

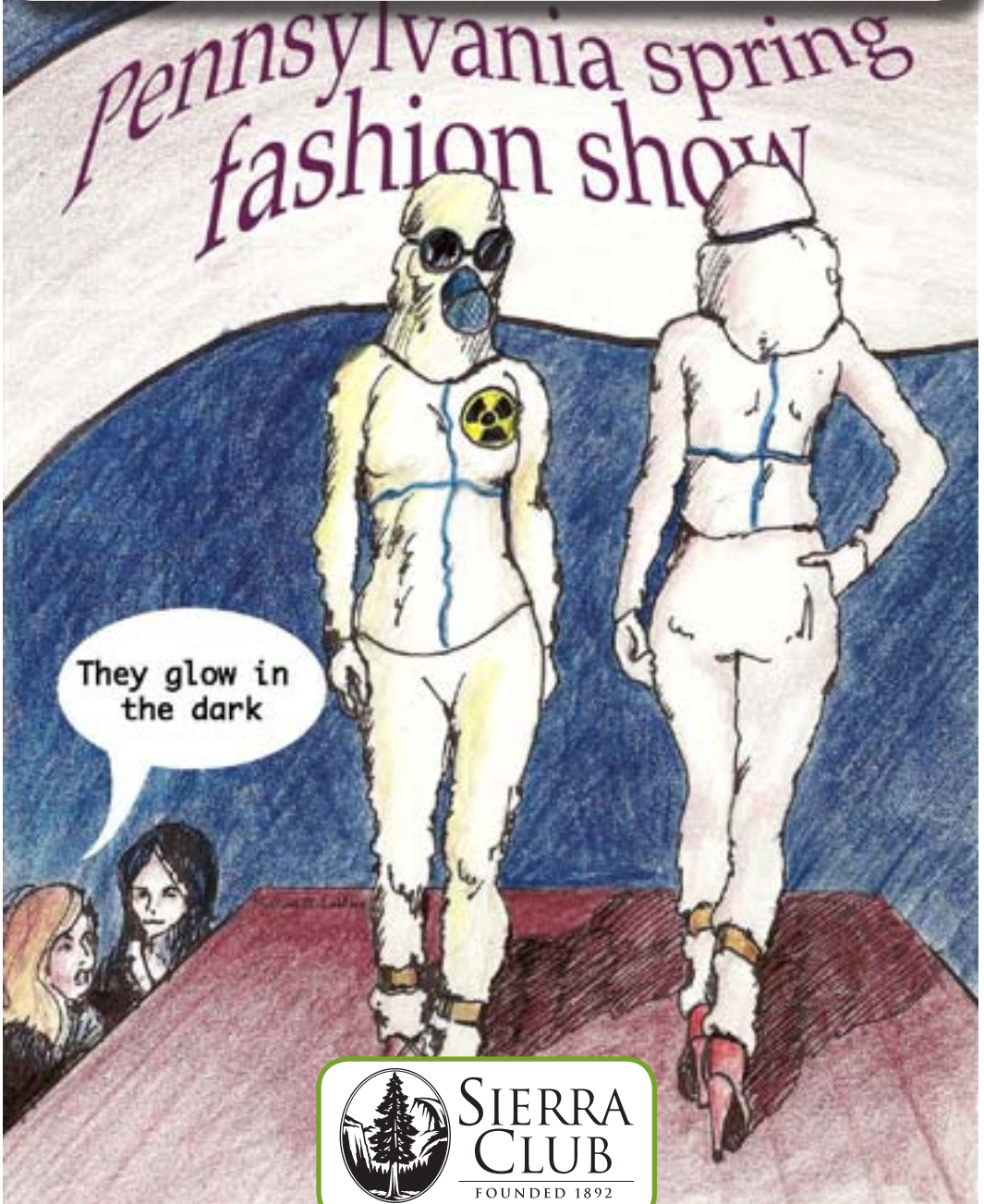
TheSylvanian

Spring 2012

Pennsylvania Chapter Sierra Club • pennsylvania.sierraclub.org

NUCLEAR FALLOUT

*Pennsylvania spring
fashion show*



Explore, enjoy and protect the planet.

From The Editors

Some issues blaze in our frontal lobes. Marcellous shale is an example. For more than two years, we have had what seem to be daily developments that claim our attention and require action. Other issues settle to a nether region in our consciousness and rise to the surface only occasionally. The power of the atom is one of these. Nuclear concerns flared recently when a tsunami hit Fukushima. But Japan is a long way away, and to most folk it became a "That's a pity!" moment. Nothing more.

We should remember that the United States has more reactors than any other country and Pennsylvania has the second most of any state. Illinois has one more only because one Three Mile Island reactor was decommissioned after the historic meltdown.

Your editors decided it is time to dredge the atom to the surface and take a comprehensive look. We start with Michael LaMark's reactor wear fashion show, and we go on from there. There is new pressure in the United States to build more and bigger reactors. Around the world and in Pennsylvania, there are problems. Reactor breakdowns, waste disposal, atomic weapons, rising capital costs, radiation health problems, the debate over breeder technology, the growing need for more electric power (in Pennsylvania, the United States, and around the world). These are issues we want to touch on.

We hope you will find our efforts worth your while.

WENDI TAYLOR AND PHIL COLEMAN
Co-editors of *The Sylvania*



Wendi Taylor



Phil Coleman

Next Deadline: June 15

Send articles & photographs to: taylorwj@comcast.net or pcoleman19@tampabay.rr.com.
To mail photos: *Sylvania*, Sierra Club - PA Chapter, PO Box 606, Harrisburg, PA 17108



OnTheCover

Mike LaMark's take on our nuclear power dilemma is a bit far out. But what has happened at Three Mile Island could happen again. No telling where the next earthquake, tsunami, coolant leak, or operator error will require that workers break out protective clothing and put their lives on the line.

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Contributor deadlines are June 15 (Summer issue), September 15 (Fall Issue), December 15 (Winter Issue) and March 15 (Spring issue). Anonymous contributions are not accepted.

SIERRA CLUB MISSION STATEMENT: To explore, enjoy and protect the wild places of the earth; To practice and promote the responsible use of the earth's ecosystems and resources; To educate and enlist humanity to protect and restore the quality of the natural and human environment; and To use all lawful means to carry out these objectives.

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The View From Harrisburg



By Jeff Schmidt, Chapter Legislative Director

SECRET NEGOTIATIONS LEAD TO PASSAGE OF FLAWED GAS DRILLING LEGISLATION — LOCAL GOVERNMENTS VOW TO OVERTURN ACT 13

The PA General Assembly has taken more than four years to finally pass legislation concerning natural gas drilling. During the Rendell administration, the Democratically-controlled House had passed both a severance tax bill and a State Forest gas leasing moratorium, only to see the bills buried by Senate Republican leadership. With Republicans winning majority in the House and the Governor's office in 2010, all efforts to pass a severance tax or State Forest gas leasing moratorium have been essentially stymied. Meanwhile, Governor Corbett made clear his intention to pass legislation to accommodate the gas drilling industry's wish list for Pennsylvania, and appointed a drilling industry-dominated Marcellus Shale Advisory Commission (MSAC). In 2011, the MSAC came up with their wish list, which became the key provisions in HB 1950. Just in time for Valentine's Day, Governor Corbett signed HB 1950 (now Act 13) into law, giving the drilling industry the sweetheart deal they were looking for. Tom Corbett has accepted more than \$1.6 million in campaign contributions from the gas industry, up to the end of 2010, when he was elected Governor.

Prior to the 2011 Christmas holiday break, the PA House and Senate had each passed their versions of gas drilling legislation. During this process, a number of strengthening amendments were offered and mostly defeated on party-line votes, with Republican leadership blocking efforts to improve environmental protections or restore local government authority to protect communities. To resolve the differences between the House and Senate versions, a conference committee was created, but not convened until the last minute. The final 174-page HB 1950 was negotiated over six weeks behind closed doors between the Republican Senate and House leadership and the Corbett administration. Democratic Senate and House leadership were excluded from the negotiations until a final bill was presented to and voted out of the conference committee on February 6. The Conference Committee passed the "Conference Committee Report on HB 1950" on a vote of 4 yes and 2 no, with the two Democrats voting to oppose. The PA Senate then began debate on the Conference Committee the next day, having scant time for members to read the extensive provisions of HB 1950. The Senate then passed HB 1950 by a largely party line vote of 31 - 19 several hours after debate began. The PA House picked up the debate on the conference committee report and passed it on February 8 by a largely party line vote of 101 - 90. The House vote was close, since they needed 99 "yes" votes to pass the bill.

LOCAL CONTROL PRE-EMPTED; REPUBLICAN SENATORS ABANDONED MUNICIPAL ZONING

One of the most objectionable provisions in Act 13 is the provision that eliminated the authority for local municipal governments to establish zoning requirements to protect their communities. Prior to passage of Act 13, Pennsylvania courts have upheld the right of municipal governments to exclude gas drilling from certain zones, such as residential zones, based on authority granted by the PA Municipalities Planning Code (MPC). While case law has found that local governments must provide for all (legal) land uses in each municipality, local governments can determine where in the municipality that land use may occur. Thus, many municipalities have established zoning ordinances to exclude gas drilling in residential zones, to protect the people who live there. Act 13 contains a provision that

pre-empts this local zoning authority and REQUIRES all local governments to allow gas drilling and associated activities in residential zoning districts. Thus, the gas industry can now place a gas drilling pad 300 feet from your house, a day care center, a school, hospital, senior center, community park or playground. No longer can communities establish noise or light ordinances, or limit drilling activities to day time.

During the negotiations leading to passage of Act 13, Sierra Club and other environmental groups approached several moderate Republicans who have traditionally supported good land use planning to ask for their support to get the local pre-emption provisions in the drilling legislation removed. We were pleased when nine Republican Senators (Alloway, Erickson, Folmer, Greenleaf, McIlhinney, Mensch, Rafferty, Tomlinson, and Vance) signed a letter to their leadership indicating their opposition to legislation unless the local preemption provisions were removed. At that point, it was clear that the Senate Republican leadership would not have the votes to pass drilling legislation, unless they accommodated the nine Republican Senators. In the end, leadership made no meaningful changes to the preemption provisions of the bill, but eight of the Republican Senators broke their pledge and voted in favor of the bill. Only Senator Pat Vance of Cumberland County kept her pledge and voted against the bill. These eight “flip-flop”ers gave the Senate the majority of votes needed to pass the conference committee report on HB 1950.

IMPACT FEE, NOT SEVERANCE TAX, REQUIRES COUNTY VOTE TO OPT-IN

While there has been a bipartisan effort to adopt a natural gas severance tax in Pennsylvania for four years, Governor Corbett’s opposition to a severance tax killed it. Corbett has signed a “no new taxes” pledge when running for Governor, while poll after poll found support in Pennsylvania for a natural gas severance tax by at least a 2 - to - 1 margin. Pennsylvania citizens understand that the drilling industry pays a severance tax in every other gas-producing state, and they should pay their fair share here, too. Governor Corbett claimed the drillers would move out of Pennsylvania if we adopted a severance tax here, despite the fact that our gas wasn’t going anywhere. Corbett has slashed funding for a variety of important programs, from education and the environment to support for those with disabilities and other social services, and refused to support a drilling tax equivalent to other states that would help reduce the needs for large budget cuts.

Instead, Corbett demanded that the General Assembly pass a minimal “impact fee” that would be primarily for use by communities to address the direct local impacts that drilling created. This impact fee, contained in Act 13, must be approved by each county where drilling takes place. Thus, Corbett conveniently ducks responsibility for any “new tax” because the local county commissioners are the ones who must impose it, and then take responsibility for a “new tax”. And while a County may choose to opt out, it takes a majority of that County’s local governments to override the opt-out decision.

The impact fee amount is less than half the rate of most states’ severance taxes. Thus, the drillers get off without paying their fair share, Corbett keeps his “no new tax” pledge, local county commissioners are on the hook for the fee decision, and the PA State Budget holes go unfilled.



ENVIRONMENTAL PROVISIONS WEAK, FULL OF LOOPHOLES

Separate from the local preemption provisions, Act 13 established weak environmental provisions, many full of loopholes. A few examples include: The setback for a drilling well pad or a fracking wastewater pit from your home in a residential neighborhood is 300 feet. A gas compressor station can now be placed 200 feet from your property line, and can operate at 60 decibels 24 hours a day. Penalties are a slap on the wrist, at best: general violation \$1,000 and a willful violation \$5,000. This is pocket change to multi-billion dollar international companies like Shell and Exxon.

MEDICAL SECRECY (DOCTOR GAG ORDER) Section 3222

A provision inserted in the final version of Act 13, which was not disclosed to legislators during floor debate, forces a doctor to sign a gag order, before the driller will disclose the name of a chemical that may be causing serious health issues to a contaminated worker or member of the public. Under the guise of a “trade secret” an emergency room physician must agree to keep confidential the chemical name of a substance claimed as a trade secret. The doctor is then legally prevented from telling his/her patient or other medical professionals what it is that is causing the patient’s medical problems. The doctor cannot document the chemical name and share it with other physicians who are doing research on drilling industry health impacts on workers or communities. This, combined with the other trade secret provisions of Act 13, will continue to keep the public in the dark about the chemicals that are being used for drilling operations within 300 feet of their homes and schools. Several public health organizations have been discussing a legal challenge to the doctor gag order provisions of Act 13.

LOCAL GOVERNMENT CHALLENGES TO ACT 13 EXPECTED SOON

A number of local governments from both western and eastern Pennsylvania are planning to challenge Act 13’s local pre-emption provisions. Many of these local governments had local zoning ordinances in place to protect their communities from drilling activities at the time of passage of Act 13. One of these municipalities is Nockamixon Township in Bucks County. Nockamixon Township had a zoning ordinance on the books



Marcellus Shale Sludge in Pennsylvania

for four years, which successfully prevented a gas driller from putting a gas well in a residential neighborhood. Within a day of Corbett’s signing Act 13 into law, the gas driller applied for a new permit to drill in the residential area of Nockamixon Township, pointing to the pre-emption provision in the brand new law. Bucks County Republican Senator Chuck McIllinney, originally said he would oppose the drilling legislation unless the pre-emption provisions were removed, but then voted for Act 13 with no changes.

McIlhinney is now claiming that Act 13 did not pre-empt any local government authority for Bucks County, ignoring the reality in Nockamixon Township. McIlhinney is one of the pro-Act 13 legislators who has come under increasing fire from his constituents, who claim he is lying about the impacts of Act 13. He received a number of communications from Sierra Club prior to his vote on Act 13, alerting him to the dangerous preemption provisions and the need to oppose them.

HOW DID YOUR LEGISLATOR(S) VOTE ON ACT 13?

Sierra Club, in conjunction with several other environmental organizations, has created a “Pennsylvania Marcellus Shale Scorecard 2011-12.” It can be found through this link:

http://pennsylvania.sierraclub.org/PA_Chapter_2008/legislative%20shale%20scorecard.html

The Marcellus Scorecard tracks a series of votes starting in the Fall of 2011, when HB 1050 was first being debated on the floor of the PA House and Senate. During this period, a number of environmental-leaning legislators offered a series of amendments intended to strengthen HB 1950. The Scorecard includes these votes, as well initial final passage of HB 1950 prior to the holiday recess, and the final passage votes on the Conference Committee Report in February, which ultimately became Act 13.

We encourage everyone to learn how their Representative and Senator voted on the most important environmental issue in Pennsylvania, and let them know what you think of their votes. For legislators who voted in favor of the environment a significant majority of the time, they should be congratulated. Legislators who voted against the environment should hear of your disappointment. Please also consider sending a letter to the editor of your local newspaper expressing your opinion on how your local legislators voted, as well. This year is an election year, and the voters should know whether their interests are being protected.

TOP TEN MYTHS ABOUT ACT 13

Sierra Club has created a “myth busters” document, intended to cut through the misinformation about Act 13 being spread by the drilling industry and their mouthpieces in the General Assembly. It can be found at this link:

<http://www.sierraclub.org/pressroom/downloads/FrackingMythbustersFactSheet.pdf>

We encourage our members and friends to spread the word about the problems with our new law, and educate the public about the need elect legislators who will protect us, not the drilling industry.

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First Ever Limits on Carbon Released

by Sierra Club Communications Staff

On March 27th the Obama Administration issued draft language to establish the first-ever carbon pollution protections for new power plants. Carbon pollution is the main contributor to climate disruption and is linked to life-threatening air pollution like smog – which triggers asthma attacks – making it a serious hazard to Americans’ health and future. Once finalized, these protections will ensure that new power plants will meet public health standards and protect Americans from dangerous pollution.

IN RESPONSE, MICHAEL BRUNE, EXECUTIVE DIRECTOR OF THE SIERRA CLUB, ISSUED THE FOLLOWING STATEMENT:

“The Sierra Club applauds President Obama and EPA Administrator Lisa Jackson’s announcement today to establish new safeguards under the Clean Air Act to protect Americans from dangerous carbon pollution. Their action today follows the actions of thousands of families and activists over the last several years to prevent 166 dirty coal plants from polluting their communities, air and water.

