

Oklahoma facilities can have permit conditions that require them periodically to monitor and report their combustion emissions. Monitoring requirements are meant to verify that the permitted facility is complying with its emission limits. The requirements have existed for years, but until 2003, the Air Quality Division (AQD) could only monitor compliance by reviewing each facility's self-monitoring results. In 2003, the division was able to purchase a portable combustion monitor and train staff in its use. This marked the beginning of the on-site combustion emission monitoring program.

Nitrogen oxides (NOx) and carbon monoxide (CO) are the combustion pollutants of concern for public health. Portable combustion analyzer results are used exclusively for monitoring compliance with these emission limits, and not for any other purpose, especially emission inventories. The portable analyzers are used most of the time for monitoring engine emissions, and they are commonly referred to as portable *engine* analyzers, or PEAs.

The first major step in establishing Oklahoma's PEA program has been to standardize the methodology. In 2003, the division devel-

oped a Portable Engine Analyzer Monitoring Protocol. Facilities may also request approval for an Alternate Monitoring Protocol that may be granted if the alternative meets minimum monitoring requirements. A representative number of facilities are selected annually for on-

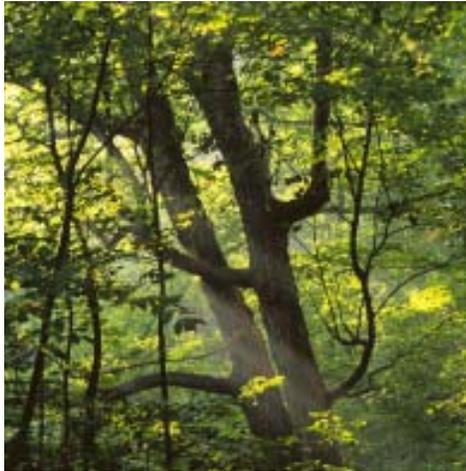
site PEA monitoring. Each facility has the option of performing simultaneous monitoring while AQD inspectors are working on-site.

The PEA program has discovered instances of emissions above allowable limits, and these were addressed through enforcement.

However, most recent on-site monitoring has determined that facilities are complying with their permitted limits. This growing increase in compliance indicates that the PEA program is proving useful in helping to reduce NOx and CO emissions. ■



Kyle Jantzen and Kevin Carter, Air Quality Inspectors, conduct an unannounced emissions test at a natural gas compressor station.



Land Protection

Land Protection Introduction

Land Protection programs are aimed at reducing and safely managing human-generated waste, both in commerce and at home. The division regulates disposal of solid waste, non-hazardous industrial wastes, discarded tires, hazardous wastes, biomedical wastes and certain radiation sources. It also assists with household and commercial recycling programs and provides environmental education. The division specializes in cleanup and reuse of historical industrial properties that have been contaminated, ensuring that they can safely be reused. When formerly contaminated sites are reclaimed, not only is a public health and safety hazard eliminated, but as new development replaces old, fewer farm and wilderness lands are lost to the bulldozer. Protecting and reclaiming land from improper waste disposal safeguards surface water, ground water and air from pollutants. DEQ's Land Protection programs strengthen the natural environment, protect the state's ecosystems and ensure that Oklahoma lands remain viable and productive for future generations. For more information about the Land Protection Division, go to www.deq.state.ok.us/LPDnew/index.htm. ■



Wildflowers in the Wichita Mountain Wildlife Refuge, Quanah Lake Area.



Snow covers a pine tree at the Oklahoma City National Memorial.



Wichita Mountain Wildlife Refuge, Quannah Lake Area.



Elk Mountain area of the Wichita Mountain Wildlife Refuge.



Cimarron River in rural Payne County.

Tar Creek: The Oklahoma Plan



Abandoned mine shaft.

Ottawa County community leaders are anticipating the unfolding of myriad reclamation projects that promise a healthier place to live. The community looks forward to new economic development potential, once

the contamination and blight of abandoned mine lands have been replaced with safe, reusable real estate. The contaminated land is the legacy of the county's former economic base, zinc and lead mining.

The county bears the dubious distinction of having the largest Superfund site in Oklahoma. The EPA Superfund bureaucracy, while useful, often moves at a slow pace. DEQ leaders, working with Senator Jim Inhofe's Committee on the Environment and Public Works and representatives from the University of Oklahoma, the Quapaw tribe and the Governor's Office, teamed up to help solve the problems at Tar Creek. Hoping to accomplish as much of the cleanup as possible, they developed the *Oklahoma Plan for Tar Creek*. The plan was funded by federal appropriations. DEQ is collaborating with other state agencies and the University of Oklahoma, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the Natural Resources Conservation Service and the U.S. Department of Housing and Urban Development to clear the way for Ottawa County to begin redevelopment.

