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Spring 2005

Land & Water

Kentucky
UNBRIDLED SPIRIT

Kentucky Environmental and Public Protection Cabinet

Land Air & Water

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How clean is your creek?

By Ken Cooke
Division of Water

Kentucky's Watershed Watch program is offering a series of free workshops to train people to find the answer to this question.

Participants will learn about stream ecology, water chemistry and biology—and get their feet wet alongside some of

Kentucky's leading stream scientists. After training, participants will be asked to choose a stream, river, lake, wetland or cave system to monitor, then pay several visits over the summer to collect data on its condition.

Participants also will collect water samples for delivery to professional labs for analysis. The training will cover the proper collection, preservation and transport of samples to a lab. Data from the analysis will be returned to volunteers so they can see actual water quality values for their chosen streams. Monitoring data will also be used by state and local agencies, research organizations and cleanup programs such as PRIDE (Personal Responsibility in a Desirable Environment).

To find out more about the project or register online, visit the project's Web site <http://kywater.org/join.htm>. Select an area of the state, check dates of workshops in the area and complete the registration form. You can also call (800) 928-0045 ext. 473.

Watershed Watch is a statewide citizens' monitoring effort to improve and protect water quality by raising community awareness and supporting implementation of the goals of the Clean Water Act.



Jean Watts (standing in creek) instructs volunteers on Carr Fork Creek in Perry County. Photo by Ken Cooke

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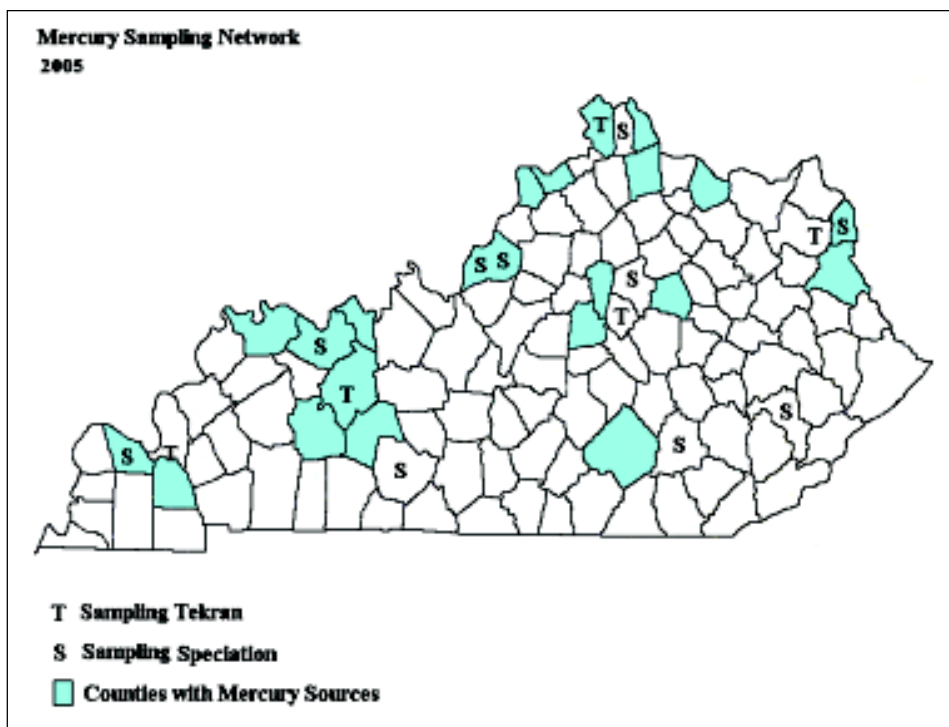
Jack-in-the-Pulpit (*Arisaema triphyllum*). Photographed by Thomas G. Barnes, University of Kentucky, Department of Forestry.

New air monitoring station in Ohio County online

By Elizabeth Robb
Division for Air Quality

Monitoring the quality of the air is a technical and scientific process requiring advanced technology, skilled technicians, data collection and processing, and application of the scientific method.

Monitoring locations are selected based on guidance from the Environmental Protection Agency (EPA) and are generally established near populous areas or pollutant sources. Each year the locations are reviewed to ensure that adequate coverage is being provided. Data from the network is used to demonstrate compliance with and progress toward meeting ambient (outdoor) air quality standards, set by the EPA, and to identify pollution trends. The data are also used to provide pollutant levels for daily air quality index reporting and to detect elevated pollutant levels for activation of emergency control



The EPA has noted that Kentucky is ‘ahead of the curve’ in beginning to monitor for ambient levels of mercury.



procedures. Air monitoring stations may also be set up for special studies for limited time periods to address specific issues with air quality in areas where there are numerous complaints, or where the Division for Air Quality (DAQ) feels that air quality is affected by a localized activity.

The DAQ runs one of the most comprehensive air monitoring networks in the United States. This year, the DAQ is running a network of 104 monitors at 34 sites in 29 counties.

The new Ohio County site, located in Echols, will sample ambient levels of ozone, sulfur dioxide, PM2.5, mercury and air toxics. The site features one of four

DAQ Environmental Engineer Technician Stephanie McCarthy audits and calibrates a Tekran monitor. DAQ photo

new Tekran monitors, which have the ability to sample air continuously over a 24-hour period, and to measure ambient levels of mercury vapor. Two other monitors are operating at sites in Nicholasville and Grayson Lake, and a fourth will operate at the East Bend monitoring site in the Florence region. A fifth monitor has been part of the network since 2001.

The DAQ began monitoring for ambient levels of mercury vapor in 2001 after purchasing its first Tekran Model 2537A mercury vapor analyzer. The Tekran analyzer was set up in Middlesboro, where sampling lasted nearly six months. It was then moved to Mammoth Cave National Park in 2002 and relocated in 2003 to DAQ's air monitoring

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ABOVE: A wetland was constructed after remediation in a downstream portion of the on-site drainage. **RIGHT:** Post-remediation is evident at the on-site drainage ditch, which includes a buffer zone (mulched area), the DNAPL barrier (along yellow posts) and riparian zone revegetation (on both sides of the drainage ditch). Photos submitted



Guthrie stream runs clean

Remediation goals at Koppers plant are achieved

By Ahad Chowdhury
Division of Waste Management

Decades of pollution from a wood preservative used at a 93-year-old plant in Todd County have been cleaned up in a remediation project overseen by the Hazardous Waste Branch of the Department for Environmental Protection (DEP) and the U.S. Environmental Protection Agency (EPA).

The plant, which produced railroad ties and timbers, was built in 1912 by L&N Railroad in Guthrie, where two main lines intersected. Today the 130-acre

facility, owned by Koppers Inc., is a primary supplier of crossties, switch ties and track panels to the CSX and national railroad systems.

Over the years, soil, sediment and groundwater were contaminated by polycyclic aromatic hydrocarbons (PAHs), the primary constituents of creosote, a chemical wood preservative.

The Hazardous Waste Branch and the EPA Region IV worked with Beazer East Inc., a previous owner that retained

environmental liabilities, to perform corrective action in accordance with the DEP-administered Resource Conservation and Recovery Act (RCRA) permit for assessment and clean up.

Remediation has been ongoing since 1994. Cleanup actions include containment, extraction and recovery of creosote-dense aqueous phase liquid (DNAPL) and groundwater, including both on-site and off-site systems, within a complicated subsurface karst setting. Other actions have included removal and solidification of impacted soil and sediment. Solidified wastes produced during the recent cleanup of the source contamination, ditches and streams were placed within a Corrective Action Management Unit constructed on site under permit with the EPA. The unit consists of a clay bottom liner and a multiple-component liner cap. It encapsulates more than 10,000 cubic yards of solidified soil and sediment.

Groundwater remediation has evolved through multiple phases of groundwater



Continued on Page 16

LEFT: Placement of a geosynthetic clay liner helped to isolate remaining sediments from the restored stream bottom. Photo submitted

Governor Fletcher unveils Kentucky's comprehensive energy policy

By Lola Lyle
Division of Energy

A comprehensive energy policy for Kentucky was announced by Governor Ernie Fletcher in February. The policy, the first of its kind in the state, aims to preserve Kentucky's historically low energy costs, while promoting environmental protection, energy conservation and expanded use of renewable fuels.

"This new energy plan reflects the principles I laid out with the formation of the energy task force: to maintain Kentucky's low-cost energy, to responsibly develop Kentucky's energy resources and to preserve Kentucky's commitment to our environment," stated Governor Fletcher.

Co-chairmen of the Commonwealth Energy Policy Task Force—Commerce Cabinet Secretary Jim Host and LaJuana S. Wilcher, secretary of the Environmental and Public Protection Cabinet—presented the policy to the governor. The seven-member task force formulated the plan after conducting a series of public meetings around the Commonwealth. The task force heard testimony from citizens, business representatives, environmental organizations and energy producers.