“These first-ever carbon pollution standards for new power plants mean that business as usual for the nation’s biggest sources of carbon pollution, dirty coal-burning utilities, is over. Cleaning up dangerous carbon pollution from new power plants and modernizing the way we power our nation will help secure Americans’ health and future, and prevent against life-threatening air pollutants like dirty soot, toxic mercury and smog.

“Most of all, these carbon pollution protections mark the end of an era for antiquated, dirty coal plants and continue the momentum behind clean energy to ensure healthier kids, families and workers, as well as much-needed job creation and a more secure climate future.”

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HELP US CREATE A VEGETARIAN COOKBOOK!

Do you have a favorite vegetarian dish that people rave about? If so, please share it with the Sierra Club so it can be included in the first-ever Pennsylvania Chapter Sierra Club cookbook. We are hoping to have the recipes compiled and ready for sale by November -- in time for the holiday gift-giving season.

Wouldn't be nice to give a friend a cookbook, which includes one of your recipes?

To submit a recipe, jot down the ingredients and instructions and email the recipe to: pennsylvania.chapter@sierraclub.org

Please put “cookbook” in the subject line. Make sure you include your name, the city and ZIP code where you reside. Recipes are due by September 30, 2012.

Rally: Invest in Pennsylvania and Pennsylvanians

by Wendi Taylor

Be There – May 1st

The Pennsylvania Chapter of the Sierra Club are calling upon all members and supporters to turn out on May 1st on the Capitol Steps at 1 p.m. Standing together, we will call upon Governor Tom Corbett and the Pennsylvania General Assembly to INVEST IN PENNSYLVANIA AND PENNSYLVANIANS.

We want a show some power – people power!

- We want clean jobs.
- We want clean energy.
- We want better schools.
- We want safe bridges and roads.
- We want a fair and just economic system.
- And we want to be good stewards of the Earth.

We are inviting environmental groups, labor groups, religious groups, educational advocates, justice groups and others to participate at the rally.

The Reverend Jesse Jackson once told the story about his grandmother being so poor that she could not afford a blanket to keep her warm at night. So she gathered scraps together and made a quilt. That is what progressive groups have to do. We have to sew our patches together so that we are big enough that we can all get what we want.

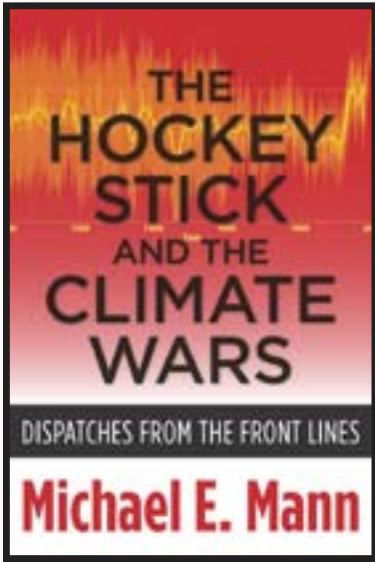
Come and be part of something bigger than all of us.

For more information about the rally or for information on transportation, contact the Sierra Club office at 717-232-0101 or by email pennsylvania.chapter@sierraclub.org

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BookReview



BOOK REVIEW: “THE HOCKEY STICK AND THE CLIMATE WARS: DISPATCHES FROM THE FRONT LINES,” BY MICHAEL MANN; COLUMBIA UNIVERSITY PRESS, 2012

By Robert Baillie

In this new book, Penn State climatologist Michael Mann debunks the dishonest attacks against the overwhelming scientific evidence that shows humans are changing the climate.

The now-famous “hockey stick” graph of estimated temperatures over the last 1000 years captures the conflict. Centuries of small increases and declines give way to a sudden, steep rise, showing that average temperature is now higher than at any other time in the last 1000 years. Because the hockey stick so clearly shows an alarming trend, it has become the target of those who insist that the climate is not warming. Denialists, egged on by the fossil fuel industry, have attacked the scientific process itself and impugned the integrity of Mann and other climate scientists.

Lost in the attack is the reality of how Michael Mann and two co-authors derived the “hockey stick” graph using evidence of temperatures found in tree growth rings, coral growth, ice cores, and other data. Scientists have scrutinized data and the methods used to derive it, no major flaws have been found. In fact, other climatologists have independently produced graphs that have the same basic shape.

Here’s how the scientific method works: Researchers gather and analyze data, then submit their article to a scientific journal. The journal’s editor sends the article out for a peer review – that is, a critique by other researchers (the “peers”). The identities of the reviewers are usually not known to the authors. The reviewers critique the methods and the conclusions. The goal is to prevent incorrect or shoddy work from being published. The process of criticism continues when an article is published. Other scientists often try to replicate the experiment to see if they can find flaws in the process or conclusions. Sound ideas survive this scrutiny. Inaccurate ideas will be discarded. Through this process, the scientific community arrives at an accurate picture of how nature works.

Mann points out that scientists must be skeptics. But deniers are different:

they ignore evidence they don’t like and lob personal attacks on people they don’t agree with. Mann is not the only target. Climate researchers have been attacked with smear campaigns and so-called “investigations” that amount to witch hunts.

This book refutes, in great detail, many arguments put forth by deniers. My favorite example is a paper by McKittrick and Michaels that used input values that were too large by a factor of 57! (see p. 82 of Mann’s book, or <http://scienceblogs.com/deltoid/2004/08/mckittrick6.php>). As they say, garbage in, garbage out. Had this paper been subject to the rigorous peer review that is standard in climatology, that error (and others) would have been found before the paper was released.

To this day, deniers still claim that Mann's "hockey stick" graph has been discredited. It has not; it has been confirmed by other scientists. Deniers claim that global warming stopped in 1998. It did not: the last decade was the warmest on record.

If deniers thought they could intimidate Mann into silence, they picked the wrong person. Mann pulls no punches in this book. He names names and documents the false claims by those who deny the validity of the scientific evidence.

As Mann says, it's one thing to argue about what, if anything, we should do about climate change. But it's quite another to deny the scientific evidence and falsely claim that climate science itself is a hoax, as some Republican politicians have been doing. These are fights that matter. Everyone who is troubled by organized disinformation campaigns should read the "Hockey Stick" book.

This book nicely complements Mann's previous book, "Dire Predictions:

Understanding Global Warming - The Illustrated Guide to the Findings of the IPCC", co-authored by Lee R. Kump. That book's charts and graphs present the evidence for climate change in a way that the layperson can understand. Every informed person should have at least one of these books. These books are available at your local bookstore, or Powells (whose unionized workers make decent wages), or, as a last resort, Amazon.

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“Who’s Who of Anti-Natural Gas Movement” Draws Hundreds to Marcellus Shale Exposed

by Karen Feridum

“A corporate business plan is not a national energy policy,” says Dr. Anthony Ingraffea, a Cornell University civil engineering professor and renowned expert in rock fracturing. He said the United States did not have the “proper regulatory, legal, and strategic energy policy in place” before unconventional natural gas drilling began. Ingraffea was the keynote speaker on March 17th at the Marcellus Shale Exposed symposium hosted by Berks Gas Truth and the Lehigh Valley and Pennsylvania Chapters of the Sierra Club.

Unconventional natural gas drilling is a controversial process that has raised numerous concerns. The symposium, which attracted about 350 activists, was held at Northampton Community College in Bethlehem.

Patrick Creighton, spokesman for the industry trade group, the Marcellus Shale Coalition, called the event a “who’s who of the anti-natural gas movement.” It kicked off on Friday evening with a screening of the Oscar-nominated documentary, *Gasland*. The film’s director, Josh Fox, joined the panel discussion that followed via Skype from the kitchen of two of the other scheduled panelists, Craig and Julie

Sautner who remained at their home in Dimock to respond to Thursday’s unexpected announcement by the EPA that their water was not contaminated. The agency based its conclusion on a small sampling of results. The Sierra Club issued a statement expressing support for the residents of Dimock read by Lehigh Valley Sierra Club chair Donald Miles during his opening remarks.

Panelists Laurie Barr of Save of Streams PA and Michael Shaw of Berks Gas Truth discussed the Scavenger Hunt PA project that Barr and her husband have undertaken to locate and map the approximately 100,000 orphaned oil



Professor Ingraffea during his keynote speech.

PHOTO BY DON MILES



Photo of one of the many exhibits at the symposium

PHOTO BY CATHY KIMOCK

and gas wells across the state. Abandoned wells serve as pathways for methane to migrate to the surface and make its way into air and water. Ingraffea referred to Barr's project the next day when he showed a photograph of a geyser of effluent coming out of an abandoned well 150 feet from a well being fracked in Pearsall, Texas in 2010.

Ingraffea's keynote address was followed by talks targeting the wide range of concerns unconventional natural gas drilling has created. Tracy Carluccio, deputy director of the Delaware Riverkeeper Network spoke on the environmental impacts of drilling. Michelle Bamberger, DVM, and Robert E. Oswald, Ph.D., discussed their research on health impacts. Deborah Rogers, founder of the Energy Policy Forum, addressed economic issues surrounding gas drilling. Jeff Schmidt, director of the PA Chapter of the Sierra Club, spoke on legislative and regulatory issues. Vera Cole, Ph.D., president of the Mid-Atlantic Renewable Energy Association, explored clean energy alternatives to natural gas, and Karen Feridun, founder of Berks Gas Truth, addressed media coverage and messaging related to drilling.

Several of the speakers took on the industry's claims that the process is safe. One particular claim that has often been repeated by public officials and media sources is that there are no known cases of groundwater contamination as a result of fracking. "The industry specifically uses the term fracking in that statement because it is one moment in a much larger process," explains Feridun, "Groundwater contamination caused over the life-cycle of a drilling project has been observed and well-documented many, many times. The industry uses the term fracking because they know that most people use the term as shorthand for the entire process, but it really shouldn't be used that way."



PHOTO BY DAN TOMKINSON

Professor Ingraffea warns that what happened in Pearsall, Texas, could happen in Pennsylvania.

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Coleman's Lantern

by Phil Coleman

One of my few unusual experiences when I was in the army was being blown up by an atom bomb. Let me explain.

I was drafted in 1952 as soon as I graduated from college and spent the bulk of two years at Fort Leonard Wood, Missouri. Shortly after I finished basic training, at about the time the Korean truce was signed, I became an athletic and recreation NCO for the Sixth Armored Division headquarters company, a battalion-sized company that housed clerks, personnel specialists, typists, and mechanics, etc., the personnel who kept the Division and the Post running. My principal duty was to go to each of our three day rooms and be sure the pool tables were in order before the First Sergeants came along to play pool.

In the Spring of 1953, an order came down saying that each platoon and platoon-sized unit would find a volunteer to go to an atomic bomb test. Since there was no one less crucial to the unit than me, I was told that I volunteered. If we had been lined up and asked if we would volunteer, I would have taken a step backward. I had learned not to volunteer. But being ordered to volunteer, I went gladly. Anything to break up the routine of army life. The 200 or so of us from Fort Leonard Wood were sent to St. Louis where we boarded a Pullman train, joining troops already aboard from some eastern posts. The train drifted west, stopping in Kansas City for Fort Custer volunteers, again in Leavenworth, Kansas, for Fort Riley, on to Camp Carson near Colorado Springs, Colorado, and by a circuitous route to Las Vegas.

I learned last week that my 40+ year old daughter didn't know what a Pullman was. Pullman sleeping cars were standard ways to take long trips back then. Our army Pullmans were a bit less luxurious than private passenger fare. The sleepers opened up four ranks high, so as many men as could sit beneath them could sleep in them. We slept eight hours every night. The kitchen car was in the middle of the train. For meals, the passengers in the back half of the train marched forward to the front half and then walked back through the kitchen receiving trays of food. Then the front half did just the opposite. I had a buddy from basic training who asked me if I played bridge. He got four of us together and we played bridge all the way there and most of the way back. One of our foursome was the best bridge player I have ever played with. One was not good at all. My buddy and I were in between. We spent our trip eating, sleeping, and playing bridge.

From Las Vegas, we were bused about 70 miles to Camp Desert Rock, a tent city in the middle of a barren piece of desert. In army "hurry up and wait" style, we laid around Desert Rock waiting for the day. We attended a couple of lectures presented by bored non-coms reading scripts. They definitely didn't want any questions. One day, Jimmie Durante showed up with his troupe and entertained the troops. I doubt that many readers today will know who Durante was. (Look it up!) One evening we loaded on buses and went into Las Vegas. We had six or seven hours there. Las Vegas was just beginning to be a casino city. Not being a gambler or a money spender, I was ready to return long before the buses were.

The evening before the big event, we were put through an extensive inspection to be sure we had exactly the equipment we



were required to have. I recall that we were issued carbines and helmets, which most of us had not had to wear since basic training. But there was nothing special or high tech about our equipment. If we had been charging up Pork Chop hill, we would have been equipped the same way. We were just soldiers dressed in fatigues like soldiers. Some army regulation requires that soldiers retire before midnight, so we had taps and lights out at 11:50 p.m. Then we had reveille at 12:30 a.m. We hurried up and waited and then boarded buses which took us some bit farther into the desert, to an area called Yucca Flat. Yucca Flat looked just like all the rest of the area – just as many Yuccas, just as flat. We were told that we were 3000 meters from ground zero. As we got off the buses, we were given sack lunches and badges. We were sent over to deep slit trenches. We sat next to the trenches, ate our sack lunches and then threw the sacks on the ground and got in the trenches. We were told to hunker down, close our eyes, and wrap an arm around our eyes. We had a countdown of sorts. At the end of the countdown there was a bright light, so bright that closing my eyes didn't seem to lessen the brightness. A few seconds later, the earth waved up and down three times and then there was a violent shake and a loud but not sharp roaring noise. Then it was over. We climbed out of the trenches and everything seemed the same. The lunch bags were still strewn about. There had been no wind to blow them away. The breaking dawn had turned into early morning. We craned our necks to look up at a towering mushroom cloud.



In a few minutes, we were organized into squads and we walked forward toward ground zero. We came upon tethered sheep along the way. The first ones we saw looked bewildered, but as we continued, we could see that some of them also had their wool singed on one side. Then a leader with what must have been a Geiger counter halted us. We had gone as near to ground zero as someone had deemed safe. My guess is that we were about a mile from ground zero. We walked back to the buses. As we boarded the buses, we threw our badges into a cardboard box that looked like one of the boxes our lunches had been in.

The buses took us to Camp Desert Rock. We showered, changed, grabbed our duffle bags, and got back on buses headed for the train. Somewhere along the line we were given a repeat lecture: There were spies who wanted to know about the bomb. We were to tell no one anything. What we had experienced was top secret. When our train stood on the platform in Las Vegas, newsboys hawked special edition papers covering the test in much more detail than any of us knew. [I learned years later that reporters had been invited to observe the test from about seven miles away, a bit less than three times as far from ground zero as we were, but they were not in slit trenches.]

I suspected then and still suspect today that the reason for having troops at the tests was to disseminate the notion that atomic bombs weren't all that bad. The tests were real tests to the designers of different configurations of bombs. But there was no need for troops to be there. As far as I know, we contributed no information to the studies. But we returned to a broad base of army units where whatever we told of the experience would be told to a large audience.

These tests took place just eight years after Hiroshima and Nagasaki. The United States was still celebrating the Bomb's effectiveness in ending the war and was getting mired down in the Cold War with the Soviet Union. There was almost no feeling of guilt. We were not yet dealing with complaints around the world that we were the only country to use the Bomb in war. In fact, we were just realizing that we were

no longer the only country with a nuclear capability. Also, Americans were beginning to believe the optimistic predictions that nuclear energy would give us free electricity. Nuclear power plants would make coal-and oil- and gas- fired plants obsolete. Newspapers regularly ran enthusiastic predictions. The math was simple and simple-minded. Since energy equals change in mass times the speed of light squared, a very few atoms could supply unlimited energy forever. Few considered the realities that made a lie of that simple formula, and few looked at the negatives. The prospects of power plant accident were downplayed. The question of what the radioactive life of nuclear waste would be wasn't taken seriously. The notion that power plants would age and have to be decommissioned seemed to be a distant prospect. Elevated up front capital costs weren't yet realized.

In the early years of the Cold War, and continuing through the years when Khrushchev threatened to locate nuclear weapons in Cuba, school children were drilled in hiding beneath their desks if there was an atom bomb attack. Somehow, it was easy for us to fear the Soviets but not extend that fear to nuclear power.

The questions concerning harm are too complex for anyone other than trained scientists to unravel. Potential cancers, radiation poisoning, and genetic mutations are possibilities.

One negative that the scientific community was somewhat aware of was radiation. The general public had a vague notion that if you were close enough to a blast, you would get a lethal dose of radiation. However, the popular notion was that if you were that close, the blast would kill you before the radiation did. There was no notion about cumulative effects or probabilities or different

types of radiation. At the Desert Rock tests in 1953, the assumption was that since we were fit and healthy after the bomb test we had had no radiation effects. There was no concern that the bomb cloud would have radiation fallout. It was many years later that some test veterans began to experience effects which they attributed to the test. At some point in the 1990's nuclear veterans were invited to register and report any problems with cancer. I reported but had no problems then. Or now.

Studies in the 90's revealed a somewhat higher incidence of leukemia in the civilian population east and south of Desert Rock where most nuclear cloud fallout occurred.