To date, much of the mine waste and hazards remains. But residents of Commerce, Cardin, Quapaw and Picher can see the future in demonstration projects that have cleaned up acres of public and private land and closed gaping mine shaft openings.

One project involves locating old mine maps and developing a detailed assessment of the undermining in the Tar Creek Mining District. Another project is paving gravel roads built from chat, the crushed rock that was left on the ground after lead cadmium and zinc-bearing ore were removed. The road paving project reduces the potential for the population to be exposed to lead dust and the amount of contamination in stormwater runoff. Progress is being made and signs of hope are returning to the area.

The state is still waiting for a final Superfund Record of Deci-

continued

sion to be signed to deal with large piles of the mine waste on-site, which will eliminate another source of lead.

Much remains to be done and the most intractable problems linger, but there are signs of hope. Coordinating resources and expertise, the various state and federal agencies and the Ottawa County communities were able to accomplish far more than could have been done if each had stayed within the narrow confines of its jurisdiction. ■



Experimental procedure to examine injecting chat into mine shafts.



Investigation of the chat that remains from years of mining.

Tar Creek: Baseline Data Established



DEQ personnel processing water quality samples for metals.

DEQ, in cooperation with the U.S. Geological Survey (USGS) and the Seneca-Cayuga Tribe, completed the first year of low- and high-flow water quality and

sediment sample collections from Tar Creek, Spring River and Neosho River in Northeast Oklahoma in 2004. The collection of data is a monumental step toward estab-

lishing a baseline for measuring metals entering Tar Creek and the Spring and Neosho Rivers. These data help to characterize water and sediment quality and to

evaluate movement of total and dissolved metals in the water bodies, all of which flow into Grand Lake O' the Cherokees.

A continuation of data collection began in early 2005. Information from the second collection will be combined with data from samples collected in 2004 to determine the movement of metals and sediment. DEQ staff also completed bioassay collections in 2004. Biomonitoring helps determine the health of organisms living in the creek and rivers.

Trends are beginning to appear. Sites of particular concern along Tar Creek, like Douthat Bridge and Highway 69, are showing lead and zinc loading values higher than at other sites along Tar Creek. The data also show that iron is precipitating out of Tar Creek, particularly between Veterans Boulevard and Central Street in Miami. In addition to the water quality and sediment data, USGS collected 14 sediment cores using a Geoprobe in the Tar Creek floodplain where Tar Creek intersects the 22nd Street Bridge in Miami, Oklahoma. All core samples

continued

had detectable concentrations of aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, nickel and zinc.

Once completed, this project will help focus cleanup efforts on specific areas with the highest levels of metals. It will also help determine how much of the metals contribution is from Tar Creek in Oklahoma and how much is from upstream states. Using baseline data generated from this study and working with other agencies and neighboring states, we can reduce the metals loading and improve the quality of the water that is entering Grand Lake O' the Cherokees. ■



DEQ personnel collecting water samples on Tar Creek.

Tar Creek: GIS Application Supports Restoration

In support of restoration activities at the Tar Creek Superfund site, DEQ recently developed a Web-based Geographic Information System (GIS) computer application, the Tar Creek Data Viewer. The new application supports collaborative efforts among state, federal, tribal and