"As we implement our comprehensive energy plan, which includes greater use of clean coal technology, biofuels and energy efficiency, Kentucky will be well-positioned to continue to lead the nation in affordable energy while we become better stewards of the environment God has given us," stated Governor Fletcher.

The governor's plan calls for greater energy efficiency—using technology to reduce energy consumption and energy costs without sacrificing performance in appliances, office equipment, homes and buildings. Energy efficiencies can reduce energy bills by 20 percent to 30 percent for many homeowners and businesses.

For years, Kentucky has enjoyed the nation's lowest residential electric rates. But because there was no incentive to cut consumption, the nation's lowest rates did not translate into the nation's lowest bills.

Members of the Commonwealth Energy Policy Task Force watch as Governor Ernie Fletcher signs Kentucky's first comprehensive energy policy. Creative Services photo



The average residential electric rate in Kentucky is 33 percent below the national average. The average residential bill in Kentucky is only 17 percent below the national average. The governor's plan provides for energy efficiency resulting in reduced consumption, lower bills and an improved environment because of reduced emissions.

The policy also calls for state government to lead by example in energy efficiency. It says an aggressive utility savings initiative should be developed to address excessive energy use, and policies encouraging the purchase of energy-efficient products should be implemented. The state should also encourage high-performance, energy-efficient design for newly constructed state-funded buildings and examine state building codes to determine if enhanced energy efficiency gains are possible through progressive policy.

It is estimated that Kentucky state government, which spends more than \$200 million a year on energy, could cut that cost by 10 percent—up to \$20 million—with a comprehensive energy management program. By changing the way state government buys products, builds buildings and works internally, greater efficiencies and savings could be realized.

One program mentioned in Governor Fletcher's energy strategy is ENERGY STAR—a joint venture of the U.S.

Department of Energy and the U.S. Environmental Protection Agency to help businesses, governments, schools and individuals protect the environment through superior energy efficiency. Appliances, heating and cooling equipment, electronics, lighting, office equipment and commercial equipment are eligible for an ENERGY STAR rating. New and existing homes, as well as certain types of buildings, can also be ENERGY STAR certified. For several years, the Kentucky Division of Energy's ENERGY STAR program has been a frontrunner among the southeastern states.

The new policy also supports use of renewable fuels. According to the Energy Information Administration, United States reliance on foreign oil, currently 56 percent, will increase to 68 percent by 2025 unless there is a change. Use of renewable fuels such as ethanol and biodiesel can help reduce this dependency. The governor calls for use of a 10 percent ethanol and gasoline blend (E10) and a 2 percent blend of biodiesel (B2) in the state's fleet and encourages Kentucky's post-secondary institutions to do the same. The governor also supports the use of a 20 percent blend of biodiesel (B20) in the public school bus fleet.

To view Kentucky's energy policy in its entirety, as well as related executive orders, visit the Division of Energy's Web site at www.energy.ky.gov.



New LEDs will save energy and money

By Lola Lyle
Division of Energy

Kentucky will soon be the second state in the country, behind Delaware, to convert all of its traffic signals, highway flashing beacons and school flashers on state maintained routes to Light Emitting Diodes (LED). LED signals are 80 percent to 90 percent more efficient than incandescent lights and can last more than a decade.

Siemens Building Technologies Inc. has a contract with the Kentucky Transportation Cabinet to change out the lights at more than 2,500 intersections statewide and began the change in January.

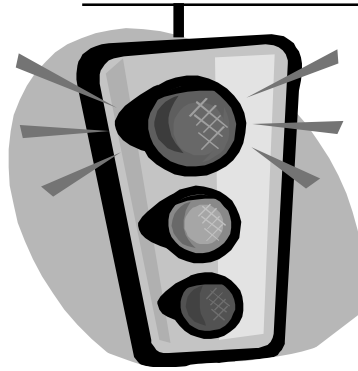
“Once this project is complete, it will result in a tremendous savings for the taxpayers of Kentucky,” stated Kentucky Transportation Cabinet Secretary Maxwell Bailey. “This is one of many projects in our effort to become more efficient and cost effective as directed by Governor Fletcher.”

The contract allows the cabinet to make these upgrades with no capital expenditures by financing the funds



“Once this project is complete, it will result in a tremendous savings for the taxpayers of Kentucky.”

Secretary Maxwell Bailey
Kentucky Transportation Cabinet



necessary to complete the project. Payback for the financed funds will be made through energy cost savings resulting from the upgrades within the first four years. The project is expected to save the state about \$1.7 million per year.

A typical utility bill for a signalized traffic intersection costs taxpayers approximately \$65. Once the LEDs are installed, the Transportation Cabinet expects bills to drop to \$12 per intersection, on average.

Energy use statewide will drop approximately 30 million kilowatt hours every year, which is enough energy to power 3,000 Kentucky homes. This reduction in energy use is the equivalent of removing more than 4,000 cars from the road every year.

LED bulbs have to be replaced every 11 or 12 years, and are brighter and clearer than incandescent bulbs. Incandescent lights usually burn out in less than a year.

The personnel and equipment hours that have been previously spent changing faulty bulbs can now be spent on preventive maintenance and better operation of systems and infrastructure.

“This is truly smart energy management. By creating a win-win for all involved, energy savings are financing a project that will improve traffic safety while lightening the load on our power grid and helping the environment,” said Kentucky Division of Energy Director John Davies. “Using energy efficiency to benefit all Kentuckians is a great example of Governor Fletcher’s energy strategy.”

To learn more about energy savings performance contracting, visit the Kentucky Division of Energy’s Web site at <http://www.energy.ky.gov/programs/esp/>.



A crew from Siemens Building Technologies changes incandescent bulbs to LEDs at traffic signals on Mero Street in Frankfort.

Transportation Cabinet photo



Members of the Technical Escort Unit, a specialized Army unit from Pine Bluff, Ark., prepare the BGAD one-ton container (OTC) for the transfer of its contents into two new OTCs. Photo by the Blue Grass Army Depot

Blue Grass Army Depot

Plug replacements turn into container replacements

By Bill Buchanan
Division of Waste Management

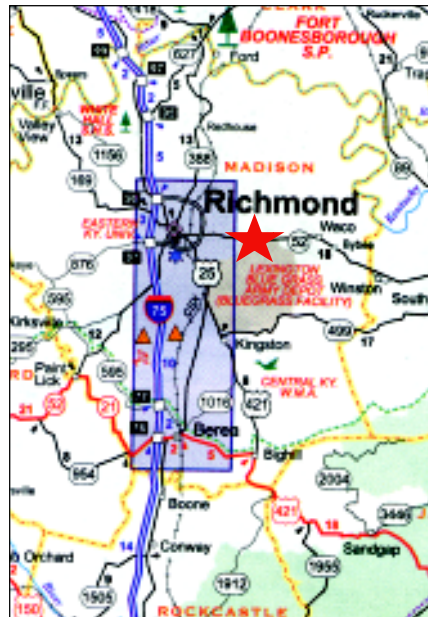
Located in the heart of the Bluegrass Region between Richmond and Berea is the Blue Grass Army Depot (BGAD). The installation sits on more than 14,000 acres and is used for storing conventional explosive munitions and assembling chemical weapons.

The BGAD has about 523 tons of chemical agents stored at its facility in Richmond. Most of these agents are contained in rockets and projectiles housed in earth-covered igloos. However, almost 100 gallons are stored in a one-ton container (OTC) commonly used by industry for storing chlorine gas.

This OTC stores Sarin, a highly toxic nerve agent manufactured by the Army specifically for chemical warfare.

Recently, BGAD officials concluded that the container's carbon steel plugs needed to be replaced, and a work plan was developed and submitted to the Kentucky Division of Waste Management.

Each OTC contains eight plugs—five plugs on one end and three on the other—that allow the container to be maintained and serviced. The carbon steel plugs were installed 10 years ago when testing revealed the original brass plugs were



deteriorating.

The work plan called for the carbon steel plugs to be replaced with stainless steel. At the same time, a sample of the container's content was to be collected and tested to determine the best method of demilitarizing it.

In November, a specialized team from Utah's Deseret Chemical Depot was brought in to do the plugs replacement.

However, due to problems found

during the operation, plans changed. The team noticed that one of the plug holes in the container was severely deteriorated, and the new plug could not be fitted properly. A temporary, expandable rubber plug was installed while corrective action options were considered. Only five of the eight plugs were replaced during this operation.

After thorough consideration, the BGAD opted to transfer the contents into two new OTCs in case a neutralizing or decontaminating agent was needed once the sample analysis was obtained. These new containers were shipped to the BGAD, and the Technical Escort Unit, a specialized Army unit from Pine Bluff, Ark., was selected to perform the transfer.

The transfer took place outside the igloo but inside two glove boxes (one container inside the other) under negative pressure provided by a 1,000 cubic-foot-per-minute filter that would absorb any material if there was a leak. The glove boxes were housed inside a negatively-pressured vapor control shelter that acted as a secondary containment should the glove boxes have leaked. Monitoring instruments were also used during the operation that could detect chemical agents at extremely low levels.