This is a difficult problem to consider. Some careful studies have concluded that 1) there is no cumulative effect from repeated low doses; and 2) low doses, even if repeated, do not have deleterious effects. Even so, high doses of radiation can cause cancers and have other deleterious effects.

The popular belief that radiation from nuclear accidents is harmful got a tremendous boost after the Three Mile Island and Chernobyl accidents, but there is little evidence of harmful effects from the low doses that escaped from Three Mile Island.

The questions concerning harm are too complex for any other than trained scientists to unravel. Potential cancers, radiation poisoning, and genetic mutations are possibilities. The range of dangerous particles also needs to be understood. Frankly, I don't understand nearly enough. They are so complex that trained scientists can concentrate on different aspects and set different standards and come to opposing conclusions.

I am convinced that nuclear power is less harmful than coal. By this I mean that the environmental consequences of mining, transporting, and burning coal are extensive and present right now. And in many ways they are visible. The consequences of nuclear power are prospective rather than present. But they are still real.

Regardless, the supply of economically mineable uranium is far from infinite. Breeder reactors would solve the supply problem, but they also make the consequences of an accident much worse. A breeder reactor meltdown would leave a big hole in the earth and lethal radiation would surround it. Furthermore, the prospect of bomb grade material falling into the hands of terrorists becomes more serious.

Americans tend to fear “rogue nations” developing nuclear capabilities. We feel that leaders of Iran and North Korea, for instance, aren’t stable enough to be trusted with bombs. United States, Russia, England, France, China, India, Pakistan, North Korea, and Israel have nuclear weapon capability, if not already constructed bombs. It is not particularly helpful that some of these nations are allies. A nuclear attack by any country will mean broad devastation to friends and foes.

It should be clear that we need to look elsewhere for our electricity, and we need to elect sane non-war-like leaders who will help us do our part to avoid nuclear war.

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15Th Annual Huplits Wildlife Grant Competition

A CHALLENGE TO PROTECT WILDLIFE AND HABITAT IN PENNSYLVANIA

The Sierra Club’s Huplits Wildlife Grants Committee is seeking grant proposals to help protect wildlife and wildlife habitat in Pennsylvania. Approximately \$45,000 will be available for the 2012 Huplits Wildlife Grants program. A total of six grants were awarded in last year’s competition.

Application guidelines:

- We request projects that directly impact wildlife in the Commonwealth on a regional or statewide level.
- A grant project may involve public education, litigation, land acquisition, wildlife studies that focus on improving Pennsylvania wildlife.
- Generally, projects will be funded for no more than two years. Under special circumstances a project may be extended.

A proposal should include the overall goal of your project, the project objectives, major activities, resources required, project timelines, and a reasonably detailed budget.

DEADLINE: Please submit proposals before APRIL 30, 2012 to Christopher Seymour via e-mail at tophseymour@gmail.com. If you have any questions, contact Chris via email or call 412-559-9535.

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Nuclear Fallout

The Sierra Club’s Position

Tragically, it took a horrific disaster in Japan to remind the world that none of the fundamental problems with nuclear power have ever been addressed.

Besides reactor safety, both nuclear proliferation and the required long-term storage of nuclear waste (which remains lethal for more than 100,000 years) make nuclear power a uniquely dangerous energy technology for humanity.

Why Nuclear Power Doesn’t Make Sense

As the disasters at Chernobyl, Three Mile Island and Fukushima have shown, nuclear power can cause catastrophic damage to land, human health, and our food supply. We should pursue our cleanest, quickest, safest, and cheapest energy options first: Nuclear power comes out last in every one of those categories.

In the long-term, nuclear power is also unnecessary: With an intensive effort to exploit our clean energy resources, we can power our society, create good jobs, and keep our environment healthy with renewable energy such as solar and wind. With the right policies and investments, we can achieve 100 percent renewable energy in our lifetimes -- without nuclear power.

IT’S PROHIBITIVELY EXPENSIVE

- Construction of nuclear reactors is very complex and can take up to seven years and up to \$10 billion in capital costs.
- Long construction timeframes and large capital costs mean that the payback on the initial investment in a nuclear plant often takes 40 years or more.
- Due to terrorism risks, governments must maintain costly security programs to protect nuclear plants that increase the cost of production -- a factor not included in official costs for plant operation but paid for by society.



IT'S PROPPED UP BY SUBSIDIES

- Nuclear power is not viable without subsidies (estimated to be at least 0.7 ¢/kWh, or 13 percent to 80 percent of production costs), and those subsidies often exceed the value of the energy produced.
- These subsidies hide the true cost of nuclear power, making it seem more cost-effective than it actually is.

IT ENDANGERS WORKERS

- Uranium miners are at risk of exposure to radioactivity on their clothes, skin, and in the air they breathe. Miners and nearby populations are exposed to radon gases. When accidents happen, as in Fukushima, workers are subject to extremely unsafe levels of radiation.
- It Hurts the Land
- Uranium ore comprises only a small fraction of the total material that is mined, leaving behind tons of rock along the landscape in the form of radioactive tailings.
- Hundreds of millions of tons of long-lived mining and milling wastes have been generated in the U.S.
- Nuclear power is the largest water consumer among all energy technologies. Heat waves and droughts have often forced the temporary shut down of U.S. nuclear plants.

IT'S UNSAFE

- There is no long-term disposal method for nuclear waste, and it lasts for thousands of years.
- Radioactive fuel rods are stored in pools around reactors across the country, many of which are too full to be safe.
- Yucca Mountain -- the proposed nuclear repository located just 100 miles from Las Vegas -- cannot guarantee safe storage of spent nuclear fuel and radioactive waste for 10,000 years, the time it takes for the fuel to become safe. Contamination of soil and groundwater is a real threat. Dozens of earthquakes have struck the area around Yucca Mountain since the federal government first considered it as a potential waste site.
- Transporting nuclear waste to a centralized site poses a risk for people who live near the railway lines. An estimated 22,000 rail trips would be required. It would cost billions of dollars. And it would be a potential target for terrorists.

TERRORISM

- Unlike wind and solar plants, nuclear reactors, if targeted by terrorists, could endanger millions of people.
- Though nuclear fuel cannot be used to make nuclear weapons, "reprocessed" nuclear fuel can -- posing a security risk.

NuclearFallout

NEARBY NUCLEAR

Americans who have been watching with trepidation the nuclear tragedy in Japan can't help but look at their own backyard. And with good reason. There have been three global nuclear disasters in three decades. I'd wager that few Americans could name the nearest nuclear site from their home.

The Sierra Club has opposed nuclear energy for a long time. Take a look at our factsheet on nuclear here and take action.

The U.S. government has pegged the danger zone around the Fukushima plant in Japan at 50 miles. That number "is certainly going to raise questions about the safety of those who live more than 10 miles from the plants in the U.S.," Union of Concerned Scientists nuclear expert Edwin Lyman told Mother Jones in a good rundown on nuclear plants and their proximity to our major urban areas. The site has a handy table of nuclear sites and nearby populated areas, so check that out.

The nuclear spot that has been getting the most press is Indian Point, merely 35 miles from Manhattan. The New York Times reports that Indian Point officials will be revisiting their safety standards:

"I have no doubt there will be changes we make in response to this event," said John McCann, vice president of nuclear safety and licensing for Entergy. But, he said, he was "in no position" to say what they would be.

Mr. McCann reassured the legislators that Indian Point had been designed to withstand an earthquake much stronger than any on record in the region, though not one as powerful as the quake that rocked Japan. He said repeatedly that the greater threat to public safety in Japan had come not from the earthquake, but from the tsunami.

It was the tsunami, he said, that washed away the tanks of fuel for the emergency generators and left the Japanese unable to keep the plant's reactors cooled. Indian Point has several sources of power and water that should preclude a similar situation there, he said.

Meanwhile, the political fallout is still up in the air, so to speak. Here's Rep. Ed Markey telling it like it is:

Nuclear lobbyists are hard at work in Washington. And I don't blame them! Their industry is incredibly expensive. Generous tax subsidies for nuclear are crucial if they hope to expand.

By the way, I couldn't pass this up. Ultra-right commentator Ann Coulter offered this piece of reassurance on Fox News shortly after the disaster in Japan: "There is a growing body of evidence that radiation in excess of what the government says are the minimum amounts you should be exposed to are actually good for you and reduce cases of cancer."

If that's a talking point that nuclear supporters are going to roll with, then by all means!

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Breaking News! NRC Blocks Restart

The Nuclear Regulatory Commission (NRC) is doing its job on this one. The commission has blocked restart of San Onofre nuclear power plant in southern California citing plant problems that have not been fixed. Unusual wear on hundreds of tubes that carry radioactive water has caused leaks of radioactive steam.

This large plant, producing over 2,000 megawatts, enough electricity to serve over a million homes hasn't operated for two months and won't until the reason for the failures is found and corrected. Ironically, the plant spent over \$650 million on new steam generators just two years ago. These generators are the site of the problem. NRC will not permit restart until the problem is completely solved.

Loss of a power plant of this size will create a strain on the California grid when usage increases this summer. A report commissioned by Friends of the Earth argues that design flaws in this plant are the crux of the problem.

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Scientists Find We Are “Living on Borrowed Time.”

In its second annual review of American nuclear power plants, the Union of Concerned Scientists identified 15 “near misses” in 2011. Although none of the 15 occurred at Pennsylvania’s nine plants, the pattern of lax operation and Nuclear Regulatory Commission (NRC) oversight suggests that the industry everywhere fails to take safety as seriously as it should.

The study revealed that plants continue to have problems with safety related equipment and occasionally recognize but misdiagnose problems. Further, when NRC discovered a problem it all too often focused on the problem, not the cause.

“While none of the safety problems in 2011 caused harm to plant employees or the public, their frequency—more than one per month—is high for a mature industry. The severe accidents at Fermi (a plant in Michigan that suffered a partial core meltdown) in 1966, Three Mile Island in 1979, Chernobyl in 1986, and Fukushima Dai-Ichi in 2011 occurred when a handful of known but uncorrected problems led to catastrophes. That plant owners could have avoided nearly all the near-misses in 2011 had they corrected known deficiencies in a timely manner suggests that neither the owners nor the NRC has completely internalized the lessons from those accidents.”

*The executive summary is available at: http://www.ucsusa.org/nuclear_power/nuclear_power_risk/safety/nrc-and-nuclear-power-safety
The full text of this report is available on the UCS website at www.ucsusa.org/nuclear_power*

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Status Of World Breeder Reactor Programs

By John Rawlins

When Phil Coleman asked me to write this summary, I hesitated for several days before committing to it. As I reviewed the history since I exited from the remains of the U.S. program in 1995, I partially understood that reluctance, probably best explained in the memorable words of Admiral Rickover. In the early 1950's he gave the reasons for the navy's abandonment of this reactor type (liquid metal coolant, high enrichment fuel) as follows:

They are 'expensive to build, complex to operate, susceptible to prolonged shutdown as a result of even minor malfunctions, and difficult and time-consuming to repair.'

In 1977 President Carter added another problem: reprocessing spent fuel to recover plutonium (and uranium) presented a proliferation risk (theft of plutonium for weapons) not worth taking. He was in effect stating what is now obvious to me: humans are not morally, intellectually, or emotionally fit to manage long-term nuclear power programs responsibly. One might add that continued burning of fossil fuels reinforces that point.

During the early days of planning future nuclear power programs, all governments that went on to develop breeder reactor technology did so based on the understanding that long-term (hundreds of years) electricity production would by necessity begin with uranium fuel in water-cooled reactors, and over time transition to plutonium fueled reactors with some kind of liquid metal coolant. These 'breeder' reactors would then produce somewhat more plutonium than they would consume using depleted uranium (U-238) stocks, as I'll explain eventually. Several countries pursued other options as well, but the core programs in all cases eventually centered on liquid metal coolant and plutonium/uranium fuel.

First, a short history of my bonafides. My Ph. D. research focused on experimental low-energy accelerator-based nuclear physics, as did my post-doctoral research. Phil Coleman then hired me to teach undergraduate physics at what is now California University of Pennsylvania for six years, followed by a year of further post-graduate study at the University of Maryland's Nuclear Engineering department.

In 1976 I went to work for Westinghouse-Hanford Company (WHC) in a reactor physics group formed to provide support and guidance for startup testing at the Fast Flux Test Facility (FFTF). The FFTF was a liquid sodium cooled reactor, fueled with mixed-oxide plutonium/uranium, in a quasi-breeder configuration. The reactor's central purpose was to test fuels and materials for the subsequent larger breeder reactor prototype and demonstration reactors. Because the purpose was materials testing rather than electricity production, the 400 MW (mega-watts) of heat produced at full power was dumped to the atmosphere via sodium-air heat exchangers. The facility thus avoided some of the pitfalls associated with sodium-water-steam systems experienced by many of the other breeder reactor demonstrations around the world that included electricity production. We went through startup testing as planned, and full power operation commenced in 1978. The plant never had any significant operational problems and was a very stable, successful demonstration of the capabilities of breeder reactor fuels and materials.

Following completion of documentation of all the startup experiments, I drifted into technical group management for a group of physics friends. We supplied basic nuclear data needs of the reactor group, and explored alternative uses of the FFTF after Presidents Ford and Carter terminated a key component required for a breeder program - fuel reprocessing. This action essentially killed the breeder

program, which Congress later officially ended. One of the potential uses of the reactor was to demonstrate the feasibility of what we called a partitioning and transmutation (P-T) idea, in which transuranic and certain fission product isotopes partitioned (chemically separated) from spent fuel might be inserted into a breeder-type reactor in order to transmute them (by absorbing a neutron) into shorter-lived isotopes more amenable to long-term waste management.



Typical Breeder Reactor

A management friend and

I then organized an international conference to solicit ideas for P-T chemistry and reactor types from around the world. The first-of-its-kind conference was in Seattle in 1993, called Global-93. While the conference was successful financially, there was no reward funding from the U.S. Department of Energy (DOE) as a result, and I was soon to take an early retirement offer from WHC in 1995. After another 12 years of teaching physics and astronomy at a community college in Bellingham, Washington, I finally retired to practice subsistence farming and having fun in this beautiful part of the country.

I have not even thought about trying to follow progress in that field since retirement, and that was also part of my reluctance to author this article. However, I did find an excellent summary of the world's breeder reactor programs produced by the National Resource Defense Council (NRDC) and commend that to you for more detailed explanation and history:

<http://fissilematerials.org/library/rr08.pdf>

The 2010 NRDC summary is long and complete, in that it describes breeder systems that I will not discuss and a complete history of programs in the U.S., Russia, India, Great Britain, France, and Japan. I'll begin by briefly summarizing the physics behind the choice of plutonium fuel.

The beginning really took place billions of years ago, when massive stars formed, lived relatively short lives, and then exploded. The first stars formed from clouds of gas comprised of 75% hydrogen, 25% helium formed in the first few minutes of the universe. The cores of those stars fused hydrogen to helium, then helium to carbon, then carbon to oxygen, and so on up to nickel-56 - the most tightly bound (stable) nucleus in the entire table of the nuclides. The implication to the core of the star is that further fusion, while possible, will not produce energy required to prevent the core from gravitational collapse. Therefore, the core collapses from an already-dense state to a far denser state and either forms a 'neutron star' core, or a black hole. In the first case, in-falling material slams into the recoiling surface of the neutron star and explodes into space amidst a swarm of neutrons and other particles. The 'supernova' explosion then includes neutron transmutation of that in-falling material into elements all the way up the periodic table to uranium and beyond. Thus, over time, the heavy-

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element concentrations in star-forming clouds steadily increase with time. Other types of supernova explosions have a similar effect on heavy element concentrations.

So some 5-6 billion years ago, the story goes like this: a star exploded in the vicinity of material that would make up our solar system, and included all the elements produced through time (and in that explosion). Elements produced with half-lives on the order of hundreds of millions to billions of years are still present in Earth's makeup. Most of that mass would have sunk toward the center of the planet during its early molten phase, but mountain-building and other tectonic activity has resulted in small amounts of heavy metals being present near or at the surface in certain locations. The planet is now 4.6 billion years of age. That just happens to be the half-life of U-238, so about half of the original amount of that isotope remains here (the other half has become lead-206 through radioactive decay). The only other uranium isotope still present is U-235, with a half-life of 700 million years - so most of that isotope is now gone (replaced by lead-207). The only naturally occurring isotope that readily undergoes neutron-induced fission is U-235, BUT mined uranium only has 0.7% U-235; 99.3% is U-238. Early neutron transmutation experiments demonstrated that U-238 could capture a neutron to form U-239, which decayed eventually to Pu-239 - which like U-235 is readily amenable to fissioning with neutrons. The half-life of Pu-239 is only 24,000 years, so none remains anywhere on earth from the original supernova. Physicists refer to U-235 and Pu-239 (as well as U-233 and Pu-241) as "fissile," while U-238 (and thorium-232) are "fertile." Neutron bombardment in the reactor changes fertile nuclei into fissile nuclei, and that is what "breeding" refers to.

