in the air have dropped almost 92 percent nationwide since 1980, largely the result of the agency's phase-out of lead in gasoline. Lead in the air comes from a variety of sources, including smelters, iron and steel foundries and general aviation gasoline.

[More information on the designations: http://www.epa.gov/leaddesignations](http://www.epa.gov/leaddesignations)

Sneak Peek

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Thin Film Silicon Photovoltaic Technology – From Innovation to Commercialization

Subhendu Guha, Jeff Yang

From ***MRS Proceedings Volume 1245***

Abstract: The last decade has witnessed tremendous progress in the science and technology of thin film silicon (amorphous and nanocrystalline) photovoltaic. The shipment of solar panels using this technology was about 200 MW in 2009; based on announcement of new or expanded production capacity, the shipment is projected to grow ten-times in the next 3-5 years. The key factor that will determine the wide-scale acceptance of the products will be the cost of solar electricity achieved using this technology. Efficiency of solar modules and throughput of production equipment will play a key role.

EPA Releases the 2010 Fuel Economy Trends Report

Carbon dioxide decreases as fuel economy increases

WASHINGTON - For the sixth consecutive year, the U.S. Environmental Protection Agency (EPA) is reporting a decrease in average carbon dioxide (CO₂) emissions and a slight increase in the average fuel efficiency for new cars and light duty trucks, according to EPA's annual report "Light-Duty Automotive Technology, Carbon Dioxide Emissions, and Fuel Economy Trends: 1975 through 2010".

EPA projects a small improvement in 2010, based on pre-model year sales estimates provided by automakers, to 395 grams of CO2 per mile and 22.5 miles per gallon (mpg), though there is uncertainty in these projections as they were made during the atypical automotive market in 2009. The 2010 final data will be available in next year's report.

For 2009, the last year EPA has final data from automakers, the average CO2 emissions from new vehicles were 397 grams per mile and the average fuel economy value was 22.4 mpg.

The report confirms that average CO2 emissions have decreased and fuel economy has increased each year beginning in 2005. Average CO2 emissions have decreased by 64 grams per mile, or 14 percent, and average fuel economy has increased by 3.1 mpg, or 16 percent, since 2004. The positive trend beginning in 2005 reverses a long period of increasing CO2 emissions and decreasing fuel economy from 1987 through 2004.

The annual report provides data on the CO2 emissions, fuel economy and technology characteristics of new light-duty vehicles (cars, minivans, sport utility vehicles, and pickup trucks).

The CO2 emissions and fuel economy values reflect EPA's best estimates of real world CO2 emissions and fuel economy performance. They are consistent with the fuel economy estimates that EPA provides on new vehicle window stickers and in the fuel economy guide. These real world fuel economy values are about 20 percent lower, on average, than those used for compliance with the corporate average fuel economy (CAFE) program.

More information on the 2010 report: <http://www.epa.gov/otaq/fetrends.htm>

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WATER NEWS

For hundreds, lawsuit over coal slurry unresolved.

Hundreds believe Virginia-based Massey Energy Co. and subsidiary Rawl Sales & Processing have poisoned their [water wells](#) with 1.4 billion gallons of toxic coal slurry.

The company has denied wrongdoing, though residents say the proof flows from their faucets as red, orange or black water. They say the chemicals in slurry have left them and their children with developmental disabilities, cancers and other maladies.

Since a hot day in Williamson, when Doyle and others packed a field house and a courthouse, the case has been handed from one judge to another. Now, a five-judge mass litigation panel has ordered 748 plaintiffs to appear Monday in Charleston for the start of a three-day meeting or risk being cut from the case.

"Hopefully they're prepared for the chaos that might ensue," she said, noting many families have children with disabilities like attention deficit disorder — which they believe were caused by the toxic water.

Plaintiffs' attorney Kevin Thompson says most of his clients will pile onto buses in Williamson and make the 90-minute trip to the Charleston Civic Center, despite what Thompson calls an obvious hardship on many elderly and ailing plaintiffs.