Most of the contents of the original OTC was placed in the first recipient container. About 20 percent had to be placed in the second container. Some of the original liquid chemical agent had solidified into sludge on the bottom of the OTC and could not be distributed.

Because safety is the top priority when an operation of this magnitude is undertaken, the transfer into new containers took four days. All three containers were put safely back into the igloo and are being monitored on a routine basis to ensure that they remain in good condition until demilitarization.

For more information, contact Shannon Powers at (502) 564-6716, or e-mail shannonl.powers@ky.gov



KBEAP helps local business lower emissions

By Rose Marie Wilmoth
Division of Compliance Assistance

Somerset Recycling Services has been in the recovery and recycling trade for 20 years. It does business with 25-30 states, purchasing byproducts and scraps from manufacturing and distribution centers. It processes these materials for use in post-consumer plastic products.

The company operates three shifts a day, typically processing 3,000 to 4,000 pounds per hour, and also manages more than a dozen trucks involved in the transportation division of the business. Hauling also includes discarded materials that do not require processing at the Somerset plant.

Last year, the company recycled more than 90 million pounds of materials ranging from plastic bottles and construction hard hats to automobile air bags. The forecast for 2005 is more than 100 million.

The processing of scrap materials at the plant generates a large quantity of dust. Somerset Recycling had always complied with air quality standards. However, Mike Hannon of the Division for Air Quality's London Regional Office suggested that the company contact the Kentucky Business Environmental Assistance Program (KBEAP) for help with its paperwork needs. KBEAP did more than help with the company's paperwork. It provided valuable recommendations on how to reduce dust emissions.

Somerset Recycling's commitment to reducing dust, along with the technical assistance provided by KBEAP's Eric Byrd, has led to some major changes at the plant. Substantial investments have been made in equipment and processes to significantly reduce dust emissions.

"Our experience with KBEAP has been very positive. The staff was professional, caring and informative," said Steve Keck, president of Somerset Recycling. "Their involvement assisted our company in developing an effective improvement in air quality."

RIGHT: Bag filters located outside the plant catch dust created during the processing of materials inside the facility.

BELOW: Samantha Gibson, safety manager at Somerset Recycling Services, and Pete Davis, plant manager, stand in front of remnants of automobile air bags.

Photos provided by Millinda Rumble, KBEAP



Somerset Recycling now has three bag houses in the plant that trap dust created during the processing of materials and then channel it outdoors. The third one was installed based on Byrd's recommendation.

Dust generated from plastic grinding is sent through ducts to the outside and collected with bag filters.

The company also has added lids to the auger moving pans to reduce floating dust within the plant. It plans to add four more lids to other auger-moving pans in the future.

Keck is committed to providing a better work environment for his employees and being a better corporate citizen by significantly reducing the dust releases from his business.

The availability of free technical assistance from KBEAP was a key factor in identifying the changes he needed to make at his plant to achieve these goals.

If you are a business owner interested in receiving air quality compliance assistance from KBEAP, call Greg Copley at (800) 562-2327 or visit the KBEAP Web site at www.kbeap.org



In March, more than 30 environmental educators made history in Kentucky when they became the first to graduate from the Kentucky Certification for Nonformal Educators Program.

A year of training, assessments and camaraderie finally came to an end for the program participants. The graduates—representing government agencies, nonprofit organizations and businesses across the Commonwealth—and instructors looked back at their accomplishments during the graduation ceremony in Lexington.

The program is known for its rigorous, standards-based approach to training. Participants attended several workshops throughout the year that incorporated standards described in the North American Association for Environmental Education (NAAEE) Guidelines for the Initial Preparation of Environmental Educators. In addition to studying environmental systems and education design strategies, participants were also trained in providing education without bias, which is a component of environmental education that distinguishes it from environmental advocacy.

“Environmental education is a highly complex endeavor, requiring an understanding of the interrelationships of both natural and human systems, plus the unique instructional strategies we use to teach about these systems,” said Jane Eller, executive director of the Kentucky Environmental Education Council. “For years we have asked people to teach these complex systems with little or no specific training. The certification program is our strategy for preparing better environmental educators and, from there, better environmental education,” Eller said.

One of the best aspects of the program is the camaraderie experienced during the workshops and activities. The certification program attracts participants from across the state providing for diverse perspectives and viewpoints. Participants ranged in experience levels from one year to more than thirty years of experience.

“What a great group to be associated with; everyone was there to learn and had a great time during the learning process,” said Doug McLaren, cooperative extension service employee and certification graduate.

The program, in addition to other environmental education efforts, makes Kentucky one of the leading states in the nation for environmental education. Its training approach makes it a model program for other states wishing to create similar certification programs.

“What impressed me the most was the absolute dedication of my Kentucky colleagues to the field of environmental education. In the national context, Kentucky is providing the kind of vision and leadership that I would hope will inspire others elsewhere to action,” said Bill Dent, a program graduate who is executive director of the North American Association for Environmental Education.

Most importantly the program gives environmental educators the resources, skills and accountability they need to better educate the citizens of the Commonwealth about the environment.

“There is no doubt that this program will strengthen the field of environmental education across the Commonwealth,” stated Yvonne Meichtry, certification instructor and professor at Northern Kentucky University.

The program was a great success in 2004. The second year of the program began in March with a full class and a lengthy waiting list. Those interested in participating in future classes can contact Jane Eller at (502) 564-5937. ❖

Commencement graduates cadre of environmental educators

By Kate Shanks
Office of Communications and Public Outreach



ABOVE: Certification participants got a lesson in teamwork during the final certification workshop at Cumberland Falls State Resort Park.



LEFT: (left to right) Rayetta Boone, Department of Agriculture; Doug McLaren, Department of Forestry/UK Cooperative Extension Service; and Sara Gilbert, East Kentucky PRIDE, study field, forest and stream systems during the first certification workshop at Lake Cumberland State Resort Park. Photos provided by Joe Baust, Murray State University, Center for Environmental Education

New air monitoring station in Ohio County online

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station on Bloodworth Farm in the Paducah region, where it remains today.

Mercury (Hg), a natural element, is found in very small amounts in rocks, oceans and soils. As rocks erode, soil decomposes and volcanoes erupt, elemental mercury is released into the environment.

Mercury has been extracted and utilized by humans for ages. However, mercury is known as a 'heavy metal' and can be toxic to living organisms. Humans have taken advantage of mercury despite its known toxicity, because of its wide range of applications. Mercury has the ability to conduct electricity, measure temperature and pressure, act as a disinfectant and catalyze reactions, and it is the only metal that can remain liquid at room temperature. It is also the most volatile of all the metals and vaporizes to become an odorless and colorless gas.

The use of mercury for so many applications has greatly increased the amount of mercury mobilized and released into the environment due to human activities. Some examples of man-made sources of mercury emissions include coal-fired power plants, municipal waste incineration, sewage and medical waste incineration, chlor-alkali plants, mineral ores processing, steel manufacturing, petroleum refining and fossil fuel combustion.

Mercury is not biodegradable and once released into the environment can convert to various forms that affect human health. Elemental mercury is most toxic when it vaporizes. Children playing with or exposed to elemental mercury can become seriously ill if they breathe the invisible vapor from mercury spilled onto carpet, furniture or other surfaces.

Reactive gaseous mercury and particle-bound elemental mercury are easily deposited in water bodies. There, they can be transformed into methylmercury by bacteria living in mud at the bottom of lakes, streams, and rivers. Methylmercury increases in concentration as it moves up the food chain—from bacteria to insects to fish to humans. Unlike elemental mercury, methylmercury is easily absorbed into the human body; the most likely source is consumption of contaminated fish.

Overexposure to mercury can result in long-term damage to the kidneys, liver and central nervous system. Children and developing fetuses are the most at risk, resulting in the issuance of a statewide fish consumption advisory to discourage pregnant woman and children age 6 and under from eating more than one meal of freshwater fish per week. The advisory, issued in 2000, remains in effect.

The Tekran mercury vapor analyzers provide a continuous measurement of the total gaseous mercury concentration in the ambient air. They do not, however, differentiate between the three mercury forms—elemental, reactive gaseous and particle-bound.

In 2002, the DAQ and the Metro Louisville Air Pollution Control District deployed a network of ten speciation samplers across the state. These samplers detect 48 elements, one of which is mercury. Speciation methods extract the signal due to reactive gaseous or particle-bound mercury, disregarding the elemental component. Hence, the speciation samplers used in our network provide data for "speciated" mercury, whereas the Tekran gives "total gaseous" levels.

According to John Lyons, director of the DAQ, "In the southeast, there is limited monitoring and data regarding ambient mercury levels. The EPA has noted that Kentucky is 'ahead of the curve' in beginning to monitor for ambient levels of mercury. This monitoring is a first step in determining if correlations can be made between mercury in ambient air and the problems we see in our streams."