A national commitment to breeder reactors requires the following steps/facilities:

1. Mining uranium for phase 1 reactors
2. Uranium enrichment to produce uranium with 3-5% U-235
3. Fuel fabrication for light-water power reactors
4. Light-water reactors (LWR)
5. LWR spent fuel reprocessing, separating Pu and U from the fission product waste
6. Waste form production (generally glass logs) incorporating the LWR fission products
7. Production of mixed-oxide (Pu & U) fuel pellets for breeders
8. Disposal facilities for all fission product waste
9. Breeder reactors
10. Breeder reactor spent fuel reprocessing, separating Pu/U from fission products
11. More waste form production & disposal
12. Breeder Pu/U back to the breeder fuel pellets, repeating steps 7 through 11 ad nauseum, or
13. Until all the U-238 is gone or no longer economical to provide.

None of the assumptions supporting initial commitments to breeder reactor development have turned out to be valid. Uranium from mining will not peak until late this century. We built far fewer LWRs than originally imagined. In spite of years of political angst and physical site research we have no high level waste disposal facility for either glass logs or spent fuel, with absolutely no current notion of a

Plan B. Nuclear power turned into the opposite of “too cheap to meter.” We have almost certainly reached the point in time of Peak Everything, which implies having reached Limits To Growth, which means it is now too late for almost any new large-scale commitment from investors or government to take on massive new programs like breeders and their associated support facilities. Finally, three very impressive accidents (Chernobyl, Three-Mile Island, and Fukushima) have occurred and have convinced large populations that nuclear power is too risky to continue.

When I first heard what happened on Japan’s east coast last year, I shuddered to imagine the possible consequences of operating a sodium-cooled breeder reactor located at Fukushima during the tsunami. The only other time I had that stomach-churning (This-Is-NOT-Going-To-End-Well) feeling was while scouting the Lava Falls rapid at high water in the Colorado River’s Grand Canyon for an hour. The stomach was right - testosterone and scouting did not help - the raft flipped. Radionuclides from the Fukushima plant’s reactors continue to enter the Pacific Ocean, and ocean currents from there merge and head for our west coast fishing waters. However, the sacrifice zone around Fukushima is probably far smaller than it would have been for a breeder reactor complex located there. For those of you who forget your chemistry lab days, see the following:

<http://www.youtube.com/watch?v=92Mfric7JUc>

Today, the U.S. no longer has a breeder program. Japan’s program is stretched out now to more than 50 years longer than in the beginning, as is France’s. I am sure that anyone concerned about resurrection of breeder programs can rest assured that the era of breeder reactors is now history. Breeder reactor specialists and advocates are an endangered species. And for an industrialized world in decline for the remainder of the century, it’s likely that the entire nuclear future will consist of license extensions for some operating plants, shutdown of others, MAYBE construction/operation of a few more LWRs, and spent fuel remaining in on-site spent fuel pools as long as the mind can imagine.

In 2007 I concluded a series of articles about Peak Everything with a brief summary of nuclear power, including a physics primer complementary to the material in this article. The web-link for that 2007 article is:

http://www.whatcomwatch.org/php/WW_open.php?id=854

Some of the punctuation (notably apostrophes and dashes) got lost in the online version, but it’s still easily readable.

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Nuclear Is Not the Answer

By Eric Epstein

A letter from Eric Epstein, September 23, 2011

Over the last ten years the nuclear industry spent \$600 million on lobbying, and donated \$63 million in campaign contributions to convince lawmakers that nuclear power is the answer to America's energy problems.

This is the same industry that promised Americans that atomic power "would be too cheap to meter."

This is the same industry that Forbes described in 1985 "... as the largest managerial disaster in business history, a disaster on a monumental scale. The utility industry has already invested \$125 billion in nuclear power ... only the blind, or the biased, can now think that most of the money has been well spent." As described in Forbes magazine November 25, 2010, federal nuclear loan guarantees would transfer the financial risks of the "nuclear renaissance" onto U.S. taxpayers. The non-partisan Congressional Budget Office (CBO) has estimated that "well over half" of nuclear loan guarantees will default, leaving taxpayers to hold the bag for many billions of dollars per failed project.

This is the same industry that gobbled up \$151 billion in subsidies from the U.S. government from 1943 to 1999.

So what has changed to convince American taxpayers it's time to bet the house on nuclear energy? Try \$600 million on lobbying and \$63 million in campaign contributions.

NOWHERE FOR NUCLEAR GARBAGE TO GO

Each nuclear reactor generates 30 metric tons of high-level radioactive waste annually. The United States has 70,000 tons of waste stored at 80 sites (high-level terrorist targets) in 35 states. By 2055, the amount of waste is expected to increase to 153,000 tons. The Government Accounting Office concluded that if radioactive waste stays onsite for 500 years, taxpayers will be on the hook for between \$34 billion to \$225 billion.



CORPORATE SOCIALISM MEETS VOODOO ECONOMICS.

There is considerable exposure for Joe the Plumber who already insures nuclear power through the Price Anderson Act. Try buying nuclear homeowners' insurance for this safe and reliable energy source.

The CBO considers the risk of default on government nuclear plant loan guarantees "to be very high – well above 50 percent." In a report issued on May 7, 2008, the CBO concluded the risk of default by private companies comes from the expectation that a new nuclear plant "would be uneconomic to operate because of high construction costs, relative to other electricity generation sources."

According to Pennsylvania Power & Light, the cost for its new nuclear generating station at Bell Bend

mushroomed from \$10 billion in September 2008 to \$15 billion in June 2009. Not bad for a company that collected over \$2 billion in nuclear taxes, i.e. “stranded costs” for cost overruns at its Susquehanna nuclear plant.

WHEN DID BROWN BECOME GREEN?

The “clean air myth” was demolished on May 13, 1999 when the Nuclear Energy Institute’s (NEI) advertising campaign was deemed “misleading” by the the Better Business Bureau (BBB). The commercial in question featured a cute owl singing the praises of nuclear power, and thanking the NEI for clean air. The BBB concluded, “The process currently used to produce at least some, if not most, of the uranium enriched fuels that are necessary to power nuclear energy plants emits substantial amounts of environmentally harmful greenhouse gases.” The NEI did not appeal the decision.

The enrichment of uranium at the Paducah Gaseous Diffusion plant releases massive amounts of chlorofluorocarbons (CFCs) which are more damaging as a global warmer than carbon dioxide. CFCs remain the primary agent for stratospheric ozone depletion.

WATER HOGS

Nuclear power plants use millions of gallons of water every day to cool their superheated reactor core. It is not uncommon for these plants to cause massive fish kills, discharge chlorinated water, and use chemicals to defeat Asiatic clam infestation.

PPL’s nuclear plant uses 29.86 million gallons of water per day from the Susquehanna River that is not returned. PPL increased its generating capacity through an Extended Power Uprate that will allow the nuclear plant to increase the amount of water it takes up to 65.4 million gallons per day or almost 24 billion gallons per year.

The new plant proposed by PPL would withdraw an additional 20 million gallons per day regardless of seasonal fluctuations, water restrictions or periods of drought.

NUCLEAR POWER INCREASES FOREIGN FUEL DEPENDENCY.

Nuclear fuel is a nonrenewable energy source with an escalating price tag. The cost of uranium ore rose every month in 2007 and peaked at \$120 a pound in 2007. This was the same “low-cost” fuel that sold for \$7 a pound in 2001, but now sells for about \$52.50.

Most of our nuclear fuel is supplied from dependable foreign “allies” like Russia and Kazakhstan or Australia when their mines aren’t flooded. Additionally, uranium mining and milling present significant health risks.

Mines release radon gas and radioactive dust from the crushing and grinding of ore. Plants that enrich uranium can also be converted to build nuclear bombs. This is the path Iran is taking to develop nuclear weapons.

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What Are We Doing with Nuclear Waste?

by Wendi Taylor

After more than 75 years of creating a stockpile of nuclear waste, we still don't know what to do with it. The scientific community has decided that the best way to handle the ever-increasing amount of nuclear waste is to stabilize it in canisters and bury it deep within the earth where people of the future will not likely stumble upon it.

The United States began to establish a high-level nuclear waste facility at Yucca Mountain in southwestern Nevada. After spending nearly 30 years and \$14 billion, the Obama administration in 2009 abandoned plans to store the waste there. This decision has been challenged at the Nuclear Regulatory Commission, which licenses storage facilities. The question remains: Where on earth are we going to put our nuclear waste? What land can we give up forever?

The problem with nuclear waste is that it is harmful to humans for a very long time. How long depends on the type of waste. Most nuclear waste is classified as low-level or high-level nuclear waste, depending on its potency. Low-level nuclear waste is harmful to humans for about 200 years, while high-level waste can be harmful for thousands of years and some types for a million years.

What civilization creates this kind of problem? Perhaps Americans with their “we can do anything” spirit assumed that science of the future would find a solution. It hasn't.

YUCCA MOUNTAIN

In the interim, spent nuclear fuel rods are being stored at the 75 commercial nuclear plants in 33 states. Yucca Mountain was supposed to take both waste from commercial nuclear reactors and the military nuclear waste from producing nuclear weapons and nuclear submarines. Most of the country's nuclear waste is located at the Hanford site which occupies 586 square miles in Benton County, Washington. Hanford was established during World War II to develop weapons and continued to operate until 1970's. Now it is the largest cleanup effort ever undertaken.

WASTE AROUND THE WORLD

But the problem of nuclear waste is not just here in the United States. There is nuclear waste across the globe, as a result of the Atoms for Peace program, in which the United States exported nuclear reactor technology to many countries. Because the United States considers the existence of this nuclear waste as a security concern, it has taken responsibility to collect the nuclear waste scattered around the world and secure it to prevent the proliferation of nuclear weapons. This project is likely to take until 2019 to complete. In March, the United States took possession of the nuclear waste from Mexico.

The federal government is working to store nuclear waste in forms that will stabilize the waste until it can figure out what to do with it. The U.S. Department of Energy (DOE) has responsibility to secure and dispose of the nuclear waste. The Nuclear Regulatory Commission is responsible for licensing the disposal facilities. The DOE has entered into a number of agreements to clean up and move the nuclear waste stored in Washington, Idaho, New York, Colorado and South Carolina. The Department of the Navy has some responsibility for the waste stored in Idaho.

Right now, the best thinking is to immobilize the high-level nuclear waste by vitrification, a process that turns the waste into a glass-like substance, which can be placed in canisters until it can be disposed of somewhere. The federal government is building a \$12 billion vitrification plant on the

Hanford site, which is not expected to be completed until 2019. Then, it will take about 30 years to produce about 10,000 canisters of waste. The Savannah River Site in South Carolina started its vitrification process in 1996 and is about 40 percent complete. The Savannah River site is only dealing with 30 metric tons of spent nuclear fuel, compared to the 2,130 metric tons being housed at Hanford. New York's West Valley site has secured its high-level nuclear waste in 275 canisters. Fort St. Vrain site in Colorado has 15 metric tons and Idaho National Laboratory has 280 metric tons of spent nuclear material.

HANFORD

The DOE is feverishly working on the Hanford site, which has a mixture of high-level radioactive liquid and solid waste, along with an assortment of contaminated structures. Workers on the Hanford site are racing to clean up 53 million gallons of high-level radioactive waste that is being stored in 177 underground tanks. About a third of the tanks are leaking and contaminating soil and groundwater. The federal government is trying to stop about 1 million gallons of the waste from traveling through the groundwater to the Columbia River. The cleanup is costing about \$2 billion a year.

After the decision to close down Yucca Mountain, the U.S. Government Accountability Office reviewed the implications of the shutdown for Congress. It concluded that the Department of Energy should assess the condition of the stored nuclear waste and plan to extend the life of the storage facilities. It also recommended that the DOE continue its research into finding better solutions to the nuclear waste problem.

The commercial nuclear plants in the U.S. produce about 20 percent of the country's electricity and add about 2,000 tons a year to the nuclear waste problem. Once the fuel rods stop producing energy, the spent fuel rods are set in pools to cool for about five years and then are packed in stainless steel canisters and stored on site in dry casks. About three-quarters of the fuel rods in the U.S. are being stored in pools, while the rest are in dry casks. The NRC is responsible for inspecting the dry casks.

Some researchers say there are ways to reduce the amount of nuclear waste; one is reprocessing and the other is high temperature breeder reactors. Spent nuclear fuel could go through a process to extract the plutonium-239 from spent fuel rods, which could be reused in power plants. This would lessen the amount of waste produced and increase the fuel for reactors. However, reprocessing also produces weapons grade materials that could be used to create a nuclear bomb.

BREEDER REACTORS

Another alternative is high temperature breeder reactors, or fast reactors, which use high temperatures to induce neutrons to produce fission. Breeders are cooled with liquid sodium rather than water. These reactors are a way to recycle reactor waste into fuel. This relatively new form of nuclear technology could overcome the principal drawbacks of current nuclear reactors, such as fear of radioactive releases from reactor accidents, the fear that nuclear fuel falling into the hands of terrorists, the problem of storing dangerous, long-lived radioactive waste, and the depletion of the world's uranium.

According to the American Nuclear Society, fast reactors can diminish the cost and duration of storing and managing reactor waste. "Virtually all long-lived heavy elements are eliminated during fast reactor operation, leaving a small amount of fission product waste that requires assured isolation from the environment for less than 500 years." (However, see John Rawlins' article, this issue.)

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How Far Have We Come Since Fukushima?

by Wendi Taylor

A year after the catastrophe at the Fukushima nuclear plant, are U.S. nuclear power plants doing anything differently? Has the Nuclear Regulatory Commission (NRC) changed its oversight based on lessons learned? The answer seems to be not nearly enough. Instead of treating Fukushima as a teachable moment, the industry decided it was a time for reassurance. In a public relations campaign, the industry said the ever-expanding complex problems that happened in Japan could not happen here.

NRC STUDY

Even so, the NRC organized a team of experts to study U.S. reactors and the related equipment and procedures at nuclear power stations. In July the members on the task force submitted about 30 actions that the NRC should implement that would make plants safer, based on lessons learned.

One year later, not a single plant has been required to make any modification or adhere to any new safety rule. The NRC recommended that all power stations prepare strategies to deal with events that are greater than the plant was designed to handle, such as exceedingly large earthquakes and tornadoes or historic flooding. In other words, what would they do if, as happened at Fukushima, an event cut power to the nuclear plant and it could not be restored? As part of the strategic planning for events, the NRC wants to re-examine each plant for seismic and flooding hazards. While on the front burner in the weeks following the accident, the NRC is now estimating it could take up to seven years to deal with deficiencies because of the limited resources of the industry owners and operators.

Another problem at Fukushima was the buildup of pressure caused by overheating of the core within the containment unit. Workers had difficulty operating the vents that would have relieved the pressure. The task force recommended that reliable containment vents be installed to release the dangerous pressure build up. A debate about whether the NRC should require vents with filters or no filters is holding up this change. Once the debate is settled, implementation may take five years.

The last big recommendation made by the task force concerns upgrading the instruments used to monitor the pools where spent fuel rods are kept so that during an accident, workers know the water level, the temperature and the radiation level. During the accident at Fukushima, workers could not ascertain the condition of the pools and diverted people and time to determine that the fuel rods were being cooled. Some industry representatives have argued that knowing the water level would be information enough during an accident. And the NRC has modified its order.

LICENSING CONTINUES

While some countries are slowing down or phasing out their nuclear power plants, the NRC has actually sped up actions on license renewals, approving nine since the accident compared to three the year before. The industry has also quickened its pace of applications for uprating plants from five to nine. The process of increasing the maximum power level at which a commercial nuclear power plant may operate is called a power uprate.

One has to wonder what would happen if a disaster on the scope of Fukushima occurred at the Limerick plant. About 8 million people, including all Philadelphia, live within the 50-mile radius of that plant. About 252,000 people live within the 10-mile zone where people could be exposed to airborne radioactive contamination.

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All for Jobs – A Cautionary Tale

by Wendi Taylor

After more than 50 years, Armstrong County is still addressing the legacy of an industry that brought jobs to the area but left behind health problems and a huge amount of nuclear waste to clean up. The former Nuclear Materials and Equipment Corporation (NUMEC) operated two plants within three miles of each other: a nuclear fabrication plant in Apollo (1957-1984) and a plutonium plant in Parks Township (1960-1997). For decades NUMEC produced nuclear fuel for submarines and other nuclear applications for the government and private companies.

PAT AMENO ASKS QUESTIONS

When many of those who worked at the plant began to be diagnosed with cancer, some employees began to wonder if there was a connection between their jobs at NUMEC and their health. Local resident Pat Ameno made the connection. “What does it mean when in a town of 1,800 people, almost one-quarter of them have cancer?” Ameno asked. She began investigating and collecting information on the plant. Today, she said she has about three million documents, which tell a disturbing story. “It is like a corporate war against humanity,” she said, and a lot of agencies did not do what they were supposed to do. She said it is a “bitter pill” to swallow that the government let this happen.

Ameno said that people didn’t have to work at NUMEC to be subject to contamination. The plant created a fallout plume 500 feet wide. The parking lot was contaminated. “Why did the government license them to operate in the town next to houses in the first place, a plant with 124 stacks in a valley with an inversion problem?” she wanted to know.