"The judges want to make sure the people of Rawl are serious about pursuing their claims, and they believe this is a way to test this," he says. "And yes, the people are very serious about their claims. They have jumped through flaming hoop after flaming hoop."

The current and former residents of Rawl, Lick Creek, Sprigg and Merrimac are suing Massey for injecting slurry into 1,000 acres of former underground mines between 1978 and 1987. Slurry is created when coal is washed to help it burn more efficiently.

Massey attorney Dan Stickler did not respond to several requests for comment from The Associated Press. The company has defended the practice in court documents, arguing mineral rights agreements dating to 1889 give it "the full right to take and use all water found on the premises."

For decades, [coal companies](#) in Appalachia have injected slurry into worked-out mines as a cheap alternative to dams and other systems that can safely store or treat the slurry. The industry says the practice is safe, but critics contend slurry seeps through natural and manmade cracks, eventually contaminating groundwater.

The state Department of Environmental Protection has imposed a temporary ban on new injection sites. Earlier this year, a team of West Virginia University researchers advised lawmakers to start monitoring coal slurry, even though they could not conclusively demonstrate a hazard to public health.

Bottling water

Michiganders don't have to worry much about having an adequate supply of water. But efforts by Nestlé to bottle water in the state, and the prospect of drier times in a climate-changed future, are leading some residents to try to put Michigan groundwater under permanent protection. Andrew Stelzer reports. (Living on earth)

As Glaciers Melt, Science Seeks Data on Rising Seas

By [JUSTIN GILLIS](#), NYTimes

Scientists long believed that the collapse of the gigantic ice sheets in Greenland and Antarctica would take thousands of years, with sea level possibly rising as little as seven inches in this century, about the same amount as in the 20th century.

But researchers have recently been startled to see big changes unfold in both Greenland and Antarctica.

As a result of recent calculations that take the changes into account, many scientists now say that sea level is likely to rise perhaps three feet by 2100 — an increase that, should it come to pass, would pose a threat to coastal regions the world over.

And the calculations suggest that the rise could conceivably exceed six feet, which would put thousands of square miles of the American coastline under water and would probably displace tens of millions of people in Asia.

The scientists say that a rise of even three feet would inundate low-lying lands in many countries, rendering some areas uninhabitable. It would cause coastal flooding of the sort that now happens once or twice a century to occur every few years. It would cause much faster erosion of beaches, barrier islands and marshes. It would contaminate fresh water supplies with salt.

In the United States, parts of the East Coast and Gulf Coast would be hit hard. In New York, coastal flooding could become routine, with large parts of Queens and Brooklyn especially vulnerable. About 15 percent of the urbanized land in the Miami region could be inundated. The ocean could encroach more than a mile inland in parts of North Carolina.

Abroad, some of the world's great cities — London, Cairo, Bangkok, Venice and Shanghai among them — would be critically endangered by a three-foot rise in the sea.

Climate scientists readily admit that the three-foot estimate could be wrong. Their understanding of the changes going on in the world's land ice is still primitive. But, they say, it could just as easily be an underestimate as an overestimate. One of the deans of American coastal studies, [Orrin H. Pilkey](#) of [Duke University](#), is advising coastal communities to plan for a rise of at least five feet by 2100.

Preserving the Wild

The Global Trust Crop Diversity Trust has launched an international effort to gather and store the wild plant species from which the world's primary food crops have been bred. This effort aims to safeguard valuable genetic traits that might be valuable if it becomes necessary to breed future varieties to cope with climate changes and new plant diseases. The project will focus on the ancestors of 25 global food crops including wheat, rice, beans, potato, barley, lentils, and chickpeas.

How many water supplies have been impacted by gas drilling? Pa. doesn't keep count

BY LAURA LEGERE (STAFF WRITER)

Published: November 14, 201



Michael J. Mullen / Staff Photographer F. R. Place of Wyalusing stands by tanks used to supply water for the family farm, where the well water has been contaminated since Marcellus Shale gas drilling began.