After one year of mercury monitoring, the division will assess results and determine the future direction of monitoring efforts.

Crumb rubber grants awarded

Athletic fields and playgrounds across the state will be safer for the players and children using the facilities, thanks to more than \$1 million in grants awarded by Governor Ernie Fletcher. Grants to use crumb rubber for the fields and playgrounds were given to 48 school districts, cities and counties throughout the state.

Crumb rubber, a product from recycled waste tires, can be used as the primary surface on playgrounds to reduce the risk of injuries from falls.

"The use of crumb rubber will help local governments create safer playgrounds for our children," Governor Fletcher stated. "Studies have shown that crumb rubber on athletic fields makes turf more durable and gives playing surfaces more of a cushion. Maintenance costs for the fields are also reduced by using crumb rubber."

There are additional benefits to using the product, according to LaJuana S. Wilcher, secretary of the Environmental and Public Protection Cabinet (EPPC). "The use of crumb rubber in these applications provides another market for the five million waste tires generated in Kentucky annually," said Wilcher. "We must take advantage of every opportunity to recycle the goods we used to think of as waste, turning them into a product with value."

The EPPC set aside approximately \$1 million from the Waste Tire Trust Fund to provide the grants, just one segment of the state's waste tire program. Around 14 million waste tires have been collected and recycled through an amnesty program and dump cleanup program since 1998.

The state's waste tire amnesty program was recognized by officials from Keep America Beautiful's Great American Cleanup for collecting more than 860,000 waste tires during the 2004 campaign.



Children's environmental health in Kentucky

The latest 'snapshot' report of environmental trends and indicators as reported by the EQC.

By Leslie Cole
Environmental Quality Commission

EQC suggestions

The EQC has recommended that the state create a Children's Environmental Health Partnership to better coordinate state programs and develop an action plan to:

- Strengthen health surveillance programs for children to improve collection, coordination and use of health surveillance data.
- Build public awareness among physicians, health care providers, schools, employers and the public about children's environmental health issues.
- Evaluate and update state health standards to ensure they incorporate new information and are focused on children and vulnerable populations.
- Prioritize and target high risks by better tracking childhood diseases and environmental hazards.
- Promote safe and pollution-free indoor environments to target schools, day cares, homes and public places to advance safe and healthy pollution-free indoor environments for children.



For some time, the Environmental Quality Commission (EQC) has been monitoring environmental trends and conditions in Kentucky. As a result, these reports have revealed that we have made progress in restoring water and air quality, but much more remains to be done to reverse the effects of pollution on the environment and public health.

Children are different

This is especially true when it comes to the health of our children. In Kentucky, children represent 25 percent of the state's population and 100 percent of our future. Children are more exposed and more vulnerable to hazards in the environment. Pound for pound, kids breathe more air, drink more fluids and eat more food than do adults.

Children are better protected from environmental hazards now than they were 20 or 30 years ago. Measures to control pollution and target toxins, such as the elimination of lead from gasoline, have reduced the exposure to some environmental hazards. However, children continue to be exposed to a range of toxins such as mercury, lead, PCBs, solvents, asbestos, radon and pesticides that have found their way into the homes,

schools and playgrounds of our children.

Protecting children from environmental hazards requires that we better understand the relationship between environmental conditions and health outcomes. Without this information it is difficult to assess the extent to which environmental factors may be impacting the health of our children and how best to address these concerns.

The EQC has produced the state's first comprehensive report to look at the incidence of certain childhood illnesses such as asthma and cancer and their potential relationship to the environment. This core set of 18 indicators, along with county data included on a CD-ROM version of the report, is intended to improve our understanding about children's environmental health and

advance strong and sustaining children's environmental health policies in the Commonwealth.

Asthma in children increasing

Among some of the report's findings was that childhood asthma is on the rise in Kentucky. Asthma is by far the most common chronic childhood disease. It is responsible for more missed days of school and more hospitalizations than any other childhood illness.

Data show that childhood asthma hospitalizations increased 45 percent in Kentucky from 2000 and 2003. Of the 14,753 Kentuckians hospitalized with an admitting diagnosis of asthma in 2003, 35 percent were children under 14. Jefferson County led the state in childhood asthma hospitalizations during 2003 at 650.

Numerous studies have demonstrated the potential of air pollution to trigger asthma attacks in children. In Kentucky, an estimated 312,000 children are at risk

Cumberland Valley District with a 39.5 percent rate.

Lead in children still a problem

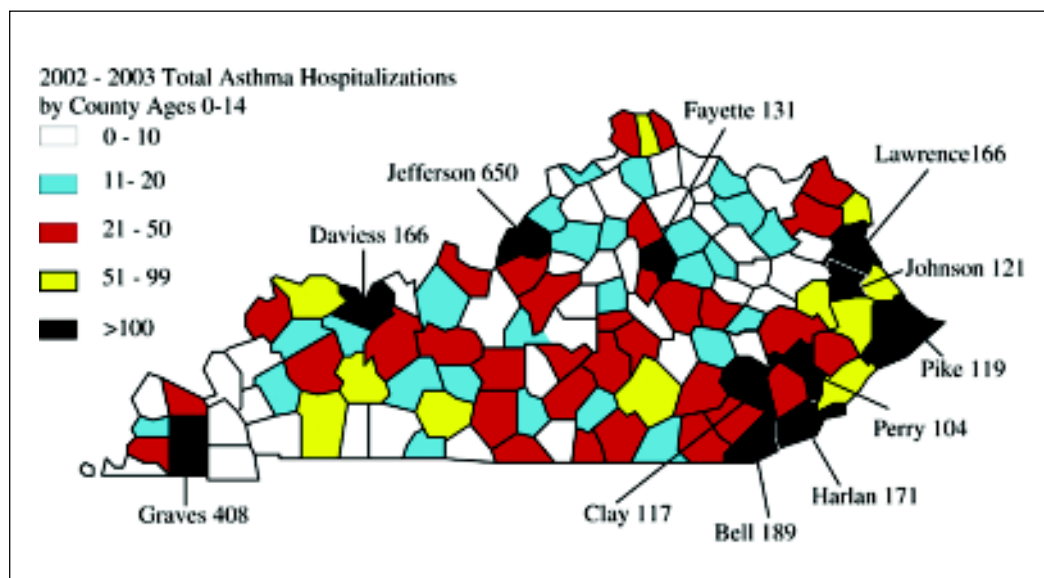
Research has linked certain environmental toxins to learning and behavioral disorders in children. For example, lead can cause a range of health effects in children, from behavioral problems and learning disabilities to seizures and death.

In Kentucky, an estimated 300,000 housing units may contain lead-based paint hazards. Local health departments have been testing children under 6 for lead since 1992. However, the number of children tested for lead poisoning has declined 50 percent, from a high of 42,000 screenings in 1986 to a low of 19,000 screenings in 2002. Yet lead is still a problem in Kentucky. Of the blood tests conducted in 2002, unsafe lead levels were detected in 4.9 percent of the children, which was well above the national average of 2.2 percent.

The good news is that these chemical releases have declined 43 percent since 1999.

Waterborne Diseases

- During the past two decades, cryptosporidium, a microscopic parasite, has become recognized as one of the most common causes of waterborne diseases in humans in the United States. During the past six years, 86 cases of cryptosporidiosis have been documented in Kentucky. In 1999, six of the seven documented cases were in children.
- During 2003, some 2,500 Kentuckians were served by 13 public drinking water systems with persistent bacteria and turbidity violations. Two of these systems primarily served schools.
- During 2001, 59 percent of the 1,291 private water wells tested by local health departments detected fecal coliform, an indication the water is contaminated.



Birth Defects

- Birth defects are the leading cause of infant mortality in the United States, accounting for almost 20 percent of all infant deaths. In Kentucky nearly one in four infant deaths in the state is caused by congenital anomalies, one of the highest rates in the nation, according to the University of Louisville Birth Defects Center.
- Mercury has been proven to cause severe brain damage in infants whose mothers were exposed to it during pregnancy. Sixty percent of the 27 lakes tested in Kentucky had median fish methylmercury concentrations greater than the state and EPA

in nine counties with unhealthy levels of ozone and particulate air pollution.

Another contributing factor to asthma is secondhand smoke. The U.S. Environmental Protection Agency estimates that between 200,000 and 1 million children with asthma have had their condition worsened by exposure to secondhand smoke. Kentucky has one of the highest adult smoking rates in the nation at 30.5 percent. A review of smoking rates reveals the Kentucky River Area Development District leads the state with a 40.6 percent smoking rate followed by the

EQC also reviewed a number of other childhood health concerns in Kentucky. Among the findings were:

Cancer

- Cancer is the leading cause of death, by disease, among U.S. children under the age of 15. The five-year incidence rates for various pediatric cancers in Kentucky were above the national rate, with the exception of leukemia.
- Three million pounds of industrial toxic chemicals released into Kentucky's air in 2002 were listed as carcinogens.

risk-based level.