A former investigator for the Department of Defense, Ameno grew up across the street from the Apollo plant with her parents, who operated a deli frequented by the workers and saw first-hand the problems that the workers and residents faced. Her father, the late John Ameno, made her promise to look into the plant across the street.

Ameno kept that promise. She spear-headed a 14-year lawsuit with Attorney Fred Baron, for wrongful death, personal injury and property damage from the owners, Babcock & Wilcox and the Atlantic Richfield Co., whose predecessor, NUMEC, operated the two nuclear fuel plants in Apollo and Parks Township. Babcock & Wilcox and the Atlantic Richfield Co. settled



Patty Ameno standing by the nuclear waste site in Park Township

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with over 300 plaintiffs for more than \$80 million in 2009.

Ameno fought for, and won, special status from the federal government to compensate former employees who became ill from working in those plants. Former NUMEC workers have since received more than \$28 million from the government and some claims are still mounting.

In January of 2011, the second Federal Civil Action was filed against NUMEC/ARCO/Babcock & Wilcox by Motley Rice Attorneys. It awaits trial.

Ameno, who had uterine cancer and has been diagnosed twice with brain tumors, said that tens of thousands of people worked at the plants while they were open. With her encouragement and participation, workers and local residents filed suit in 1994, which was the first suit of its kind to succeed in being awarded damages for radiation exposure. Ameno said it was “a mass action, not class action.”

OCCUPATIONAL ILLNESS

NUMEC workers applied for benefits from Energy Employees Occupational Illness Compensation Program Act program, enacted in 2000. Former employees petitioned for special status for NUMEC workers because of chronic contamination problems at the plants and the lack of reliable health monitoring. At first, the petition was denied.

A series of first-hand accounts of the operations at one of the country’s first private nuclear materials facility built a strong case that former employees at the plant did qualify for compensation and medical benefits. Employees were finally awarded \$150,000 each plus medical benefits.

Many who worked at the plant were found to have several kinds of primary cancers. Some workers, who earned about \$90 a week, recalled being so contaminated by radiation that health and safety technicians stripped them and scrubbed their bodies for hours. Some workers had every hair on their body shaved. Their clothes were bagged and buried at the nuclear waste dump in Parks Township, along with vast amounts of other nuclear materials and chemicals.

Further, Ameno has collected information about 3300 pounds of radioactive materials being dumped in the Kiski River and about radioactivity that exceeded the limits by 10,000 percent released into the air.



Patty Ameno standing in her front yard in 1960 with the Apollo nuclear fabricating plant in the background.

Contamination was a constant problem at the NUMEC plants. The company was different from the other national nuclear laboratories because NUMEC was a privately owned business, one of the few handling nuclear material. One former employee said that NUMEC was under pressure to meet deadlines to complete and ship final products. The company had to produce in order to get paid and make payroll. At NUMEC product development was the priority. Activities that did not contribute toward making money were often left undone.

CLEANING IT UP

The Army Corps of Engineers is now in charge of cleaning up the plant waste which was buried in Parks Township. The cleanup is expected to cost \$1 billion because of the complexity of the materials that are buried there. The last official estimate of the quantity of contaminated waste material from the trenches is approximately 24,300 cubic yards. This equates to the area of a football field twelve feet

deep. Among other things, the Corps has identified uranium and thorium. The uranium in the trenches ranges from highly depleted to highly enriched.

The waste dump, currently owned by BWX Technologies (Babcock & Wilcox) encompasses 44 acres and was regulated by the Atomic Energy Commission, the predecessor to the current Nuclear Regulatory Commission, which licensed BWX Technologies to maintain the site. The site is next to Route 66 and near the Kiski River, which flows into the Allegheny River.

Ameno is keeping a watchful eye on the cleanup to make sure it is done right. She is also working with citizens of Erwin, Tennessee regarding the health and safety from a nuclear facility, Nuclear Fuels Services, which has been operating for 50 years. There they are investigating whether there is possible causation of cancer and possible contamination of the Nolichucky River.

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Pennsylvania's Flirtation with Nuclear Power

by Wendi Taylor

Nuclear power was born in Pennsylvania and almost died here. Our state was home to Shippingport Atomic Power Station, which was "the world's first full-scale atomic electric power plant devoted exclusively to peacetime uses."

On March 28, 1979, the industry almost died in Pennsylvania because of Three Mile Island (TMI) power plant near Harrisburg. TMI has become synonymous with the worst accident in U.S. commercial nuclear power plant history. For several days in March, no one was sure if the core would melt down. And because the accident happened 12 days after the release of the movie, *The China Syndrome*, most people knew what that would mean.

The accident was so scary that since then, until February 2012, no nuclear reactors have been approved to be built in the United States. The fear of nuclear power created an informal moratorium on expanding nuclear power. In February, the Nuclear Regulatory Commission (NRC) granted the first license to build a new reactor at Georgia's Plant Vogtle.

Of the nine nuclear accidents in the US that caused significant damage, two of them have occurred in Pennsylvania: TMI and Peach Bottom, located in York County, 18 miles south of Lancaster. On March 31, 1987, Units 2 and 3 at the Peach Bottom plant shut down due to cooling malfunctions and unexplained equipment failures. That accident cost about \$400 million. The losses surrounding the TMI accident were set at \$2.4 billion.

AN APPLICATION IN PENNSYLVANIA

Now, the NRC is reviewing an application by Pennsylvania Power and Light (PP&L) for a new reactor in Luzerne County on the Susquehanna River at the Susquehanna Steam Electric Station near Berwick. That application has been pending since 2008. In March 2012 the NRC placed Susquehanna's Unit 1 reactor, along with two other plants, on degraded status, as a result of four unscheduled shutdowns (scrams) in 2010 and 2011. This performance status comes with increased NRC scrutiny and inspections, as well as involvement of the senior management staff.

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In November 2011, Pennsylvania's Limerick Plant asked the NRC for a 20-year extension of its licenses for its two nuclear reactors, which are not due to expire until October 2024 and June 2029. The Limerick Nuclear Power Plant is located near Pottstown in Montgomery County and is owned by Exelon. In March 2012, the Limerick plant's No. 2 reactor was placed on a list for additional oversight and inspections by the NRC because of a leaking problem.

A BIT OF HISTORY

Pennsylvania currently has five nuclear power plants, with a total of nine nuclear reactors: one at Three Mile Island Nuclear Station, two at Beaver Valley Nuclear Power Station, near the prototype Shippingport plant on the Ohio River about 25 miles from Pittsburgh, two at Susquehanna Steam Electric Station, two at Limerick Generating Station in Montgomery County, and two at Peach Bottom Atomic Power Station.

Pennsylvania's first reactor, at Shippingport went online December 2, 1957, and was in operation until October, 1982. Small by today's standards (60 Mwe), this thermal breeder reactor was part of President Eisenhower's "Atoms for Peace" program. On October 1, 1982, the reactor was decommissioned and six years later its reactor vessel was lifted out of the containment building and shipped to Hanford, Washington for disposal.

The Three Mile Island Unit 2 reactor about ten miles from Harrisburg in Dauphin County had only been operating three months when the 1979 accident occurred. A malfunction in the cooling system caused a partial meltdown of the reactor core, which resulted in a significant release of radioactivity and Iodine-131 into the environment.

While the nuclear power industry claims that there were no deaths, injuries or adverse health effects from the accident, some living in the area do not agree. Many residents reported a metallic taste in their mouths, which is indicative of a high dose of radiation. At least one health study found higher rates of lung cancer and leukemia in people living downwind from the plant.

The electric generator from the damaged reactor was removed, refurbished and installed in November 2010 at the Shearon Harris Nuclear Plant in New Hill, N.C.

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What's Next? Nuclear Power?

By Wendi Taylor

The table is set for nuclear power. With the many coal-fired power plants spewing unacceptable levels of pollution into the air and the many unforeseen effects of shale drilling becoming more obvious with every month, the hunt for cleaner energy is on. Despite the advertising campaigns of the coal and gas industries, environmentalists know that coal is not clean – and cannot be made clean – and fracking is not safe – and cannot be made safe. Because the government has not subsidized wind and solar in the way it helped the fossil fuel industry, some believe that neither wind nor solar are ready for prime time.

WIND AND SOLAR FALL SHORT

In the near future, wind and solar cannot produce sufficient energy to power America to the extent we are accustomed. Nuclear energy has been getting a second look. Then, the nuclear accident at Fukushima raised concerns. The technically savvy country of Japan barely managed to escape a catastrophic meltdown and could not prevent significant releases of radioactive particles into the air. Japan, which is a small country compared to the United States, has a vast contaminated wasteland which cannot be used for years to come. Further, the 50 workers who stayed behind at the Fukushima plant to control the disaster may have literally given their lives to protect their fellow citizens. No one knows the true cost of the accident.

Yes, nuclear appears to produce energy without the pollution that adds to global warming. But it comes with great risk. While accidents at power plants don't happen often, they can be catastrophic when they do happen. But that is not all that is wrong with nuclear power. Reactors use huge amounts of water and they leave behind nuclear waste that continues to be radioactive for centuries. And we do not know what to do with it. Further, like all mineral-based materials, uranium is a finite resource. At current use levels, uranium will be expended in 100 years or less. Like coal, the workers that mine uranium put their health at risk. Breathing radon gas can lead to lung cancer. And like coal, the mining operation leaves behind waste that needs to be monitored and prevented from leaching into ground water. About two-thirds of the world's uranium is mined in Kazakhstan, Canada, and Australia.

EXPENSE

Nuclear power is expensive. The cost of building a nuclear plant today is estimated at \$14 billion. The cost of construction, along with the cost of storing and guarding the waste, is paid for by consumers in the rates they pay. If the cost to store the material is exceeded by the rates paid by consumers, the taxpayers pay for it through the budget for the U.S. Department of Energy, which is charged with the disposal of nuclear waste.

For lack of a better solution, spent fuel rods are stored on site of the 103 operating nuclear plants across the country. They are stored in specially-constructed pools to cool and store the rods in such a way that they don't become "critical." Once the rods soak a while, they may be removed and stored in dry stainless steel casks and welded shut. They wait for a place to take them, but we still don't have a disposal site.

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RADIOACTIVE WASTE

The United States had planned to permanently entomb this waste along with the nuclear waste produced in military arms and nuclear weapons at Yucca Mountain, in Nevada. After years of planning and of tens of billions of investment, that idea was shelved in 2009. While all the countries of the world with nuclear energy have agreed entombment is the best solution, no country in the world has developed a permanent nuclear waste facility.

President Obama, concerned over the nuclear waste stored around the globe, has pushed for a program to collect and transport this nuclear material to the United States for safekeeping. The spent nuclear fuel can be reprocessed to produce bomb-grade fuel, which is a security threat. This program, while wise, will add to the amount of waste that we have to entomb.

Since this nuclear material is dangerous for thousands of years -- some of it a million years -- whatever we do with it or wherever we put it, it must be placed where no one a millennium from now will stumble upon it. How do you design a warning label that will have meaning 2,000 years from now?

According to a report from the General Accounting Office, the location of a permanent nuclear waste site must be in an arid climate, with minimal seismic activity, and away from large numbers of people. With global warming and climate change, who knows if today's desert will become a rainforest in a thousand or ten thousand years?

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NRDC Files Petitions to Intervene in the Limerick, Pennsylvania License Renewal Program

Citing an obsolete accident mitigation study, Natural Resources Defense Council (NRDC) has filed a petition to intervene in Exelon's application to renew (and extend) the two Limerick nuclear plants' operating licenses for an additional 20 years. The extension would permit operation until 2049.

NRDC points out that the present license permits the two plants to operate until 2024 and 2029, but Exelon is trying to rush an extension now. Exelon wants to use a safety and risk study completed in 1989, but NRDC insists that the study is outmoded and that there is plenty of time to conduct a new study. Over a million people (including Philadelphia) live immediately downwind of the plant.

For a detailed report, email: nrdcinfo@nrdc.org or click: <http://www.nrdc.org/about/contact-us.asp>. A press release is available at: <http://www.nrdc.org/media/press.aspannual.html>

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PHOTO COURTESY OF ALLIANCE FOR CLEAN ENERGY



Poetry

Ground Zero

I stood at ground zero. Barren now, austere.
Legs weak, I knelt on the cold concrete,
Reminded of those who were crystallized;
Whose only sins were geography and time.
Crystallized by airborne fire. I thought of them,
And then on villains who wreaked death.
I felt like Billy Pilgrim traipsing Dresden,
Unable to summon horror or dismay.
A girl wandered by and waved her only arm.
Reaching out too late, I couldn't say . . .
Then a woman watering a flower turned
Toward me and smiled.
She babbled through a split lip words I couldn't understand.
How did assassins justify their deeds,
Dastards who killed folk they didn't know?
I rose and looked away, toward the flags
Of Nagasaki, and said, "Well that was then. . ."

Phil Coleman

ExploreEnjoyPennsylvania

Allegheny River - Kinzua To Tionesta

by Gary Thornbloom

Canoeing the Allegheny River from Kinzua Dam to Tionesta (Allegheny and Forest Counties) is 45 miles and a pleasant three days of camping and canoeing on a beautiful river between rolling hills. With many put in and take out options you could also enjoy sections of the river for trips as short as an afternoon. The mixture of public and private land lets you get away, while not being all that far away, on a dam controlled river that has dependable water levels.

The Allegheny River Paddling Guide available at www.alleghenyoutfitters.com will get you going down the river. The laminated user friendly guide will let you pick the best camping spots, or know when to stop for a short walk into town for lunch. You may also want to check that website for a link to current water levels, as well as recommended water levels.

Dozens of islands, which are always great places for exploring, are found throughout this entire stretch of river. Backwaters and the narrow braided sections of river that shape the larger islands conceal many potential discoveries. The Allegheny River Islands Wilderness, comprised of just 368 acres on seven islands and one of the smallest parts of the United States Wilderness System, lies between Buckaloons and Tionesta. This is far from the concept many people have of wilderness being inaccessible. These islands make great primitive campsites.

Hickory, ash, maple and especially sycamore trees cover many of the islands. The alluvial, or water formed, islands are composed of cobble stones mixed with sand, mud and clay. The island interiors are often lush. Campsites are located in the obvious clearings. Falling asleep next to the gentle murmur of the river is getting back to life lived at a gentle pace.

One fall I spent three days on the river, and then two days the following spring. I looked forward each morning to the fog that settled thickly into the river basin. The world was made smaller. As the sun rose the fog would open and close revealing the blue sky of the day to come. Thick layers moved down the river corridor. One morning two dozen mergansers were silhouetted on a gravel bar in the center of the river. An immature eagle swooped three times before driving the mergansers into the water. The eagle landed and began to feed on a fish carcass. Although less than fifty feet away the eagle disappeared repeatedly in the swirling mist. All this before the coffee had perked!



When I spoke with Piper Lindell, one of the authors of *The Allegheny River Paddling Guide*, she told me about growing up in the area and visiting Kinzua reservoir when the first eagles were being seen there. Now there are numerous eagles nesting along the river. We saw as many as six eagles each day. Not only high overhead, but in treetops along the river as we floated past.

Along with eagles we saw many mergansers, kingfishers, and great blue herons. Several days on the river should leave you familiar with each of these birds—with their antics, rattling, and stately demeanor. I am certain the serious birder will discover even more.

Piles of mussel and clam shells are an indication of not only raccoons and muskrats, but also the river otters that have been reintroduced to Pennsylvania's streams. As otter numbers increase, paddlers will be treated to the periscoping antics I have seen on Canadian river trips.

A northern snapping turtle that surfaced next to our canoe looked the part of a creature whose ancestors shared the earth with dinosaurs. From past experiences I was well aware of their temperament. Unconcerned and unmolested this one stared briefly and then sank slowly below the water surface.

If the river, its islands, and its wildlife are not enough, then you may enjoy one of the hikes from the river. Anders Run Hiking Trail, river right and thirty minutes below the Buckaloons, is a gentle two mile trail that will take you into the Anders Run Natural Area, a 96-acre gem protected as a State Forest Natural Area. Away from the river the silence imposed by pines and hemlocks as old as 400 years reigns. Wildflowers, in season, also grace the forest floor.

This stretch of the Allegheny has miles of State Game Lands, State Forest Lands, and Allegheny National Forest Lands that border the river. Compare these protected areas, along with the Allegheny River Islands Wilderness, to the miles of development spread over the privately owned land. Then take a moment to appreciate the efforts of the many citizens and politicians who had the wisdom to set these lands aside.

Howard Zahniser, author of the *Wilderness Act*, was a native son of this area, and looked to the Allegheny for inspiration. He wrote these words:

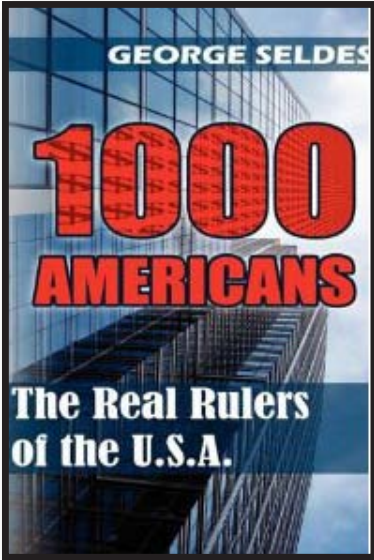
I believe that at least in the present phase of our civilization we have a profound, a fundamental need for areas of wilderness - a need that is not only recreational and spiritual but also educational and scientific, and withal essential to a true understanding of ourselves, our culture, our own natures, and our place in all nature.