Marcellus Shale

Complete coverage of natural gas drilling in Northeast Pennsylvania including recently updated searchable database of natural gas drilling leases for Lackawanna, Luzerne and Wyoming Counties

RECENT GAS DRILLING NEWS

- [How many water supplies have been impacted by gas drilling? Pa. doesn't keep count](#)
- [Township officials: Expect noise, trucks around gas well site](#)
- [Rail authority gets \\$1.3 million to acquire track](#)
- [Fracking arrives in Luzerne County community](#)
- [Corbett sees gradual forest leasing](#)
- [PennVEST board approves Dimock waterline](#)
- [Board approves Dimock water line](#)
- [Gas training expanding in region](#)

Strengthened oil and gas regulations to be considered by a state review board this week will help answer an increasingly urgent question in the era of Marcellus Shale exploration: how many water supplies have been impacted by drilling activities? Right now, no one is keeping a complete count.

The Oil and Gas Act does not require drillers to notify state regulators when landowners alert them that drinking water has been harmed by the companies' operations.

Under current law, the Department of Environmental Protection must look into cases of potential drinking water pollution only when it is asked to investigate a problem by a landowner.

The department also does not track how often gas drillers voluntarily replace drinking water supplies, either temporarily or permanently.

"Often, homeowners and drillers work out agreements without needing the department's assistance," DEP spokesman Tom Rathbun said. "We get involved when we are notified of a problem, but we are not made aware of every case."

A revised Oil and Gas Act will change that. When the new regulations go into effect, likely in January if they pass all reviews, drillers will have to notify the department within 24 hours of receiving a complaint.

An earlier draft of the revisions, which gave drillers 10 days to notify the department of a complaint, was changed after commentators on the regulations argued that was not quick enough.

The change from no notification to nearly instantaneous notification signals an increasing awareness of how often drinking water complaints go uncounted at a time when everyone from farmers to the federal government is looking for more complete information on the short- and long-term impacts of gas drilling on water resources.

Endocrine disruptors in bottled mineral water: Estrogenic activity in the E-Screen.

[Wagner M](#), [Oehlmann J](#).

Department Aquatic Ecotoxicology, Faculty of Biological Sciences, Goethe University Frankfurt am Main, Siesmayerstr. 70 A, D-60054 Frankfurt am Main, Germany.

Another study demonstrating estrogenic activity in bottled water. Here the authors studied the same spring water stored in glass bottles vs plastic (PET) and showed that the water stored in PET had much higher estrogenic activity.

J Steroid Biochem Mol Biol. 2010 Nov 2. [Epub ahead of print]

Abstract

Human exposure to endocrine disruptors is well documented by biomonitoring data. However, this information is limited to few chemicals like bisphenol A or phthalate plasticizers. To account for so-far unidentified endocrine disruptors and potential mixture effects we employ bioassays to detect endocrine activity in foodstuff and consequently characterize the integrated exposure to endocrine active compounds.

Recently, we reported a broad contamination of commercially available bottled water with estrogenic activity and presented evidence for the plastic packaging being a source of this contamination. In continuation of that work, we here compare different sample preparation methods to extract estrogen-like compounds from bottled water. These data demonstrate that inappropriate extraction methods and sample treatment may lead to false-negative results when testing water extracts in bioassays. Using an optimized sample preparation strategy, we furthermore present data on the estrogenic activity of bottled water from France, Germany, and Italy: eleven of the 18 analyzed water samples (61.1%) induced a significant estrogenic response in a bioassay employing a human carcinoma cell line (MCF7, E-Screen).

The relative proliferative effects ranged from 19.8 to 50.2% corresponding to an estrogenic activity of 1.9-12.2pg estradiol equivalents per liter bottled water. When comparing water of the same spring that is packed in glass or plastic bottles made of polyethylene terephthalate (PET), estrogenic activity is three times higher in water from plastic bottles. These data support the hypothesis that PET packaging materials are a source of estrogen-like compounds. Furthermore, the findings presented here conform to previous studies and indicate that the contamination of bottled water with endocrine disruptors is a transnational phenomenon.