- Kentucky ranks fifth in the nation in the industrial generation of mercury and mercury compounds. Coal-fired power plants released 72 percent of the mercury emissions to the air during 2001.

Progress Made

Kentucky is making progress in addressing some of these issues. In 2004, the state created work groups to assess

Continued on Page 11

Kentucky's Brownfields Program seeing organizational changes

By Herb Petitjean
Division of Compliance Assistance

Changes are being made in Kentucky's Brownfields Program to promote the cleanup and reuse of contaminated property.

The program is being divided. Promotional and administrative aspects are moving to the newly established Division of Compliance Assistance. The focus of this new division is to bring businesses and public entities into environmental compliance by combining nonregulatory training and technical assistance programs with recognition and incentive programs. Technical aspects of the Brownfields Program, such as conducting and reviewing assessments, will remain in the Superfund Branch of the Division of Waste Management. The Superfund Branch oversees approximately 120 voluntary cleanups per year. The branch also conducts cleanups using the Hazardous Waste Management Fund in cases where a responsible party cannot be found or is unable to act.

The 2005 General Assembly included a great deal of legislative activity related to brownfields. The legislature passed a tax reform package that included tax incentives for brownfield redevelopment. The package also included a provision to provide liability protection to those who purchase property without knowing of possible contamination and to owners of properties contaminated by releases of pollutants from adjacent properties. In addition, the legislature passed a bill to modify real estate law to provide greater assurance that protective measures remain in place at properties where contamination is being managed on-site rather than removed.

But, many aspects of Kentucky's Brownfields Program remain the same. The program continues to maintain a "help desk" to connect you with informational and financial resources. Also, the Targeted Brownfield Assessment Program continues to provide free assessments of abandoned or publicly owned properties for local governments and nonprofits.

Though the program is still in its infancy, three Kentucky brownfield projects, all in Louisville, have been recognized with Phoenix Awards—Papa John's Stadium, the Louisville Waterfront Park and the Home of the Innocents. However, much work remains to be done on the estimated 8,000 brownfields in the state.

For additional information, contact Herb Petitjean, Division of Compliance Assistance at (800) 926-8111 or herb.petitjean@ky.gov.

Children's environmental health in Kentucky

Continued from Page 10

health and environmental issues associated with toxic air pollution and mercury contamination. Among some of the preliminary recommendations are stepped-up sampling of mercury in fish and additional air toxics testing in urban areas.

The Kentucky Department of Education recently formed a Green Schools Committee to promote healthy schools in Kentucky. Also, Governor Ernie Fletcher recently announced that he would provide funding in the budget to expand Kentucky's newborn screening program to the national standard set by the March of Dimes and the Kentucky Department of Health and Human Services. The Governor's Healthy Kids Initiative also will require screening to be conducted during immunizations to determine whether a child lives in a house with potentially high levels of lead and it will direct parents on ways to address the problem.

"This report represents the first summary of data related to children's environmental health in the state. To my knowledge, it is the first state report of its kind in the United States," said Kimberly B. Henken, extension associate for environmental issues, Family and Consumer Sciences. "I both admire and appreciate the energy and vision the commission brings to addressing these vital issues. I look forward to using this report and sharing it with a network of extension agents throughout the state," said Henken.

To view the Children's Environmental Health report visit www.eqc.ky.gov or contact the EQC at (502) 564-2150 to request a copy. To learn more about how you can protect your children from environmental health threats visit www.epa.gov/epahome/children.htm



A 42-unit apartment building for low-income senior citizens is the first phase of an "intergenerational" residential development being constructed on a brownfield site in Louisville. Photo by Jeff Grow, Superfund Branch

Get the fat on biodiesel

By Lola Lyle
Division of Energy

In early February, about 150 people attended the second annual Kentucky Biodiesel Showcase in Frankfort. The showcase promotes the use of biodiesel and celebrates advances in the industry.

Biodiesel, which is made from soybean oil, recycled cooking oil or animal fats, is the fastest growing alternative fuel in the United States. It is widely considered a viable way of reducing the need for foreign oil, and it is significantly cleaner than petroleum diesel. Since Kentucky has extensive access to feed stocks, producers and distributors, the Commonwealth is in a unique position to capitalize on biodiesel's potential.

At the showcase, Commerce Cabinet Secretary James Host discussed biodiesel's role in Governor Ernie Fletcher's new comprehensive energy plan (see *Governor Fletcher unveils Kentucky's comprehensive energy policy* on Page 3). The plan recommends that the Commonwealth require the state fleet to use a 2 percent blend of biodiesel whenever possible, to promote the production, consumption and availability of biodiesel, and design a policy that promotes the use of a 20 percent biodiesel blend in the public school bus fleet.

A state-promoted increase in biodiesel use will likely be significant to Kentucky's soybean farmers. According to a recent report from Murray State University, the use of a 5 percent biodiesel blend across Kentucky would increase soybean processing capacity by 158 percent. This would add about \$570 million to Kentucky's economy, increase tax revenue by \$68.5 million and produce more than 3,000 jobs.

The showcase also highlighted important players in the biodiesel industry by giving out two awards. Griffin Industries, a biodiesel production company near Covington, received the 2005 Shining Star Award for Biodiesel Production in Kentucky. The award was accepted by Dennis Griffin, chairman of the board.

The Kentucky Soybean Board (KSB)



ABOVE: Griffin Industries in Covington received the Shining Star Award for Biodiesel Production in Kentucky. Photo provided by Griffin Industries



LEFT: Kentucky Soybean Board President George Martin accepts the Shining Star Award for Biodiesel Promotion in Kentucky. Photo provided by KSB

received the Shining Star Award for Biodiesel Promotion in Kentucky. The award was accepted by KSB President George Martin.

Also in February, Owensboro Grain Co. officials announced plans to build a biodiesel plant adjacent to the company's edible oil complex in Owensboro. The plant may be ready for production within 16 to 18 months, with construction expected to take about one year to complete. It will likely produce approximately 30 million gallons of biodiesel per year.

John Wright, Owensboro Grain Co. vice president of strategic planning and development, said, "We intend to be a supplier of biodiesel here at home...and around the globe."

For more information on the Kentucky Biodiesel Showcase contact Melissa Howell, Kentucky Clean Fuels Coalition, at (502) 452-9152 or e-mail KCFC@aol.com.

Also, see the Kentucky Division of Energy's Web site at www.energy.ky.gov.



Kentucky pursues carbon sequestration in an effort to tackle climate change

By Linda Potter
Department for Natural Resources

The Midwest Regional Carbon Sequestration Partnership (MRCSP), one of seven regional partnerships established by the U.S. Department of Energy's National Energy Technology Laboratory (DOE/NETL), is studying carbon sequestration as an option for addressing the global problem of climate change.

The partnership region consists of seven contiguous states—Indiana, Kentucky, Maryland, Michigan, Ohio, Pennsylvania and West Virginia. Universities, state geological surveys, nongovernmental organizations and private companies were assembled to carry out this important research.

Carbon sequestration refers to the capturing, or removal, of carbon dioxide (CO₂) from the emissions of industrial sources. Once captured, CO₂ can be stored safely in deep underground geologic formations, a process called geologic sequestration, or in soils and vegetation, which is called terrestrial sequestration.

Carbon dioxide, a common gas that is present in the air we breathe, occurs naturally within the earth's crust and is utilized by plants in the production of oxygen. Since the industrial revolution, man-made CO₂ has increased dramatically, largely due to use of fossil fuels and changes in land use. Many scientists suspect that a strong correlation exists with this increase in CO₂ (as well as other greenhouse gases) and global climate change. Carbon sequestration is one set of promising technologies and actions to help in the effort to reduce greenhouse gas emissions.

The partnership region contains a variety of terrestrial sequestration options, such as eroded and prime croplands, marginal cropland, forests, surface mining areas and wetlands.

Kentucky has already begun two important sequestration projects. The Division of Forestry's Green River State Forest project is attempting to re-establish a bottomland hardwood forest that was earlier cleared for cropland. American Electric Power Service Corp. planted 400 acres of oak seedlings, roughly 174,000, that they purchased from the Division of Forestry's nurseries. More than 70 percent survived and are growing alongside native species that reseed themselves. The long-term economic benefit of the hardwood forest is enhanced with the environmental benefit of decreased CO₂.

A second option lies in the restoration and reforestation of Kentucky's large area of abandoned mine lands and surface mine sites. As a charter member of the Appalachian Regional Reforestation Initiative (ARRI), Kentucky is already pushing for reforestation as the preferred reclamation technique for these sites. These lands can serve as important terrestrial sequestration reservoirs,



Oak seedlings planted along with native species in the Green River State Forest will help to re-establish the bottomland hardwood forest that was cleared for cropland. Cabinet photo

simultaneously improving water quality by stabilizing these lands and growing the economies of these traditionally depressed areas.