Three days on the Allegheny River floating past homes and industry, under historic bridges, near trains and cars, and then into the areas embraced by Public Lands can be a way into the essence of Zahniser's words. Three days on river time, embraced by thick silence at night, with eagles overhead by day and something new around each bend may lead you to a better understanding of yourself. Three days on the river may be enough for you to experience a need that will keep you coming back, maybe the Allegheny again, or maybe the next river awaiting your discovery. May the wind be at your back!



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BookReview2



BOOK REVIEW: "1000 AMERICANS: THE REAL RULERS OF THE U.S.A.," BY GEORGE SELDES; BONI & GAER, INC. 1947
By Phil Coleman

The best Christmas present I got this year was an old book, the 1947 first edition of *1000 Americans*, signed by the author George Selde. It reminded me of something I learned years ago and it also reminds me of Occupy Wall Street. It ties past to present in an urgent way.

I barely recalled George Selde as a hero to my father. So I looked up his biography. Selde learned journalism from the muckrakers at the turn of the 20th century. He wrote books of social criticism throughout his long career, still publishing as late as the mid 1970's, when he was in his 80's. Although he began as a reporter for established newspapers, including the *Chicago Tribune*, he found by the 1930's that they wouldn't publish him without severe editing. At that point he parted ways. From then on, one of his recurrent criticisms was that the newspaper and magazine press in the United States was owned

by big corporate interests that wanted to suppress news critical of big business.

JORNALISTIC OBJECTIVITY

We might step aside from Selde for a moment to do a thumbnail review of American journalism. Anyone who reads, however briefly, newspapers of our revolutionary period is struck by the mix of opinion with reporting that they exhibit. To put it in "journalism speak," they were not objective and did not feel any obligation to separate reporting from editorials. Newspapers by and large existed for promulgation of the political opinions of their publishers. And they did a very obvious job of it. This trend continued for some decades. In fact, there have been newspapers that distort the news throughout history. But they are no longer considered to be in the mainstream in the United States. [British newspapers follow a very different tradition. Also, Fox TV news slants everything and doesn't follow the American newspaper tradition.]

As American settlement moved west and southwest in the early 19th century, newspapers had a difficult time getting current reports of what was going on. The development of the telegraph in the 1850's meant that information could flow quickly, but newspapers could ill afford to have reporters stationed in every town or county seat. Papers had to rely on a new system, the "wire service." The Associated Press was instituted in 1846 to accommodate New York City newspapers. It grew to become a worldwide network and still holds sway today. The problem confronting wire services was that they had to report news to papers who had divergent, opposing views. The solution to this problem was "objective reporting." The news was reported in neutral terms and limited itself to what could be called the facts. Objectivity is to some extent a matter of sticking to the facts. But it is also to a large extent a matter of style -- and to an occasional extent a matter of choosing what not to report. The Associated Press style sheet became a standard for the profession in America.

As journalism schools developed in the early 20th century, the objective style became not just a standard but a morality. Objectivity became the requirement for reporters everywhere. By midcentury, it

was not unusual for reporters to develop a cynicism that pervaded their conversation: they could discuss what they really knew about their subjects around the city desk, but they wrote bland cleaned-up news that did not hint at what they suspected or knew. Opinion was restricted to the editorial page. Here, editors and columnists wrote arguments that followed the editorial policies of publishers. In this way, newspapers became less bastions of truth than handmaidens of owners.

As an example, consider this: As early as 1940, government-funded studies found that cigarette smoking shortened people's lives. Cigarettes threatened health in many ways. However, virtually all newspapers and magazines, which depended heavily on cigarette advertising, failed to report these studies. Instead, they relied on the spin the tobacco companies contributed to the news. For decades, readers were more likely to smoke because a brand was "a treat, not a treatment" than to know about tobacco hazards.

Seldes conducted a one man crusade against smoking for years and condemned the press for its failure to report the facts. But his crusade was self-published in books and minor journals, not in the establishment press.

In the mid 19th century, most towns had a newspaper that was independently owned and operated. The trend since then has been toward fewer and fewer owners and bigger and bigger newspaper chains. The capital required to own and operate a newspaper put ownership out of the reach of individuals. [Of course, the trend over the last 50 years has been the decline of newspapers in competition with television. The history of the very small privately owned TV station was a very short one. Rather quickly, networks, and more recently cable network companies funded by major corporations, took over the air waves. But Seldes was writing before the advent of TV.] The standard of objective reporting and the trend toward a shrinking number of owners combined to limit ability of writers to publish divergent views.

In *1000 Americans*, Seldes hammers at the economic stranglehold that corporate America imposes on the bulk of people. He argues that 1,000 millionaires control the laws and the purse strings and do so in part because they control the press. His favorite target is the National Association of Manufacturers (NAM), an organization we seem to have lost track of today. He identifies the Chamber of Commerce as a virtual subsidiary of NAM.

He points out that in 1946 a Justice Department investigation "produced evidence that six most powerful banking groups of the nation, headed by Morgan, Stanley & Company, hold a monopoly on the nation's commerce . . ." (p. 171) However, the investigation was not mentioned in major newspapers because the same major corporations controlled the press.

Seldes lists the biggest of the corporations: Morgan-First National with assets of \$30 billion plus; Rockefeller, \$6 ½ billion plus; Kuhn Loeb, \$11 billion; Mellon, 3 Billion plus; Chicago Group, \$1 ½ billion; DuPont, \$2 ½ billion; Cleveland Group, \$1 ½ billion; Boston Group, \$1 ½ billion.

Seldes concludes, "Today, as a generation ago, it is still Wall Street, still Morgan and still Rockefeller who own and control. Today, however, the few who still protest – in the name of democracy and the general welfare – cannot make themselves heard" (p. 175).

Have things changed? Somewhat: The House of Morgan has grown from the \$30 billion Seldes reports to over \$2 trillion as Morgan-Chase today. If Seldes were writing now, he would be making the same criticisms he made half a century ago. Big corporations and conglomerates control the press. They pay for elections of friendly congressmen, etc. In recent years, they have even gotten judicial interpretations that permit them to influence elections without having to disclose what they are doing. Many of

the players have changed their names, but we saw three years ago how ruthlessly they can abuse their powers and how easily they get their failures ameliorated by government subsidies. The significant change since Seldes' day has been the development of the internet. It offers some ability for people to communicate even when the power press is closed to them. But, of course, the mass of folk don't bother to look beyond the pap that network news offers them.

This morning's TV news spent minutes on an accident which left a mother and her children trapped in a car hanging off a bridge and even more minutes on a wrecked cruise ship. There was no mention of the Middle East, where Iran is threatening to close the Gulf of Hormuz. There was mention of the Republican primary contest for president, but only its "horse race" aspects, nothing about issues. There was no mention of the European financial crisis, which took a new hit last week when credit ratings for France and others were reduced.

TV news is largely entertainment, sprinkled generously with "Happy Talk." When our eight year occupation of Iraq is mentioned, the discussion is quickly diverted to admiration of the bravery and sacrifice of our troops and away from the stupidity of our military and political leaders. TV news diverts us from serious issues.

At the conclusion of *1000 Americans*, Seldes discussed the report of the "Commission on Freedom of the Press," chaired by Robert Hutchins, Chancellor of the University of Chicago, which report castigated the American press because it was "not serving society," and in the press' failure to do its job it was "endangering the peace of the world." He pointed out that the report did not get reported in American newspapers – an example of the corruption of the press Seldes castigated.

One might argue that with the internet today and its ability to spread news the American press doesn't want to touch, we are better off today than we were sixty years ago. And perhaps we are. Unfortunately, it is still true that the bulk of voters – the vast majority of voters – know little more about current events than a few slogans. If we have an advantage today, it is in the efforts of Occupy Wall Street. However, even here, what tends to get reported is not the issues but the struggle.

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*"If you don't believe in nature as a divine force,
you won't go to hell, you'll live in one."*

Patrick Lynch

Fossil Fuels vs. Renewables: the Key Argument that Environmentalists are Missing

by Kurt Cobb

Which of the following can we count on to act as a “bridge fuel” to a renewable energy economy?

- A. Oil
- B. Natural Gas
- C. Coal
- D. None of the above

The correct answer is: D. None of the above.

Mark Twain is reported to have said: “It ain’t what you don’t know that gets you into trouble. It’s what you know for sure that just ain’t so.” What most environmentalists think they know for sure is that oil, coal and natural gas are all abundant—so abundant, in fact, that many environmentalists believe they are forced to make a Hobson’s choice of natural gas as a so-called “bridge fuel” to a renewable energy future.

Though natural gas produces fewer greenhouse gas emissions per unit of energy than coal or oil when it is burned, it still contributes mightily to climate change. In fact, according to research by a Cornell University team, natural gas from shale, which will make up an increasing share of U.S. gas supplies, is worse than conventionally produced gas which is now declining. Because shale gas wells are drilled in a way that releases considerable volumes of unburned methane into the atmosphere, shale gas is probably also worse than coal.

Methane is about 25 times more potent than carbon dioxide as a greenhouse gas, and it leaks into the environment over the lifecycle of natural gas from drilling through delivery. In addition, hydraulic fracturing or fracking in the country’s vast shale formations pollutes the air and surface waters surrounding drill sites and threatens the groundwater because the process uses toxic chemicals.

It turns out, however, that what most environmentalists know about the future supply of natural gas and other fossil fuels is based more on industry hype than on actual data. And, that means that they are missing a key argument in their discussions about renewable energy, one that could be used to persuade those less concerned about pollution and climate change and more concerned about energy security: There is increasing evidence that no fossil fuel will continue to see its rate of production climb significantly in the decades ahead and so none of them is a viable “bridge fuel,” not natural gas, not oil, not coal. This means that global society must leap over fossil fuels and move directly to renewables as quickly as possible. In advanced economies this leap must be combined with a program of radical reductions in energy use, reductions which are achievable using known technologies and practices.

Okay, perhaps you are wondering about the data. Let’s discuss each fossil fuel separately:

OIL

The first thing you should know about oil is that worldwide production has been on a plateau since

2005. This is despite record high prices and furious exploration and drilling efforts. There have been well-publicized finds here and there that may seem large. However, at the current worldwide rate of consumption, one billion barrels of oil lasts only 12 days. Thus, the multi-billion barrel finds announced in the last decade or so will have little impact on the longevity of world supplies.

Another key issue is one that oil companies do not want to emphasize: depletion. The worldwide average for production declines in existing oilfields has been estimated to be about 4 percent per year. That means that each year just to stay even, the industry must develop new oil production capacity equivalent to the current capacity of the North Sea, one of the world's largest fields. To grow production, it must, of course, exceed this amount, and that hasn't been happening.

When you mention these hard facts in polite company, you will undoubtedly be met with skepticism. But the data are available to the public from the U.S. Energy Information Administration (EIA) website. The agency is the statistical arm of the U.S. Department of Energy and is widely considered the gold standard of energy information in the world.

Now, don't be deceived by shifting definitions of oil. When the petroleum glut long predicted by the optimists failed to appear, they started lumping in ethanol, biodiesel and natural gas liquids with petroleum and calling them all "oil." These other products are useful, but they are not as energy-rich, versatile or easily transported as oil. Our current infrastructure is heavily dependent on oil inputs with no real substitutes available in the quantities required.

You will also likely be met with protestations that we still have lots of oil: tar sands in Canada, heavy oil in Venezuela and even oil shale in the American West, primarily Colorado. Well, this represents the difficult-to-get oil. We extracted the easy stuff in the first 150 years of the oil age. And, while it is true that these resources and others like them represent an immense store of hydrocarbons, what matters is the rate at which we can produce them.

Because of the high-cost, capital-intensive nature of such production, the rate of production will be slow to ramp up and difficult to maintain. The hydrocarbons locked in the tar sands and the Orinoco oil belt in Venezuela aren't what we call oil and must be heavily processed at high cost using enormous amounts of energy. As for the oil shale in the America West, the amount of commercially produced oil we are currently getting from that oil shale is zero. No one has figured out how to extract it profitably. Partly this is because oil shale contains no oil. Instead, it contains a hydrocarbon-rich waxy substance called kerogen which must be heavily processed to turn it into oil.

An analogy might be useful: If you inherit a million dollars with the stipulation that you can only take out \$500 a month, you may be a millionaire, but you will never live like one. Increasingly, this is the situation we will find ourselves in when it comes to oil. The key issue is the rate of production, not the size of the resource. The hard-to-get oil resources are large, but they take a long time to develop and require strenuous, expensive and energy-intensive methods to extract. All this, when combined with the relentless depletion of existing fields, spells little or no growth in the worldwide rate of oil production in the coming years.

NATURAL GAS

By now you've been told so many times in television ads and news articles that we have a 100-year supply of natural gas in the United States that you assume it must be true. While the claim itself is suspect, even if we accept it, there is a very serious omission. The claim in its entirety reads: a 100-year

supply of natural gas at current rates of consumption. If natural gas is to be used as a so-called “bridge fuel”—a fuel that will power society with the least environmental cost while we deploy nonpolluting, renewable energy—then its rate of production will have to grow considerably if we expect it to displace coal and oil.

Simple spreadsheet calculations will tell you what happens to such long-term supply claims under the pressure of a little exponential growth. At just 2 percent per year growth, the 100-year U.S. domestic natural gas supply is exhausted in 56 years. If we assume that production peaks when about 50 percent of the resource is exhausted, this puts the peak within 35 years. Think about it. Even if the optimists are correct, with a production growth rate of just 2 percent per year, the country reaches a peak within 35 years! What will we do after that?

The picture gets acutely worse as the rate of production growth rises. A 3 percent growth rate implies exhaustion in 47 years and peak in 31 years. A 5 percent growth rates means exhaustion in 37 years and a peak in just 26 years.

As it turns out, the EIA projects a growth rate of just 0.4 percent per year in U.S. natural gas supplies through 2035 with production jumping from about 24 trillion cubic feet (tcf) in 2010 to about 26.5 tcf in 2035, hardly a bonanza.

Beyond this consider that the vast resources of natural gas from deep shale layers, commonly called shale gas, may not be so vast. A U.S. Geological Survey assessment pared the EIA’s original estimate of “technically recoverable” natural gas in the largest of the shale deposits, the Marcellus Shale, from 410 tcf to just 84 tcf, an 80 percent reduction. And, this says nothing about whether the gas will be economically recoverable.

The 100-year figure was based on inflated estimates of recoverable natural gas and on ignoring the fact that the rate of natural gas consumption would have to rise exponentially to displace other fossil fuels. These two facts suggest that natural gas will not be the bridge fuel environmentalists are looking for.

COAL

Among the environmental community, the big fear is that coal will displace clean natural gas and even become a source for liquid fuels as oil supplies wane. That fear is founded on industry claims of vast coal supplies in the United States and elsewhere. But four studies suggest that coal may not be nearly as abundant as once believed.

A 2007 National Academy of Sciences report concluded that claims of 250 years of coal reserves in the United States at current rates of consumption could not be supported. The number was more likely to be 100 years. However, it said that a comprehensive survey was necessary to determine a more accurate figure.

But if coal consumption were to grow beyond the current rate, then the 100 years of supply would quickly shrink as in the case of natural gas. And, data from EIA shows that the total heat content of coal mined in the United States has been declining since 1998 despite roughly level production. This means that coal grades are dropping and that the actual energy the United States gets from domestic coal peaked in that year.

A second study by David Rutledge at the California Institute of Technology concluded that worldwide reserves are probably half of those currently stated. Rutledge noted that unlike oil reserves, coal reserve

estimates have been steadily dropping over time as unwarranted assumptions were stripped away and the focus was put on what is actually minable.

A third study in 2007 by an independent group of analysts in Germany, the Energy Watch Group, suggests a worldwide peak in the rate of coal production as early as 2025. The authors noted that poor quality data hampered their efforts. One of the troubling gaps was China, a country thought to have some of the largest coal resources in the world. Chinese coal data, however, have not been updated since 1992, and 20 percent of China's reserves have supposedly been mined since that date.

A fourth study published in the international journal *Energy* last year came to the shocking conclusion that the rate of worldwide coal production from existing fields would peak in 2011. The authors did acknowledge that vast coal fields in Alaska and Siberia remained to be developed, but doubted that these difficult-to-extract and therefore expensive reserves would be developed in time to forestall a decline. They also wrote that production from existing mines is expected to fall by 50 percent over the next 40 years.

The researchers explained that this has serious policy implications. One such implication was that money currently being spent on carbon capture and sequestration technology—a technology that assumes vast additional supplies of coal—would be better spent on outfitting existing coal-fired power stations with supercritical steam turbines, lifting efficiency from 35 percent to 50 percent. This would reduce the rate of greenhouse gas emissions while stretching out the available coal supplies so as to aid an energy transition.