From the text:

From a qualitative point of view, the steadily increasing consumption of bottled water, the high ratio of estrogen-positive products in different studies, and the broad range of samples included therein, leads to the assumption that exposure to endocrine disruptors from bottled water is a transnational phenomenon. Based on a daily consumption of 1-2L the total daily intake of estrogenicity from bottled water can be estimated to be in a range of picogram to nanogram estradiol equivalents. This intake could result in a low dose but long term exposure to estrogen-like compounds that affects a broader population, including potentially sensitive subpopulations (infants, pregnant women, and women with breast cancer)

On December 8, 2010, this report was posted as an MMWR Dispatch on the MMWR website (<http://www.cdc.gov/mmwr>).

The first cholera outbreak in Haiti in at least a century was confirmed by the Haitian National Public Health Laboratory on October 21, 2010 (1). Surveillance data through December 3, provided by the Haitian Ministry of Public Health and Population (MSPP), indicated that the outbreak had spread nationwide and that cases of cholera and cholera-associated hospitalizations and deaths had climbed rapidly in November. As of December 3, MSPP reported 91,770 cases of cholera from all 10 departments and the capital city of Port-au-Prince; 43,243 (47.1%) patients had been hospitalized, and 2,071 (2.3%) had died. A rapid mortality assessment in Artibonite Department found that deaths occurred as rapidly as 2 hours after symptom onset and identified important gaps in access to life-saving treatments, including oral rehydration solution (ORS). Urgent activities are under way, and additional efforts are imperative to reduce cholera mortality by expanding access to cholera treatment and to reduce cholera transmission by improving access to safe water and adequate sanitation.

DIRECTIONS

2011 IS THE INTERNATIONAL YEAR OF CHEMISTRY

The year 2011 has been designated as the International Year of Chemistry. The IYC is an official United Nations International Year, proclaimed at the UN as a result of the initiative of IUPAC and UNESCO. Under the theme "Chemistry -- Our Life, Our Future," IYC will consist of a year-long series of events, educational lectures, exhibits, and experiments around the globe designed to focus the world's attention on the importance of chemistry in supporting basic human and economic needs. These activities will be kicked off with the official International Year of Chemistry Opening Ceremony, to be held at the UNESCO headquarters in Paris January 27-28, 2011. IYC also coincides with the 100th anniversary of both the Nobel Prize award to Madame Marie Curie. Programming will highlight women in chemistry and international partnerships, with the aim of increasing public appreciation of chemistry, encouraging interest in chemistry among young people and generating enthusiasm for the creative future of this science. IYC 2011 events will emphasize that chemistry is a creative science essential for sustainability and improvements to our way of life. Activities, such as lectures, exhibits, and hands-on experiments, will explore how chemical research is critical for solving our most vexing global problems involving food, water, health, energy, transportation, and more.

IUPAC will feature the change in the standard atomic weights table as part of associated IYC activities. For the first time in history, a change will be made to the atomic weights of some elements listed on the Periodic table of the chemical elements posted on walls of chemistry classrooms and on the inside covers of chemistry textbooks worldwide. The new table will express atomic weights of 10 elements -- hydrogen,

lithium, boron, carbon, nitrogen, oxygen, silicon, sulfur, chlorine, and thallium -- as intervals, having upper and lower bounds, to more accurately reflect how these elements are found in nature and convey variation in atomic weight. For example, sulfur is commonly known to have a standard atomic weight of 32.065. However, its actual atomic weight can be anywhere between 32.059 and 32.076, depending on where the element is found. More details about IYC are at www.chemistry2011.org.