The partnership region as a whole has great potential for geologic sequestration in deep geological formations. In particular, Kentucky's depleted gas fields and deep unmined coal seams seem natural candidates. In addition, depleted oil reservoirs could use CO₂ to help boost domestic oil production while simultaneously sequestering the carbon dioxide. A primary focus of the partnership's geologic research will address the location of these formations and their ability to sequester CO₂.

The hope of this initiative is to develop practical strategies for the management of CO₂ by sequestration, to find real-life cost effective solutions for reducing greenhouse gas emissions and to establish the region as a leader in creating local and global solutions for the future. Carbon sequestration is one of many potential ways to address climate change. Other measures to explore are reducing energy consumption through energy efficiency and conservation, identifying alternative ways of producing electricity and using renewable energy such as solar and wind.

These options may need to be used concurrently to effectively tackle the growing problem of global warming. The challenge requires all of us to make the economic, technical and lifestyle changes that will protect our planet for generations to come.

Additional information may be found by contacting David Ball at balld@battelle.org or visiting the MRCSP Web site at www.mrcsp.org.



EPA announces PM2.5 attainment designations

By Lona Brewer
Division for Air Quality

After undergoing extensive legal challenges, fine particulate (PM2.5) standards are being implemented by the U.S. Environmental Protection Agency (EPA). Designations of attainment and nonattainment areas under this new standard went into effect on April 5, 2005.

Fine particles can present a problem for healthy people, and can seriously affect people with respiratory or pulmonary illnesses. On top of that are potential economic costs from increased hospitalizations, medication increases and absences from work and school. Fine particles can have an impact at both short-term and long-term exposures.

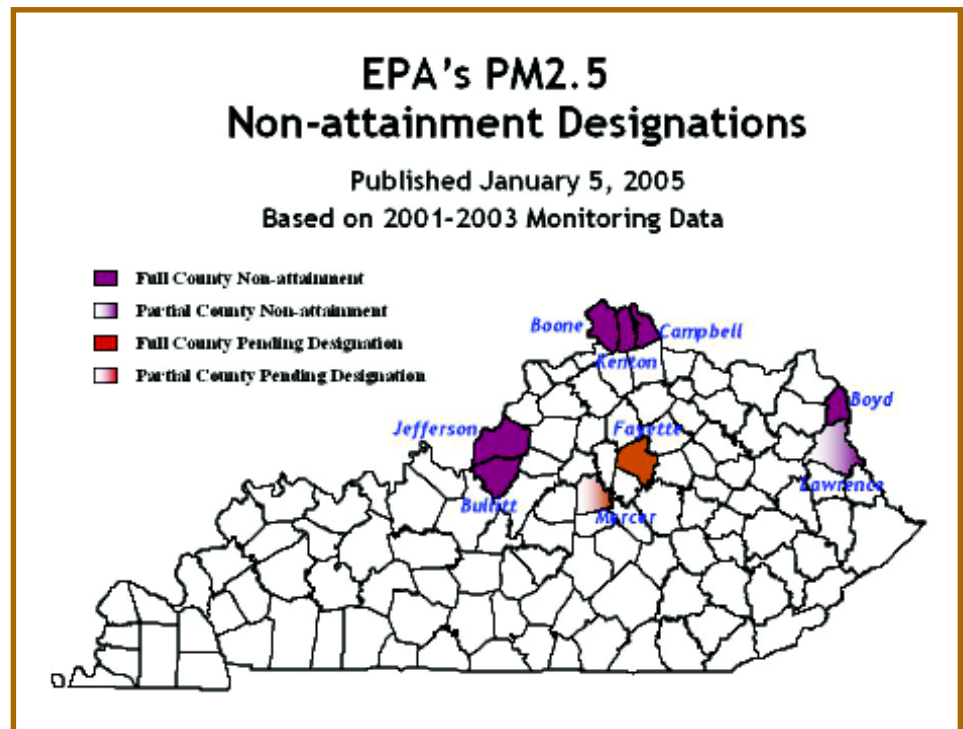
Fine particulate is a year-round problem. It can be emitted directly or formed from other pollutants being emitted. Diesel particles from motor vehicles, iron oxides from iron and steel mills and soot from wood burning are emitted directly into the air. However, fine particulates are also formed from sulfur dioxide and nitrogen oxides from power plants, industrial facilities, automobiles and other sources that burn fossil fuels.

Standards were originally adopted in 1997, but EPA was challenged on implementation plans for the new ozone standard, as well as EPA's authority to revise or set new ambient air quality standards. In February 2003, the Supreme Court upheld EPA's authority under the Clean Air Act to set and revise the National Ambient Air Quality (NAAQ) standards when research deemed necessary. EPA is required to review those standards every five years and make a determination of adequacy to protect public health. The addition of the fine particle standard in 1997 was the first change in particulate standards in 10 years. EPA had last revised the particulate standard in 1987, with addition of a PM10 standard. There are actually two fine particulate standards—the annual standard set at 15 micrograms per cubic meter and

the 24-hour standard set at 65 micrograms per cubic meter.

The final designations of attainment or nonattainment culminated a lengthy dialogue between states and the EPA. Areas where monitoring data showed fine particulate levels above the standard had to be identified, as well as areas that may be contributing to air quality problems in another region.

developed a response to EPA, thoroughly documenting potential contributions from each area listed by EPA. Although EPA did not agree with Kentucky's proposal entirely, the list was revised somewhat. EPA formally proposed seven counties and two partial counties as nonattainment. EPA's January 5, 2005, Federal Register notice included Jefferson and Bullitt counties; Boone, Campbell and Kenton counties; Boyd and a portion of Lawrence County in the Ashland area; and Fayette and a portion of Mercer County in central Kentucky.



States submitted information to the EPA in February 2004, recommending areas to be designated as nonattainment for this standard. Kentucky proposed only two counties—Jefferson and Fayette. Both counties, based on 2001-2003 monitoring data, showed violations of the new fine particulate standard. But EPA's recommendation to Kentucky included 10 other counties that EPA suggested could have the potential to impact other areas having violations of the standard.

The Division for Air Quality

counties in northern Kentucky; Boyd and a portion of Lawrence County in the Ashland area; and Fayette and a portion of Mercer County in central Kentucky.

"Although more areas are being designated as nonattainment than previously hoped for, I am very pleased that the EPA listened to Kentucky's arguments for excluding many of these areas," said Environmental and Public Protection Cabinet Secretary LaJuana S Wilcher.

Continued on Page 15

Compliance assistance offered to the regulated community

By Rose Marie Wilmoth
Division of Compliance Assistance

The name tells the story at the Department for Environmental Protection's Division of Compliance Assistance. It exists to help people comply with Kentucky's many environmental requirements. This assistance is proving to be very valuable to those who lack a full-time environmental staff or the financial resources to hire a consultant.

Most of the individuals requesting assistance have been small businesses and communities, as well as new businesses interested in locating in Kentucky. They seek training, compliance audits and assistance with the administrative processes associated with acquiring permits and submitting required reports. The division is working diligently to meet these needs and is also seeking to form compliance assistance partnerships across the state.

To assist as many small businesses and communities as possible, a hotline has been established to provide a one-stop location for obtaining compliance assistance. When a call is received, a coordinator will log the call into a tracking system. The call will then be referred to the appropriate staff, to another program within the department or to a compliance assistance partner such as the Kentucky Business Environmental Assistance Program (KBEAP) located at the University of Kentucky.

Regardless of who responds, the division will ensure that all requests for assistance are handled in a timely manner and that the

individual requesting assistance is provided the information needed.

The Division of Compliance Assistance is happy to provide this service and has seen positive environmental benefits. Individuals in need of assistance and entities interested in partnering with the division to assist others are encouraged to call the Division of Compliance Assistance at (800) 926-8111 or (502) 564-0323.



**DIVISION OF
COMPLIANCE ASSISTANCE**

HOTLINE

(502) 564-0323

(800) 926-8111

EPA announces PM2.5 attainment designations

Continued from Page 14

"I believe we made very persuasive arguments against including many of our areas, and I'm glad the EPA recognized the importance of considering this information before making the final designations," said Wilcher.

However, EPA's Jan. 5 proposal also allowed states to submit data from the 2002-2004 monitoring period—if that monitoring data showed compliance with the NAAQ standard. EPA's plan was to revise the proposed designations in those instances and allow the area to avoid being designated as nonattainment. Data showed that both monitors in Fayette County were

meeting the standard. Therefore, Kentucky petitioned EPA to remove Fayette and Mercer counties from the nonattainment list. Mercer County had a partial county designation that included the Kentucky Utilities Brown Power Plant. EPA's position was that emissions from the power plant were contributing to the previous violation in Fayette County. At press time, the DAQ was still awaiting the final designation for Fayette and Mercer counties (see map on Page 14).