CONCLUSIONS

No one knows the future. But making public policy based on industry hype could turn out to be disastrous. Keep in mind that it is the job of fossil fuel industry executives to make sure they can sell their in-ground inventories. And, of course, it's not their job to make good public policy. Our current energy policy, which I refer to as the Good-To-The-Last-Drop Policy, has already meant a huge wind-fall for oil producers and to a certain extent coal producers. And yet, both regale us with tales of plenty even as constrained supplies send prices skyward.

It is certainly possible that yet-to-be-invented technologies will extend the life of fossil fuel supplies. The question is whether such technologies can be deployed before overall rates of production for oil, natural gas and coal begin to decline. Modern industrial society depends for its proper functioning on the continuous input of high-grade energy resources. If those inputs start to decline or even fail to grow, the system will falter. Some believe we are already seeing the effects of constrained oil supplies on the economy as record high prices suppress economic activity and pressure an already fragile financial system.

It seems doubtful at this time that future technologies for exploiting fossil fuels will be able to do much beyond softening the inevitable declines. And, given the known trends and data, it seems foolish to wait for these yet-to-be-invented technologies to appear. That means that leapfrogging now past fossil fuels to renewable energy is not just desirable but probably inescapable. The only question is whether we as a society will do it with a focused plan for a rapid transition or whether the transition will be chaotic and marked by violent swings in the economy as the world lurches from one energy-induced crisis to another.

Kurt Cobb is a columnist for the Paris-based science news site *Scitizen* and author of the peak-oil-

themed thriller Prelude. His work has also been featured on Energy Bulletin, The Oil Drum, 321energy, Common Dreams, Le Monde Diplomatique, EV World, and many other sites. He maintains a blog called Resource Insights.

This article first appeared in the Winter 2011 edition of Sierra Atlantic, a publication of the Atlantic Chapter of the Sierra Club serving New York state. Permission is hereby granted to reprint this piece with attribution. Commentaries do not necessarily represent the position of ASPO-USA.)

EDITORIAL NOTES

Kurt writes that there is a PDF version available for this piece:
<http://preludethenovel.files.wordpress.com/2011/12/fossil-fuels-vs-renew...>

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Sierra Club, Earthjustice to Sue Homer City Generating Station for Violations

Homer City Generating Station, Dirtiest Power Plant in Nation, Releases Unhealthy Levels of Pollution

In February Sierra Club and Earthjustice released a Notice of Intent to Sue the Homer City Generating Station, a coal-fired power plant, today on the grounds that the Homer City plant has violated the Clean Air Act. The Sierra Club also released new air pollution modeling which showed that the coal-fired power plant's current permit allows it to release pollution in excess of the limits the Environmental Protection Agency sets to protect human health.

At a press conference, local families affected by pollution from the Homer City Generating Station joined the Sierra Club, Earthjustice, Greenpeace, Interfaith Power and Light and the Coalition for a Healthy County (Indiana County) in calling for the plant's closure. Local residents described the health effects local pollution has had on their communities, including increased asthma rates and respiratory illnesses. Data from the Clean Air Task Force estimates that pollution from the Homer City power plant contributes to 43 premature deaths, 72 heart attacks and 660 asthma attacks annually.

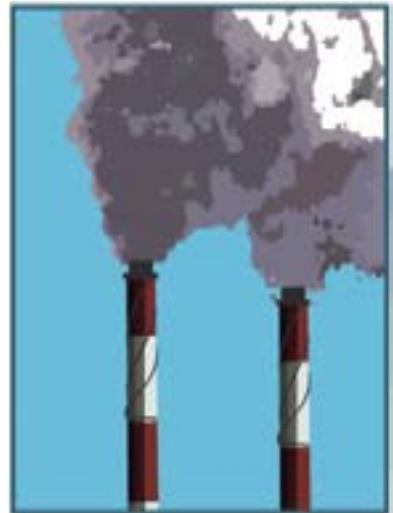
Today's Notice of Intent alleges that Homer City has actually been emitting enough sulfur dioxide pollution to violate its air pollution permit under the Clean Air Act, in some places causing ambient concentrations of sulfur dioxide more than double the health-based limit set by the Environmental Protection Agency.

"We are bringing suit against the Homer City Generating Station to protect its neighbors' health," said Charles McPhedran, staff attorney for Earthjustice. "Sulfur dioxide is an extremely harmful pollutant, and this plant is among the worst polluters in the United States. It's time for Homer City to clean up its act."

In addition, the Sierra Club released a modeling report showing that—at emission levels currently permitted by the State—Homer City has the potential to violate the Environmental Protection Agency's health-based limits for sulfur dioxide pollution across a vast area, and urging Pennsylvania's Department of Environmental Protection to step in and tighten up Homer City's permit to protect the public's health.

The Homer City Generating Station's primary owner is General Electric; it is operated by a subsidiary of Edison International. Edison's subsidiary, EME Homer City Generation L.P., has proposed pollution controls commonly known as "scrubbers" for the plant, but today's findings reveal that the limits Homer City is proposing will not remove enough pollution in the air to allow them to meet the EPA's health-based safety limits.

In proposing to approve new pollution controls for the Homer City plant, the Pennsylvania Department of Environmental



Protection is requiring emissions from Homer City to comply with federal safeguards known as the National Ambient Air Quality Standard—the standard that today’s report indicates Homer City cannot meet.

“Our report’s dispersion modeling indicates a widespread problem: we are potentially exposed to sulfur dioxide far above safe levels, and the unsafe area is huge, extending well beyond the localized area surrounding Homer City. A more realistic goal for EME Homer City would be to create a long term commitment to bringing green jobs to Indiana County through renewable energy systems,” said Nancy F. Parks, Clean Air Chair for the Pennsylvania Chapter of the Sierra Club.

The Homer City Generating Station released the most sulfur dioxide of any plant in the United States in 2010. Sulfur dioxide is a major air pollutant and is linked to respiratory illnesses, heart disease and asthma attacks. The station has also sued the EPA to block the implementation of the Cross-State Air Pollution Rule, which would save lives and reduce healthcare costs by limiting the amount of pollution power plants are permitted to emit into downwind states.

For maps of emissions from Pennsylvania coal-fired power plants, use this link:

www.rdlang.com/beyondcoal

For more information about the Sierra Club’s Beyond Coal campaign, please visit:

<http://www.beyondcoal.org>

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Answers to Crossword Puzzle

(from page 58)

Across

- 2. YUCCA FLATS
- 4. CANOEING
- 8. HOCKEYSTICK
- 11. INVEST
- 12. RAWLINS
- 14. RESOURCES
- 15. LIMERICK
- 16. RAINBOW WARRIOR

Down

- 1. EARTH
- 3. CONCERNED
- 5. HUPLITS
- 6. SHIPPINGPORT
- 7. NUCLEAR WASTE
- 9. TSUNAMI
- 10. FUKUSHIMA
- 13. NAGASAKI

Visiting the Rainbow Warrior

by Phil Coleman

The Rainbow Warrior was in town. The new Greenpeace ship that replaces the original Rainbow Warrior France destroyed in 1985, came to the port of St. Petersburg for three days in February. Along with several hundred others, Dottie Hambacher and I went to visit.

We began by going through security gates like those at an airport. Since the original warrior was destroyed by a bomb that was sneaked on board, Greenpeace is careful about sabotage. We waited our turn, got our pictures taken and then with 20 others went on a tour of the ship. Posters proclaimed that 100,000 people (including me) donated to the construction and outfitting of the ship.

This is the first A-frame masted ship I have seen. The unique design permits more sail and better antennas. The ship can sail at 14 knots and can generate its own electricity. It is as eco-friendly as a ship can be.

On our tour, we learned that the crew of 17 come from 15 different countries. The Rainbow Warrior was constructed in Poland and outfitted in Germany. It then toured Scandinavian and other European countries before it sailed across the Atlantic, where it visited four different ports along the eastern seaboard. From here it sails to Brazil, where it will protest rainforest destruction before moving on to combat whaling in the Pacific.

You can learn more about Greenpeace and the Rainbow warrior at:

<http://www.greenpeace.org/international/en/news/features/A-new-Rainbow-Warrior-sets-sail/>

Greenpeace is truly an international organization. It differs from the Sierra Club by being broadly international and by its practice of civil disobedience.

I first appreciated Greenpeace in 2004, when six Greenpeace activists climbed one of the smoke stacks at Hatfield Ferry power plant in western Pennsylvania to protest the plant's air pollution and the Bush administration soft policy on power polluters. Pennsylvania DEP brought charges against the activists. The six were sentenced to minor jail stays. But DEP subsequently forced Hatfield Ferry to install new scrubbers that reduced its air pollution.

[The only problem now is that the pollutants that were going into the air are now going into the water. Sierra Club and others have since brought suit to force better water treatment.]

There are things Sierra Club does better than Greenpeace, but there are also things Greenpeace does that Sierra Club does not attempt. I love both organizations.

It was a thrill to walk the decks of the Rainbow Warrior and to chat with members of the crew. The sleek lines and compact design make it look ready for action. A big part of the thrill was anticipation – imagining the challenges and victories to come.

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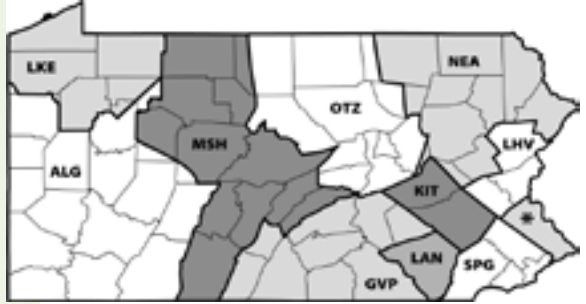
Phil Coleman and Dottie Hambacher toured the Rainbow Warrior while it was docked in St. Petersburg, Florida in February.

Meetings & Outings

For up-to-date information, start times, meeting points, & directions, please see your Group's website or newsletter, or contact the Sierra Club members listed below.

Groups may plan events & outings after *The Sylvanian* goes to press & those listed here may change. Participants on outings must sign a liability waiver, available from www.sierraclub.org/outings/chapter/forms or from the Outings Department at 415-977-5528.

Sierra Club does not have insurance for carpooling & assumes no liability.



OUTINGS & PROGRAMS

Interested in leading outings? Contact Bruce Sundquist, 724-327-8737 or bsundquist1@windstream.net

Governor Pinchot Group

pennsylvania.sierraclub.org/pinchot

MEETINGS

The Governor Pinchot group meets the last Tuesday of the month at 6:30. On April 24, the meeting will be held at Sisco's Pizzeria, 3716 N. 6th Street, Harrisburg. The May 29 and June 26 meetings will be held at The East Shore Area Library, 4501 Ethel St., Harrisburg, PA 17109.

Two Questions for Group Members! What do you think is the most important issue facing South Central Pennsylvania? What is your favorite natural place within the borders of the Governor Pinchot Group? Please send your responses to: GVPsierraClub@email.com

Call Jack Flatley at 717-921-2708 for location or email at riverman17018@comcast.net

OUTINGS & PROGRAMS

For information on Governor Pinchot Group activities, see pennsylvania.sierraclub.org/pinchot.

April 14, 2012 - Hike Outing For more info contact John at 717-737-7675 or lenahan.john@mac.com

Saturday, May 5, 2012 - 8 a.m. to 1 p.m. GVP Yard Sale, 3244 Green Street, Harrisburg. All proceeds will benefit the GVP Group of the Sierra Club. To donate items for the sale, drop off items on the porch of 3244 Green Street between May 30 to May 4th. Call Robin for more info: Home 717-221-8590 and Cell 717-903-7555 or rbroderick1@email.com

Chapter Executive Committee

<http://pennsylvania.sierraclub.org/>

MEETINGS

The Chapter Executive Committee (ExCom) meets between four and six times a year in locations near the middle of the state. Our next meeting will be held on Saturday, April 28, 2012

Kings Gap Environmental Education Center
500 Kings Gap Road
Carlisle, PA 17015-9306

Other ExCom meetings that are scheduled as follows:

Saturday, July 14, 2012
Ohiopyle State Park
Ohiopyle, PA

Saturday, September 15, 2012
Sierra Club Legislative Lobby Office
101 South Second Street, Suite 4
Harrisburg, PA 17101

Allegheny Group

www.alleghenysc.org

MEETINGS

The Allegheny Group meets the 2nd Monday of the month from 7-9 p.m. at the Sierra Club Office, 425 North Craig St., Pittsburgh, PA

For more information, see the Web site: www.alleghenysc.org

Saturday, May 14, 2012 – 1 p.m. “Three Days in the Everglades” Presentation at Wildwood Nature Sanctuary, Harrisburg, PA. This program is the Sierra Club’s annual Wildwood Series presentation for 2012, which includes a nature walk and exploration immediately after the program. This will be for 45-60 minutes on the wooden boardwalk next to the Nature Center. For more info call Jack at 717-921-2838 or riverman17018@comcast.net

Kittatinny Group

pennsylvania.sierraclub.org/berks

MEETINGS

Kittatinny Executive Committee meets monthly. All members welcome. For more info, contact Jim Keller at 484-769-0537 or keller.james.m@gmail.com

OUTINGS & PROGRAMS

For up-to-date listings of activities, see pennsylvania.sierraclub.org/berks/calendar.htm.

Lancaster Group

pennsylvania.sierraclub.org/lancaster

MEETINGS

Business meetings of the Lancaster Group of the Sierra Club are open to the public and begin at 6:30 p.m. on the third Wednesday of every month (except July and December). Dates and locations are as follows: April 18, Groff’s Family Funeral & Cremation Services, 528 W. Orange St., Lancaster, followed by a presentation about Natural End of Life Options and a tour of the facility; May 16, Lancaster Country Day School (LCDS), 725 Hamilton Rd., Lancaster; and June 20, LCDS.

OUTINGS & PROGRAMS

The Lancaster Group has scheduled several free spring outings or events, to which all people are invited.

Saturday, April 21, 8:30 a.m. - Earth Day removal of invasive plant species from Landis Woods Park near Neffsville.

Saturday, April 28, 9 a.m. - Hike at Shenk’s Ferry Wildflower Preserve in southern Lancaster County.

Saturday, May 5, 9:30 a.m. - Family Hike in Landis Woods Park.

Saturday, May 19, 7:30 a.m. - 9 p.m. - Bus Trip to Baltimore & Chesapeake Bay Foundation Boat Tour of the Bay. (There is a fee for this trip.)

Visit the website www.lancastersierraclub.org for more

details about these events, as well as others that are in the planning stages, or contact Jennifer Ericson at jericson@ezsolution.com or 717-892-2026.

For more information, contact: Carl J. Kanaskie at: cjkanaskie@verizon.net

Lake Erie Group

MEETINGS

Business meetings are held the second Thursday of every other month at the Asbury Wood Education Center, on Asbury Road in Erie, starting at 6:30 pm to 8 p.m.

OUTINGS & PROGRAMS

For information on Lake Erie Group outings and activities, contact Chuck Benson at bensoville@aol.com

Lehigh Valley Group

pennsylvania.sierraclub.org/lv

MEETINGS

The Lehigh Valley Group Executive Committee meets at 7 p.m. on the first Monday of each month (except July) in Room 638, Fowler Family Center, Northampton Community College, Third and Buchanan Streets, (south) Bethlehem, Pennsylvania 18015. All members are welcome. This meeting is where we do our organizational planning and discuss environmental issues.

For updated information, please visit our website: <http://pennsylvania.sierraclub.org/lv/>

For more information about Lehigh Valley Group, contact: Donald Miles, Lehigh Valley Group chair, at donmiles@rcn.com or 610-730-2514 or Matt MacConnell, vice-chair, at mattmacconnell@gmail.com or 610-657-2707.

OUTINGS & PROGRAMS

If you’d like to join us for outdoor fun, please consider joining our outings MeetUp: <http://www.meetup.com/Sierra-Club-Lehigh-Valley-Group/>

Moshannon Group

pennsylvania.sierraclub.org/moshannon

MEETINGS

Moshannon Group meetings are on the first Tuesday of month at 7 p.m. at Clear Water Conservancy, State College. All members & guests welcome. For more info, con-

tact Gary Thornbloom at 814-353-3466 via bearknob@verizon.net.

OUTINGS

All outings open to general public & members. All levels of ability and interest are encouraged to participate.

Saturday, April 14 — Courtship Flight of the Timberdoodle: Canoe Creek State Park has a variety of wetlands and old fields that provide ideal habitat for woodcock. Observe the fascinating and unique courtship flight of the male "timberdoodle" — a true harbinger of spring. Meet at Canoe Creek State Park Pavilion 1 at 7:30 p.m. Contact Dr. Stan Kotala by email or at 814-946-8840 for more details.

Saturday, April 21 — Spring Creek Canyon Cleanup: The Moshannon Group will be conducting their annual canoe/kayak based cleanup of the Spring Creek canyon as a participant in Clearwater Conservancy's Watershed Cleanup Day. Please consider joining us... members and nonmembers are welcome. Supplies and shuttle (Rock Run Road to Fisherman's Paradise) are provided. Meet at 7:45 a.m. at Rock Run Road; cleanup lasts from about 8 a.m. until Noon. You must bring your own boat(s) and equipment unless you have made other arrangements with us prior to the event. RSVP required. Contact Ron Johnson by email or at 814-359-6841 for details.