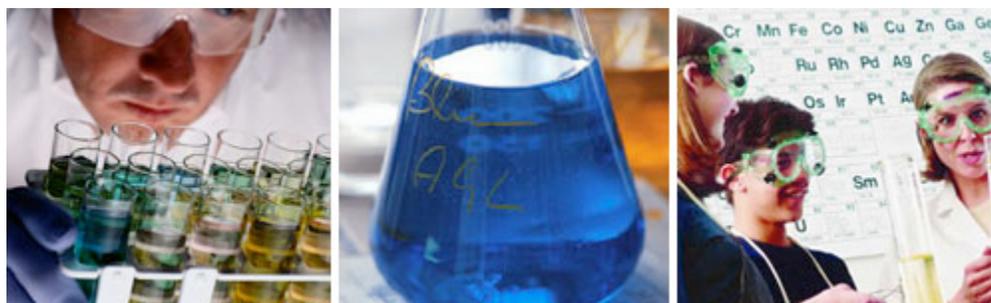
[SSP Website](#)

They support member education programs, teacher and student awards, a wide variety of educational programs, and grant programs for high schools, colleges, and beginning university professors. The links to your left will lead you to information on those programs.

[SACP Website](#)

What is the SACP?

The Society for Analytical Chemists of Pittsburgh (SACP), is a non-profit organization dedicated to the advancement of analytical chemistry through science education.



The SACP is dedicated to the education of the membership, of the community and of the future scientists in our schools. By educating the children and the community, a new generation is being prepared to meet the future.

[Traditional Chinese](#): 新年快樂; Chinese New Year – 2011 the Year of the Rabbit.

March 17-19, 2011 – Antiochian Village, Near Ligonier, PA (outside of Pittsburgh)

www.pae.net

Biomimicry Youth Challenge:

Over 2,000 youth educators interested in biomimicry? **It's true.** And we're thrilled!!! Think how many students this group of educators is now reaching. And imagine how much we can learn from one another about teaching this incredibly rich topic.

I'm writing each member of this expanding network to announce the launch of the Biomimicry Youth Challenge. The Biomimicry Youth Challenge (BYC) is a unique initiative by The Biomimicry Institute to engage educators to teach biomimicry to their students through an annual contest. Students of primary and secondary school age explore the fascinating world of biomimicry and learn the science and processes involved in design inspired by nature. The BYC combines standard curricula (science, technology, engineering, etc.) with rigorous and exciting experiential learning - a hallmark of TBI's programs. Teachers of students ages 5-9 (Grades K-4) submit an activity based on the award-winning Ask The Planet CD (www.AskthePlanetCD.org). For older students, the BYC culminates in the building, designing and testing of prototypes of the students' own inventions, original biological rese

We hope you will decide to participate! Please see www.biomimicryinstitute.org/BYC for more details. Submissions are due by April 1st, 2011, judged by an independent expert panel.

Farming for the Future Conference, Feb. 2-5, 2011

The Pennsylvania Association for Sustainable Agriculture's 20th Annual Conference-- Farming for the Future-- will be at the Penn Stater Conference Center in State College, PA. Featured speakers include Wes Jackson of the Land Institute; permaculture designer Patricia Ceglia of Human Habitat and a Baltimore grassroots watershed preservation project helping suburban homeowners install permaculture gardens for food production; George DeVault of Seed Savers Exchange; Andrew Kimbrell of the Center for Food Safety and more. See <http://www.pasafarming.org/conference2011/> for details.

Online tool created to improve STEM teaching in Maryland

A group of teachers in Maryland has created an online tool designed to improve the teaching of science, technology, engineering and math. STEMnet Teachers Hub will allow teachers to collaborate and share lesson plans and connect with researchers in STEM fields.

Internet hub for science, math teachers

November 10, 2010|By Liz Bowie, The Baltimore Sun

Using \$2 million in federal Race to the Top money and more than \$300,000 in contributions from AT&T, Citigroup Inc., Northrop Grumman and IBM, the Maryland State Department of Education and the Maryland Business Roundtable on Education are collaborating on an Internet resource for teachers in math, science engineering and technology.

The initiative is scheduled to begin with biology and will debut in the spring in either Baltimore County or Baltimore City, and plans call for an expansion next fall to other districts, said June Streckfus, executive director at the Roundtable. "It allows all the classrooms in the state to have equal access" to the best research, she said.

The site will allow teachers to drop a lesson plan that other teachers could upload and use. Wilcox hopes that teachers who use the lesson might leave their comments or suggest changes, in much the way Wikipedia is updated or cooks leave their comments about ways they adjusted ingredients in a recipe posted online.