Revisions to the State Implementation Plan documenting the state's strategy for bringing PM2.5 problem areas back into

attainment will be due on April 5, 2008, three years after final designations were made. To date, EPA has not released any guidance for states to follow in drafting these plans. It remains unclear what local controls, if any, are necessary. Several national measures on the horizon could help lower fine particulate emissions and levels throughout the country. These include measures to lower the sulfur content of gasoline and diesel fuel, new diesel standards for highway and nonhighway engines, and the possibility of stricter controls on fossil fuel-fired power plants and boilers.



DAQ and EQC partner with ENERGY STAR

By Lola Lyle
Division of Energy

In January, the Division for Air Quality (DAQ) and the Environmental Quality Commission (EQC) became the newest Kentucky state government partners to join in the ENERGY STAR program.

ENERGY STAR, sponsored by the U.S. Department of Energy and the U.S. Environmental Protection Agency, is a voluntary government and industry partnership program that sets superior energy efficiency standards for products and buildings.

Appliances, heating and cooling systems, electronics, lighting, office equipment and commercial equipment are eligible for an ENERGY STAR rating. New and existing homes can also be ENERGY STAR certified.

Results are already adding up. Last year alone, Americans, with the help of ENERGY STAR, saved enough energy to power 20 million homes and avoid greenhouse gas emissions equivalent to those from 18 million cars—all while saving \$8 billion. Also, if every household replaced its five most-used lights or bulbs with lights that have earned the ENERGY STAR rating, 1 trillion pounds of greenhouse gases could be prevented.

“The DAQ is pleased to announce that we are working to model best management practices for energy efficiency within state government by becoming an ENERGY STAR partner,” stated John Lyons, director of the DAQ.

Kentucky has more than 70 ENERGY STAR partners. Partners include public and private organizations, K-12 schools, universities and governmental organizations. In the private sector, the range of partners includes manufacturers, retailers, utilities, hospitals and religious congregations. Nationally, more than 7,000 organizations are partnered with ENERGY STAR.

According to Leslie Cole, executive director of the EQC, “Efficient use of energy is one of the simplest, most cost-effective and most immediate steps we can take to reduce air pollution while lowering energy demand and cost. All of us need to make a conscious effort to embrace energy-efficient practices and products. As an ENERGY STAR partner, the EQC will work to raise public awareness of energy efficiency and conservation to promote smart and informed choices in Kentucky about energy use and alternatives.”

The Kentucky Division of Energy (KDOE) has been an ENERGY STAR partner since 2002. The University of Kentucky Cooperative Extension Service and KDOE work together to provide energy efficiency and education about renewable energy to Kentucky’s consumers.

To learn more about the ENERGY STAR program, visit the ENERGY STAR Web site at www.energystar.gov or the Kentucky Division of Energy’s Web site at www.energy.ky.gov.



Guthrie stream runs clean

Continued from Page 2

study, including nested monitoring well sampling and performance of a dye trace test. The groundwater remediation consists of a series of wells where groundwater is collected, treated and discharged to the publicly owned treatment works. Any creosote-DNAPL that may be present is recovered separately within the wells and is collected for off-site disposal.

Migration of PAH constituents from the site into on- and off-site ditches continued unabated for decades. Cleanup of creosote at the site required removal of impacted soil, drainage of water through treatment trenches containing coke as an adsorbent media, construction of two barrier trenches to separate creosote from water and planting trees to serve as an additional buffer and barrier between the site’s “mud track,” where treated woods dripped on soil and clay, and the main surface water drainage feature, the South Ditch.

Cleanup of the off-site ditch and stream sediments included first negotiating access agreements with multiple corporate and private property owners. An aggressive removal of impacted sediments was performed over 3,365 feet of streams and ditches.

To remove sediment and restore the stream, sections of stream were isolated and water diverted. The exposed stream bed was excavated and backfilled, restoring the bottom and adjacent banks. A wetland was constructed in the section farthest downstream of the on-site drainage for mitigation purposes.

In one off-site stream section adjacent to a steep embankment of a rail line, removal of sediments had to be limited for the stability of the embankment and because of the site’s proximity to buried utilities. A 625-foot low permeability geosynthetic clay liner was installed.

Completion of cleanup activities has achieved the remediation goals set out in the hazardous waste permit. The Guthrie stream flowing through rural Guthrie will remain clean, and potential migration of dissolved constituents in groundwater from the site is prevented.

One of Kentucky's worst environmental accidents of recent years, the rupture of a crude oil pipeline on a bank of the Kentucky River in Owen County, first announced itself through technology.

Technicians monitoring the pipeline owned by Mid-Valley Pipeline Co., of Tulsa, Okla., noted a sudden drop in pressure in a segment of line that crossed beneath the river. A weakened section of 22-inch pipe had given way about 50 feet from the water's edge at 1 a.m. on Wednesday, Jan. 26.

Valves on either side of the river were quickly shut by remote control, but considerable environmental damage had been done. Eighty-three thousand gallons of crude oil gushed free, producing a slick that fouled miles of waterway and river banks.

Before it was over, more than a dozen state and federal agencies had responded, in addition to local emergency personnel. The pipeline company, a subsidiary of Sunoco, brought in a small army of contractors for cleanup and recovery.

The slick began at the accident site near the Owen County community of Perry Park and streamed northward to Lock and Dam 1 outside Carrollton, about four miles from the Kentucky's confluence with the Ohio River.

For days, spilled oil was contained behind flexible, pipe-like booms that stretched from bank to bank. However, heavy river debris of trash and tree limbs, coupled with a rapid change in water level, eventually caused the booms to be breached. Oil flowed past Lock and Dam 1 and into the Ohio River. The oil soon reached the intakes of Louisville Water Co., where workers countered with activated carbon.

No deaths or serious injuries resulted from the spill. But because it came on the heels of an explosion of a natural gas pipeline beneath a subdivision in Floyd County, the accident heightened concerns about the network of interstate pipelines crisscrossing Kentucky.

Governor Ernie Fletcher, who inspected the spill area by helicopter on the first day of the emergency response, called for an assessment of pipeline safety and security. The Southern States Energy Board, of which the governor is chairman,

has its own initiative—the Partnership for Pipeline Safety—in conjunction with the U.S. Department of Transportation and the National Association of State Fire Marshals.

The Kentucky Department of Environmental Protection issued a Notice of Violation against Mid-Valley Pipeline Co. on Feb. 2.

The department, part of the Environmental and Public Protection Cabinet (EPPC), provided personnel from three of its agencies—the Division of Water, Division of Waste Management and Division for Air Quality—as part of the

cabinet's Emergency Response Team. Personnel from the state fire marshal's office and Public Service Commission, two other EPPC agencies, also were involved. Other state agencies involved were Kentucky Emergency Management, Kentucky State Police and the Department of Fish and Wildlife Resources.

On the federal side, the Environmental Protection Agency had general oversight of the cleanup operation and provided an "on-scene coordinator." The federal Office of Pipeline Safety, U.S. Fish and Wildlife Service and Coast Guard were also involved. ❖

Oil spill one of worst in state's history

By Chuck Wolfe
Office of Communications and Public Outreach



Faintly visible, a yellow boom stretches across the Kentucky River trying to hold back the oil. However, the boom was breached and oil flowed northward past the Lock and Dam 1 outside of Carrollton. Aerial photo provided by J. Hamon

A bit of history

The Mid-Valley Pipeline accident nearly coincided with the anniversary of the worst oil disaster in Kentucky history—the rupture of a Marathon Ashland pipeline near Winchester.

The accident, which happened on Jan. 27, 2000, sent 489,000 gallons of crude oil gushing onto a golf course and into a small stream, Two Mile Creek.

Survey: Kentuckians have much to learn about the environment

By Kate Shanks
Office of Communications and Public Outreach

In 1999 the University of Kentucky Survey Research Center and the Kentucky Environmental Education Council (KEEC) conducted a survey of Kentuckians' environmental knowledge, attitudes and behavior. A second version of the survey revealed that the knowledge, attitudes and behaviors had not changed dramatically in five years and remained consistent with national averages. Despite the expected outcome of the survey, there were several conclusions made that should be of interest to people concerned about the environment.



respondents correctly identified coal-burning power plants. Forty-eight percent thought most electricity was either hydro power or nuclear.


Fifty-five percent correctly identified solar energy and trees as renewable resources. Forty-one percent incorrectly identified coal, iron and oil as renewables.

As part of an attempt to plug the knowledge gap, the Comprehensive Commonwealth Water Education Project will be launched this summer. It is a multiagency program funded in part by a grant to the University of Louisville from the U.S. Environmental Protection Agency under a section of the Clean Water Act through the Kentucky Division of Water.

The objective is to teach people about nonpoint source pollution—otherwise known as runoff. The program will begin with a documentary by Kentucky Educational Television. It will include workshops for local officials and teachers, electronic field trips and media campaigns.