Sunday, April 22 — Sunday Trillium Hike on the Lower Trail: Join Deb Tencer to see the repeat performance of thousands of red and yellow trilliums and Dutchman's-breeches that cover the hillside along a section of the Lower Trail. Meet at the Water Street flea market at 11 a.m. The hike is only 2 miles and is quite easy. Afterward, please join us to go for pizza! Contact Deb at naturehikergal@gmail.com for more info.

Saturday, April 28 — Save the Frogs Day: In an effort to raise awareness of the plight of amphibians, the scientific community has declared Saturday, April 28 as "Save The Frogs Day." On this day we encourage the appreciation and celebration of amphibians. Join Moshannon Group Endangered Species and Wildlife Chairman Dr. Stan Kotala for a short educational program about frogs and toads, followed by a brief evening stroll looking for amphibians along the Lower Trail. Meet at the Lower Trail Mt. Etna Trailhead pavilion at 7:30 p.m. (Lower Trail Map). Contact Dr. Stan Kotala by email or at 814-946-8840 for more details.

Saturday, May 5 – Sunday, May 6 — Marsh and Pine Creek Outing (Overnight): The Moshannon Group is partnering with the Canoe Club of Centre County (CCofCC) to offer

an overnite canoe/camp along Pine Creek. Canoe from Ansonia to Slate Run with hiking and camping. Contact Ron Johnson by email or at 814-355-5434 for further details.

Itinerary Day 1: Canoe 17 miles (4–6 hours + hike stops) from Ansonia to Blackwell and then to Hoffman Farm campground just south of Blackwell. Camping at Hoffman Campground is free and has already been reserved for this outing. Camping gear can be self-transported through the gorge for those wanting to do this or shuttled (via canoe) from Blackwell to campground. As Pine Creek parallels both the rail trail and 414, setting up a shuttle for Day 2 is very convenient.

Itinerary Day 2: Continue 12–14 miles downstream (3–4 hours). Take out at Slate Run or Blackwalnut Bottom depending on schedules. Free camping is available and has been reserved to accommodate those that might wish to stay Sunday night at Blackwalnut Bottom.

Saturday, May 5 — Wildflowers and Warblers at Blue Knob State Park: Mike and Laura Jackson will lead a field trip to Blue Knob State Park to view spring wildflowers and migrating warblers. Meet at Chappell's Field in Blue Knob State Park at 8 a.m. The 3-hour walk will be on Sawmill Trail, which is easy, but rocky in places. Questions? contact the Jacksons at mljackson2@embarqmail.com.

Sunday, May 6 — Spring Mushroom Walk along The Lower Trail: Join Bill Russell, author of Field Guide to the Wild Mushrooms of Pennsylvania and the Mid-Atlantic, along with Karen Croyle. The Lower Trail is heavily collected for morels, but many other interesting mushrooms are fruiting at this time of year. We might find a few morels as well. The 4-mile hike will take about 3 hours. Meet at the Water Street entrance to the Lower Trail (near the intersection of U.S. Route 22 and SR 453) at noon. Contact Deb Tencer at naturehikergal@gmail.com for more info.

Saturday, May 12 — Annual Terry Wentz Memorial Hike: Four-mile moderate hike on Moore's Hill Trail honoring former Canoe Creek State Park manager, the late Terry Wentz, who served on the Juniata Valley Audubon board of directors for more than a decade. Meet at the Canoe Creek State Park Environmental Education Center at 2 p.m. For more information, contact trip leader Dr. Stan Kotala by email or at 814-946-8840 for more details.

Saturday, May 19 — Spring Wildflower Walk at Bell's Gap Run: Join Marcia Bonta for a walk in State Gameland 108 at Bell's Gap Run to observe spring wildflowers. Meet in the parking lot for the Bellwood Rails to Trails at 10 a.m., then drive halfway up the mountain to a parking lot on the left. The walk is a gentle climb that leads past a va-

riety of wildflowers on the left cliffs as well as some rare ferns. It's also a good place for spring warblers and other birds because we are looking down at large trees and the stream. Bring a trail lunch and a beverage to enjoy at the top of the hollow. For more info contact Marcia at marciabonta@hotmail.com.

Saturday, May 26 — Canoe Creek State Park Butterfly Garden Work Party: Please lend a hand at Canoe Creek State Park's butterfly garden. No gardening experience is necessary. Bring a covered dish item to share at a picnic afterward. Everyone welcome to lend the Juniata Valley Audubon Society (JVAS) a hand with this project. Contact JVAS for details.

Sunday, June 10 — Mountain Laurel Hike in Brush Mountains Woodlands: Join Deb Tencer to hike The Nature Conservancy's property known as the Brush Mountain Woodlands to admire the massive amounts of Mountain Laurel, along with other flora and fauna specific to this dry, rocky area. At 11 a.m., meet at Panera Bread in Logantown Centre, Altoona, to carpool. For more info, Contact Deb at naturehikergal@gmail.com.

Moshannon Group's outings are listed at: pennsylvania.sierraclub.org/moshannon/outings.html

Northeastern Group

pennsylvania.sierraclub.org/northeastern

MEETINGS

Members are always welcomed and encouraged to join us each month for our executive committee meetings, where we plan activities & group priorities. Meetings held on first Tuesday of each month, usually at 7 p.m. and meeting sites vary. For more information, contact Jen Lavery at JenLavery@aol.com.

OUTINGS

For more information, please visit <http://pennsylvania.sierraclub.org/northeastern/>

Otzinachson Group

pennsylvania.sierraclub.org/otzinachson

MEETINGS

Meetings are held the first Wednesday of every other month. For more information, please visit the website.

OUTINGS

Saturday, April 14 - Loyalsock Trail, Sullivan County: 6.5 miles, easy to moderate. We will hike the LT from Sones

Pond to the end of the LT on Route 220 via the Haystacks. Meet 8:30 am at the McDonald's in Hughesville. Bring lunch and water. Leader: Roy Fontaine 570-220-4707.

Thursday, April 19 -- Bartley Gap Trail, Union County: 4 miles, moderate with rough footing. A mid-week hike for a change. This is a nice way to get to know Bald Eagle State Forest. We'll go up a stream valley and onto a ridge and try to work our way back down along the Halls Pike Trail, and loop back along the forest road. Meet at the Lewisburg PO parking lot at 9:00 am or at the trailhead at 9:45. The ground is very rocky and there are multiple stream crossings, so wear boots. Also bring water and a snack. Leader: Sam Pearson, 570-522-8159; sam.z.pearson@gmail.com.

Sunday, April 22 -- The Pinnacle on the Appalachian Trail, Berks County: 13 miles, very strenuous. This loop hike on the Appalachian Trail and adjoining side trails leads to the spectacular Pinnacle, one of the finest vistas in Pennsylvania. Meet at parking lot behind Lewisburg post office at 8:30 am, Sheetz on Rt. 54 in Elysburg at 9:10, or Hamburg Reservoir parking lot at 10:30. Bring lunch and water. Leader: Paul Shaw 717-215-8339; [\[Back to TOC\] pshaw@ptd.net](mailto:pshaw@ptd.net).

Saturday, May 5 -- Rider Park, Lycoming County: 6.2 miles, easy to moderate. We will walk a figure 8 loop centered around the parking lot. 6.2 miles total but the tired hiker can bail after only 2 miles. Rider Park is a real gem and a good place to see migratory spring song birds. Meet on Warrensville Road next to Loyalsock Creek just beyond the Interstate 180 overpass over Warrensville road at 8:30 am or 8:45am at the parking area 1.6 miles up Calebs Creek Road. Bring water and a snack if you want. We should be done by noon. Leader: Roy Fontaine 570-220-4707.

Sunday, May 6 -- Molasses Gap Trail Family Hike, Union County: 2 miles, easy (for grown ups). This is a short hike with a quick payoff as you encounter lovely streams right away. Go further and find fun wooden bridges. Good for those with younger children. Out and back for those with kids 7 and under. A slightly longer and harder loop on the Mule Shanty Trail can be worked in for those with more endurance. We will meet in the Lewisburg PO Parking lot at 1:30pm or at the trailhead at 2:15. Dress for stream encounters. Bring water and a snack. Leader Sam Pearson: 570-522-8159; sam.z.pearson@gmail.com

Sunday, May 13 -- Golden Eagle Trail, Lycoming County: 9 miles, moderate to strenuous. One of the best hikes in PA with excellent views. Meet at 8:00 am at the Sovereign Bank parking lot, Southern Avenue between Market and Hastings Streets (Rt. 15) in South Williamsport or at the

trail parking lot along Rt. 414 at 8:50 am. Bring lunch and water. Leader: Roy Fontaine, 570-220-4707.

Saturday, May 19 -- Zindel Park, Clinton County: 10 miles, strenuous. We will be hiking various trails in Zindel Park including trails used for the Bald Eagle Megatransect in a beautiful area near Lock Haven. Meet at 10:00 am at the McDonald's at the McElhattan exit off Rt. 220 northeast of Lock Haven. Bring lunch and water. Leader: Joanne Heimer, 570-295-1431; jheimer@comcast.net

Saturday, May 26-- Hickory Run State Park, Carbon County: 9 miles, moderate. We will return to Hickory Run State Park and hike another loop of its extensive trail system. Meet at 9:00 a.m. at the McDonalds off Rte. 80 at the Mifflinville/339 exit #242. Leaders: Catherine McLaughlin and Ed Lawrence, 570-925-5285; cathyed@nationi.net

Saturday, June 2 -- National Trails Day at Woolrich, Clinton County: Celebrate National Trails Day at the Woolrich flagship store in Woolrich with Randy and Sheri Propster and the Backpacker Magazine GET OUT MORE TOUR. Woolrich is sponsoring this event to help promote the Mid State Trail and the Great Eastern Trail. Various events, workshops and hiking opportunities will be offered. Woolrich Store. Time to be announced. Contact Ed Lawrence for more information: 570-925-5285; cathyed@nationi.net

Sunday, June 3 -- Old Loggers' Path, Lycoming County: 8.5 miles, moderate to strenuous. We will hike the middle section of OLP from Yellow Dog Road to Ellenton Road and back to complete a loop. Meet 8:30 at the Steam Valley Restaurant on Route 14 just off Route 15, north of Williamsport. Bring lunch and water. Leader: Roy Fontaine 570-220-4707.

Sunday, June 10 -- RB Winter State Park, Union County: 10 miles, moderate to strenuous. We'll hike a variety of trails to make a 10-mile loop. Meet at the park at the breast of the dam along Rt 192 at 8:30. Bring lunch and water. Leader: Joe Rebar 570-259-0134.

Sunday, June 17 -- Mason-Dixon Trail, York County: 14.8 miles, very strenuous. We will hike from Otter Creek Campground to historic Lock 12 through the River Hills on the west side of the Susquehanna River in York County. This is a fast-paced preview hike offered to participants in the Susquehanna Super Hike (September 8), but all are welcome. Meet at K-Mart parking lot on Rt. 15 in Shamokin Dam at 6:30 am or Clarks Ferry Truck Stop along Rt. 322 in Duncannon at 7:15 am. Bring lunch and water. Leader: Paul Shaw 717-215-8339; pshaw@ptd.net.

Saturday, June 23 -- Shingletown Gap: Bald Knob Ridge, Centre County: 6.2 miles, moderate. This loop hike will start out along Roaring Run and gradually ascend to Bald

Knob. From Bald Knob, there is a steep ascent on the Clemons Trail followed by a long downhill that passes the ruins of an old cabin. Meet at the parking lot behind the Lewisburg Post Office at 8:00 am or the trailhead parking lot on Mountain Road at 9:30. To get to the trailhead, in Boalsburg, continue west on Rt. 45 for 1.8 miles to the village of Shingletown and turn left on Mountain Road. Bring lunch and water. Leader: Tony Robbins, tony.robbins@excellservices.com.

Sunday, July 1 -- Bear Meadows, Centre County: 6.8 miles, easy to moderate. This is a figure 8 hike combining the Bear Meadows Trail and the Jean Aron/Tuxedo/Lonberger paths. Bear Meadows is an unusual remnant boreal bog with vegetation usually only found much further north. The Bear Meadows Trail can get quite soggy, so bring extra socks or waterproof boots. Meet at the parking lot behind Lewisburg Post Office at 8:00 am or the Bear Meadows parking area at 9:30. To get to Bear Meadows, turn onto Bear Meadows Road from Rt. 322 at the entrance to Tussey Mountain Ski Resort, and follow the road for 3 miles to a stone monument with ample parking. Bring lunch and water. Leader: Tony Robbins, tony.robbins@excellservices.com.

Sunday, July 15 -- RB Winter State Park, Union County: 10 miles, moderate to strenuous. We'll hike a variety of trails to make a 10-mile loop. Meet at the park at the breast of the dam along Rt 192 at 8:30. Bring lunch and water. Leader: Joe Rebar 570-259-0134.

For more information contact: Paul Shaw, Outings Chair; 717-215-8339; pshaw@ptd.net

Southeastern Group

pennsylvania.sierraclub.org/southeastern

MEETINGS

Executive Committee meets the second Thursday of the month at 7 p.m. at Whole Foods Community Room, 20th & Callowhill Sts, Philadelphia. To confirm the meeting date and location, contact 215-820-7872.

OUTINGS & PROGRAMS

Please visit the website for updated outing information. For more information on any event, contact Bill Brainerd at 610-325-3127 or billbrainerd@gmail.com.

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Associate Representatives: Randy Francisco, Hillary Bright (Blue Green Alliance)

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Co-chair: Gary Thornbloom

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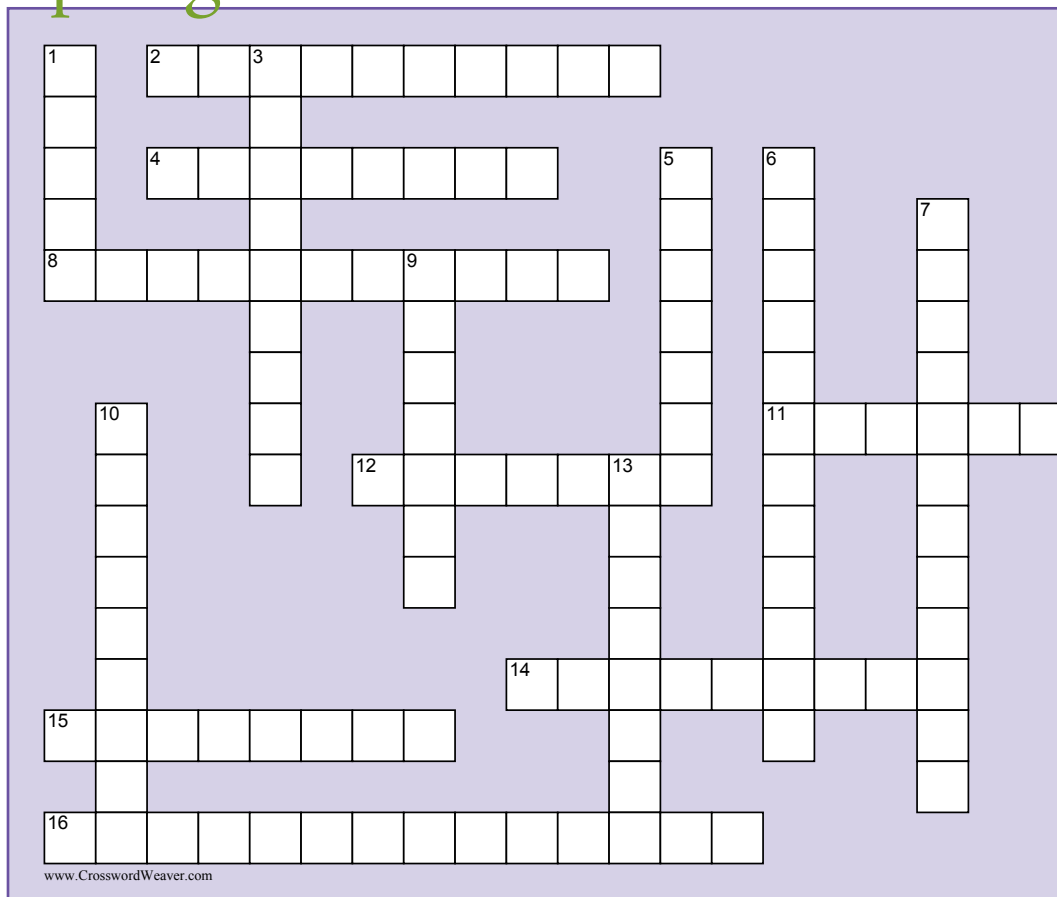
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Spring Crossword



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Across

- 2 Atomic test site
- 4 One way to enjoy the Allegheny River
- 8 One way to look at global warming.
- 11 _____ in Pennsylvania and Pennsylvanians
- 12 Physicist who worked on breeder reactor development
- 14 Natural _____ Defense Council
- 15 Pennsylvania plants applying for license extensions
- 16 New Greenpeace Sailing Vessel

Down

- 1 Friends of the _____
- 3 Union of _____ Scientists
- 5 _____ Wildlife Grants
- 6 First atomic power station
- 7 A hazard that won't go away
- 9 An earthquake caused it to hit Fukushima
- 10 Japanese reactor
- 13 Second atomic bombed city

Answers can be found on Page 49

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