The network will also allow teachers to connect with top researchers in the field to answer questions about cutting-edge research on a particular topic. So a Garrett County teacher might be able to use the web to communicate with a Northrop Grumman engineer or a scientist at the Applied Physics Laboratory on a Sunday night.

Teachers will also be linked with researchers in the state from NASA, Johns Hopkins, the University of Maryland or numerous businesses with scientists and engineers.

Some are describing the venture as a dating site for teachers and scientists: STEMnet will allow a teacher to go on line and ask for a volunteer in the field come to his classroom to describe to students the work of their field. IBM will work on software that links volunteers with schools.

A new game on the NOAA/NASA SciJinks website

A new game on the NOAA/NASA SciJinks website puts you in the position of an airline Flight Controller whose job is to safely steer planes around such hazards as air turbulence, lightning storms, and near-invisible volcanic ash. Luckily, you have maps updated in real time with information from the GOES-R satellite so you can easily see where trouble lurks. See how many of the 12 different types of scenarios you can handle to safely land all your flights within the allotted time. Check it out at <http://scijinks.gov/aviation-game>.

Enjoy!

Laura K. Lincoln
on behalf of the Space Place Team

DATABASE

Green tech

Only 3 percent of cellphones worldwide get recycled; the rest end up leaking toxic metals into landfills. Now ecoATM has the first phonerecycling kiosk, which gobbles up phones and spits out an incentive to recycle: money.

To identify the phone's model, it visually scans the phone's exterior and compares the images with an ecoATM-maintained database of 4,000-plus mint-condition handsets. Then you hook up your phone to the appropriate cable, and it tests the phone's electronics and looks for cracked LCDs and cosmetic damage.

The kiosk offers to erase your data and gives you cash based on the phone's

value for resale.

The first 10 ecoATMs, which hit electronics stores, malls and college campuses last winter, have already recycled 33,000 phones, at an average payout of \$9 per handset. The company plans to roll out 500 more kiosks next year and expand to more types of portable electronics. ecoatm.com

Visiting a Recycling Plant



Resource for Grades K-8 [Recycling and Composting](#)

About half of the paper we use in our daily lives has been recycled. The process begins when paper is picked up from a recycling bin and taken to a sorting facility, where items are separated and baled. The materials are then taken away to a facility where they are cleaned, possibly de-inked, shredded, and blended with other similar material, such as paper board, office paper, or newspaper. The batched material is then converted into a new end product. In this video segment from ZOOM, a cast member visits a material recovery center to watch this process unfold.

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Want to *Make Stuff* with your students? Try our FREE activity guide.

Lead kids in four hands-on materials science activities in classrooms, after school programs, and other settings. With comprehensive leader notes. *Activity Guide, Grades 6-8*

A new year brings new seasons of NOVA and NOVA scienceNOW!

We celebrate a new year of innovations and discoveries with new seasons, premiering January 19. Now on **Wednesday night**, [NOVA](#) and [NOVA scienceNOW](#) will air back-to-back for a solid block of the best science programming on TV.

January's teacher resources feature **materials science** and our new four-part series, [Making Stuff](#). From biomimicry to nanotechnology, these stories come from the forefront of materials science.

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United Nations declares 2011 as International Year of Forests

The International Year of Forests 2011 logo is designed to convey the theme of "Forests for People" celebrating the central role of people in the sustainable management, conservation and sustainable development of our world's forests. The iconographic elements in the design depict some of the multiple

values of forests and the need for a 360 degree perspective: forests provide shelter to people and habitat to biodiversity; are a source of food, medicine and clean water; and play a vital role in maintaining a stable global climate and environment. All of these elements taken together reinforce the message that forests are vital to the survival and well being of people everywhere, all 7 billion of us. Info: www.un.org



Winter is a good time to consider a pond on your property

For your own copy of *Management of Fish Ponds in Pennsylvania*, which provides further detail about construction, maintenance, water quality, fisheries, aquatic plants and algae, and troubles and treatments, contact the Penn State Publication Distribution Center, 814.865.6713 or visit <http://pubs.cas.psu.edu/FreePubs/pdf/uh137.pdf>

For additional details managing ponds including water quality, ecology, fixing leaks, aquatic plants, algae, fisheries, wildlife and other issues, please visit the Penn State Water Resources Extension pond management web site at: <http://extension.psu.edu/water/ponds>.