Elsewhere, the Kentucky NEED project—National Energy Education Development—and ENERGY STAR campaign provide education and promote awareness about energy and related issues.

The 2004 survey indicated a correlation between education and environmental knowledge but no appreciable difference in attitude or behavior. Survey participants also were questioned on such topics as biodiversity, watersheds, wetlands and air pollution. Survey results provide a snapshot of Kentuckians' environmental knowledge and willingness to make decisions favorable to the environment.

For more information about the survey, contact the Kentucky Environmental Education Council at (502) 564-5937 or visit the Web site at www.state.ky.us/agencies/envred/ 

Results of the survey

Kentuckians asked to cite the state's No. 1 environmental problem most often say water pollution, but fewer than one in five knows what causes it. Most Kentuckians don't know that the nation's electricity is produced mainly by burning coal. About two in five think coal is a renewable resource.

Those are among the more eye-opening findings of two surveys conducted jointly by the University of Kentucky Survey Re-

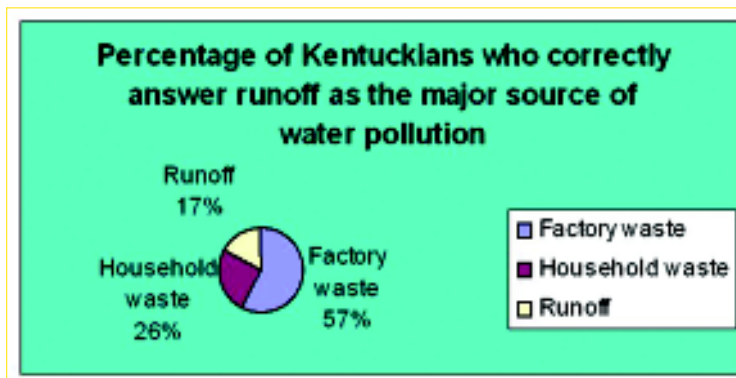
search Center and the Kentucky Environmental Education Council. The survey was first conducted in 1999. It was conducted again in 2004. The conclusion—even after five years, Kentuckians have much to learn about their environment.

But then, so does everyone else. The Kentucky results were consistent with national averages—as was another curious tidbit: Kentucky women tend to be more concerned—but less knowledgeable—than men about the environment.

There are various theories but no conclusive explanation for the gender gap.

Nor is finding an answer of paramount importance, said Jane Eller, executive director of the Kentucky Environmental Education Council.

“What matters here is that you take the population that is more concerned and



make them more environmentally literate,” Eller said.

Both surveys indicate that educators have their work cut out. For example, the primary cause of water pollution is runoff from pavement, fields and lawns—a fact correctly identified by 17 percent of 669 survey respondents last year. Over half thought the cause was factory waste. About a fourth said it came from household waste.

The survey also asked people to identify the major source of electricity in the United States. A bit fewer than half the

Woodland owners course gears up for second year

By Billy Thomas
Division of Forestry



Last year's attendees of the Woodland Owners Short Course learned many factors that go into determining the value of a log, including species, diameter, length, quality and market demands. Photo by Dylan Dillaway, University of Kentucky

Kentucky's natural resources are among the state's greatest assets. One of the more widespread natural resources is the 11.9 million acres of forests that cover nearly half of the Commonwealth.

In Kentucky, nearly 90 percent of forestland is privately owned.

Forests contribute to the economy, provide habitat for wildlife and plants, provide recreational opportunities, and help protect water quality and quantity.

The Kentucky Division of Forestry, University of Kentucky Department of Forestry Cooperative Extension Service and the Kentucky Woodland Owners Association are once again conducting the Woodland Owners Short Course to help landowners gain the information they need to manage their woodlands in a sustainable manner.

A wide range of management options are available to woodland owners in Kentucky, including generating income from timber and forest crops, recreational use, scenic beauty and

wildlife management. Regardless of the management objective, basic information about forest management helps ensure the future sustainability of Kentucky's woodlands.

Woodland Owners Short Course attendees will learn practical forestry management principles and techniques that can be applied to their woodlands.

Experts from around the state will provide the most up-to-date information on woodland management. Woodland owners will have the opportunity to meet and learn from other woodland owners from across the state.

The Woodland Owners Short Course will take place during four separate days. A variety of topics will be addressed relevant to woodland management. Topics will include exotics and invasive species identification and control, small woodland management, bottomland hardwood management and alternative logging systems and marketing. The final day will include a small graduation ceremony with a presentation of a

certificate of participation to those landowners that attend at least three of the four field days.

This is the second year of the Woodland Owners Short Course. The majority of participants, totaling 105, who attended last year's course indicated they gained valuable information and would apply it to their property. Their feedback helped guide this year's topic selections.

The cost of the entire short course program is \$50. Individual sessions are available for \$15 each.

Registration is required and each day will begin at 9 a.m. and end at 4 p.m. Lunch will be provided. A brochure with full details and registration information will be available in April.

Visit the Division of Forestry's Web site at www.forestry.ky.gov to download the brochure and registration form, or contact Billy Thomas, forest landowner education coordinator at (800) 866-0555, or Dylan Dillaway, extension associate with the University of Kentucky Cooperative Extension Service at (859) 257-9153.



2005 Woodland Owners Short Course schedule

Exotic and Invasive Species Identification and Control

- Date: June 9, 2005
- Location: Henry County

Small Woodlands Management

- Date: July 14, 2005
- Location: Woodford County

Bottomland Hardwood Management

- Date: Aug. 11, 2005
- Location: Pennyryle State Forest

Alternative Logging Systems and Marketing

- Date: Sept. 8, 2005
- Location: Fleming County

Students learn about farming

By Shanna A. Drake
Division of Conservation



Conservation districts have been sponsoring educational field days for students for years. Field day programs deal with agriculture, safety and the environment and are held at farms, parks and other locations away from the school environment.

Last year, approximately 400 students, teachers, administrators and other volunteers participated in the eighth annual Youth Ag Days at Luttrell Farms in Ohio County. Darren Luttrell, chairman of the Ohio County Conservation

District Board of Supervisors, began the program with his family in 1997, and they have hosted it each year.

Youth Ag Days bring approximately 350 fourth-grade students from six public elementary schools to Luttrell Farms each year. Students arrive at the farm around 9 a.m., spend the day visiting agriculture education-oriented stations and gain knowledge about farm life that they may not get anywhere else.

"I come from an agricultural background, as well as work for the Ohio County Conservation District. Youth Ag Days is an excellent source of education for kids," said Jackie Westerfield. "There are so many children who do not realize the importance of agriculture and that farmers feed us. This event opens a lot of

2005 Youth Ag Days

This year's Youth Ag Days will be held again in September at Luttrell Farms. If you would like to participate in this event, call the Kentucky Division of Conservation at (502) 564-3080.

LEFT: Youth Ag Days participants used hayrides to get from one agricultural station to another on the Luttrell Farms.

BELOW: Jackie Westerfield and Brad Haney, both from the Ohio County Conservation District, present an erosion control demonstration using a variety of soils, crop residue and grasses.
Division of Conservation photos



doors for kids who wouldn't normally get to see this kind of day-to-day activity."

Demonstrations include proper land use and erosion control by the Ohio County Conservation District, primary sponsor of the event, and the Natural Resource Conservation Service. There also is a demonstration of lawn mower safety from the Farm Service Agency; and a forestry presentation from the Kentucky Division of Forestry.

The erosion control demonstration gives the

students a chance to see the benefits of sowing grasses and maintaining land to prevent soil erosion.

Other stations include entomology, a petting zoo and a station with \$1 million worth of equipment for students to view.

Luttrell hopes that Youth Ag Days will allow the students to gain "a greater appreciation of the agriculture community—from farming to food on the table."

This is just one of the conservation district's ongoing agriculture and conservation awareness programs available to schools. For more information on Youth Ag Days, contact Martin Bess, Division of Conservation, at (502) 564-3080 or e-mail Martin.Bess@ky.gov.



This Earth Day, make protecting the environment your personal responsibility

By Kate Shanks
Office of Communications and Public Outreach

Every year on April 22 people across the world celebrate Earth Day. It is a time not only for celebrating accomplishments but also for looking forward to opportunities that exist to work together to protect the environment.

Last year, the Environmental and Public Protection Cabinet spearheaded a statewide Earth Day campaign by involving state agencies, organizations, schools and private businesses in opportunities to celebrate and protect the environment.

This effort continues in 2005, as Kentuckians are encouraged to understand their personal responsibility to protect the environment and also to learn how they can better manage solid waste through recycling.

To learn more about protecting the environment in your home, backyard, community, business and on the farm this Earth Day and every day, visit the Environmental and Public Protection Cabinet's Earth Day Web site at www.environment.ky.gov/earthday

Look for Earth Day 2005 highlights in the summer issue of *Land, Air & Water*.



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