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***PA CleanWays and Keep Pennsylvania Beautiful
Beautiful join forces***

PA CleanWays and Keep Pennsylvania Beautiful announce that they have joined forces to promote illegal dump clean-ups, anti-litter education, and beautification projects to make their work with local partners and volunteers more effective. "PA CleanWays and Keep Pennsylvania Beautiful have similar missions and similar objectives-- to cleanup and maintain Pennsylvania's roadsides, watersheds, forests, and cities free of litter and hazardous illegal dumps," said Jim Bendel, Board Chair of PA Cleanways. "It makes sense for us to work together to improve the quality of life for Pennsylvanians and the environment." Both organizations have partnered to help organize the state's premier dump clean-up and anti-litter effort-- the Great American Cleanup of PA. Along with the Departments of Environmental Protection and Transportation, local businesses, and other local agencies, over 940,000 volunteers have cleaned up 42 million pounds of trash from Pennsylvania roadways, trails, parks and shorelines since 2004. "PA CleanWays will maintain the Commonwealth's relationship as a state affiliate of Keep America Beautiful and will work to bring the benefits of that national organization to Pennsylvania," said Shannon Reiter, President of PA CleanWays. As part of the consolidation, PA CleanWays' Board of Directors elected and welcomed six new members from the Keep Pennsylvania Beautiful board, including: Tony Crisci, Pennsylvania Beverage Association; Maitreyi Roy, Pennsylvania Horticultural Society; Richard Ebeling, the Department of Transportation; Bill Heenan, Steel Recycling Institute; David McCorkle, Pennsylvania Food Merchants Association; and David Hess, former Secretary of the Department of Environmental Protection. Keep Pennsylvania Beautiful will be housed in the PA CleanWays office at 105 West 4th Street, Greensburg, PA, 15601. For more information, please call 877-772-3673 or visit the www.pacleanways.org website. (from Schuylkill Seedlings Newsletter)

Stay Green After the Holidays! It's always the right time to give a gift to the environment and it's easy! - save energy and recycle more at holiday parties and other activities.

<http://www.epa.gov/osw/wycd/funfacts/holidays.htm>

Cleanup CFLs Safely - Compact fluorescent bulbs contain a small amount of mercury which is toxic. If you have a broken CFL, be sure you know what - and what NOT - to do to properly clean up and dispose of broken parts, and keep yourself and your family and pets safe. EPA's new website:

<http://www.epa.gov/cfl/cflcleanup.html>

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CALENDAR OF EVENTS

UPCOMING CONFERENCES:

American Association of Physics Teachers (AAPT), January 9-11, Hyatt Regency Riverfront Hotel, Jacksonville, FL. Visit us at booth 216 and pick up a preview disc from our newest resource, Physics for the 21st Century.

League for Innovation, February 27 - March 2, 2011, San Diego, CA, <http://www.league.org/i2011/>

NSTA National Conference on Science Education, March 10-13, 2011, San Francisco, CA, "Celebrating the Joy of Science: Imagine and Create". Visit www.nsta.org

Antiochian Village, March 17-19, 2011, Near Ligonier, PA (outside of Pittsburgh), www.paee.net

ASCD Annual Conference & Exhibit Show, March 26-28, 2011, San Francisco, CA, Moscone Center, "Bold Actions for Complex Challenges". Call 1-800-933-2723 or visit www.ascd.org/annualconference

Spring/Summer Opportunities:

PRCST professional development opportunities to be announced. Check out the website www.prcst.pitt.edu for program updates.

Look forward to potential conferences addressing 1. The Environment and Health Initiative "Environment and Health: A Systems Approach" Program and the systems thinking approach in learning and thinking, and 2. Energy:-Pennsylvania History: Coal, Oil, Natural Gas, and Nuclear.