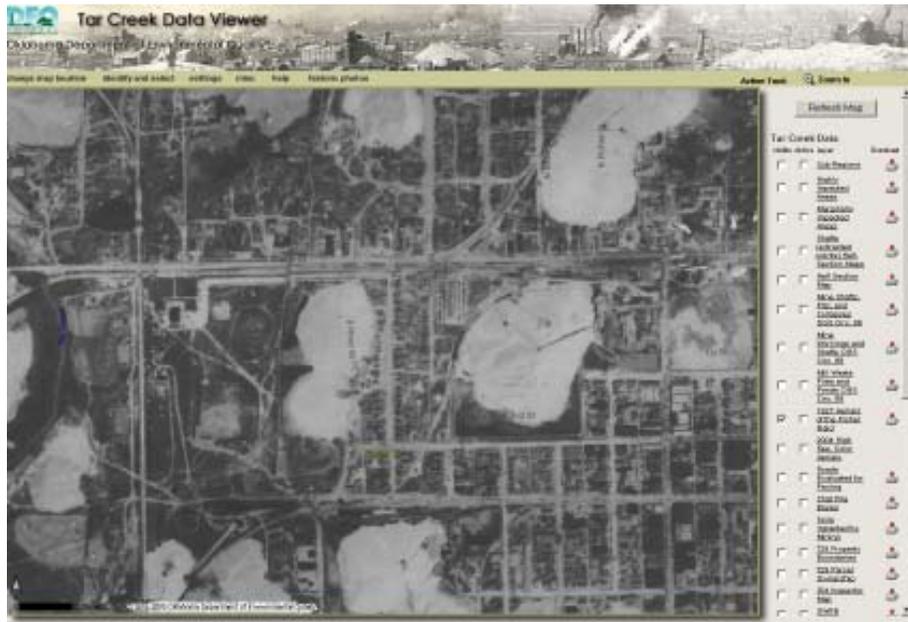
private organizations working on various remediation, restoration and evaluation projects related to the Tar Creek reclamation.

The Data Viewer provides users with access to Tar Creek data, allowing them to select, manipulate and download data specific to par-

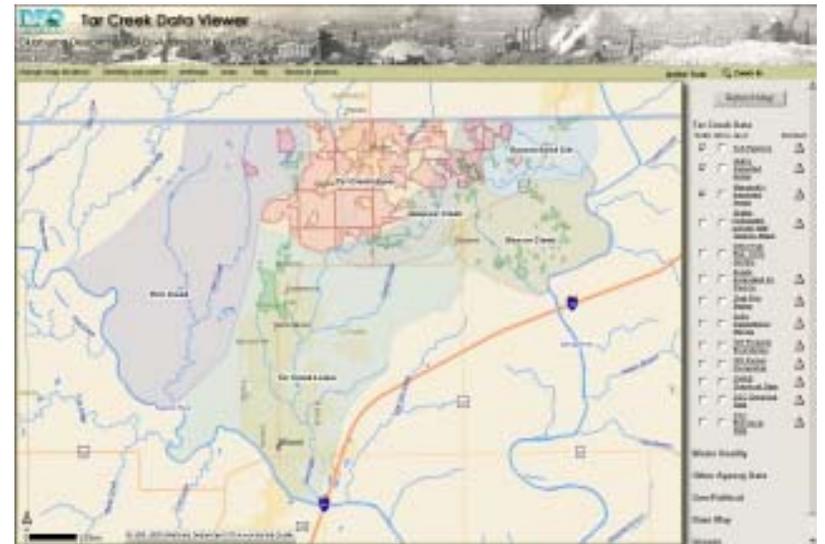
ticular projects. The wealth of information available in the database ranges from historical mine maps to aerial photography spanning 77 years (1927 to 2004). The new application helps identify areas beneath mines that are most susceptible to collapse and changes the way

project partners find and view the information that guides their remediation projects. The Viewer is a valuable tool for the groups working to address the environmental effects of historical mining activities in the Tar Creek area. ■

Photos on the right



City of Picher in 1927.



Tar Creek Data Viewer shows areas that have been highly and moderately affected by historic mining activities.



City of Picher in 2004.



Tar Creek: DEQ Monitors Toxic Metal Levels in Oklahoma Fish

The DEQ Toxics and Reservoirs Program monitors and reports on the level of toxic metals and pesticides in fish taken from Oklahoma waters for consumption. The department is seeking funds to pursue recommendations presented in last year's report, *Fish Tissue Metals Analysis in the Tri-State Min-*

ing Area (Tar Creek). Among other things, the report recommends that people, especially children, restrict consumption of fish caught in the Tri-State Mining Area. The results of that study still need to be verified and monitoring could be extended downstream into Grand Lake to further

protect public health.

Last January, DEQ issued a statewide advisory recommending that women who might become pregnant and children restrict consumption of predator fish taken from Oklahoma waters to one meal a week. The agency is investigating the possibility of low-

DEQ's Brain Maggott collects fish samples from Skeleton Creek.

ering the threshold for issuing such consumption advice, to match national norms.

The State Environmental Laboratory is acquiring a new technology that soon will permit faster, less costly analysis of mercury levels in fish samples. The Toxics and Reservoirs Program will continue to sample fish from approximately 10 to 15 lakes and streams each year and report to the public on the safety of this food source. ■

DEQ and ITRC: A Partnership for Success



Beautiful wildflowers grow near I-35 in Oklahoma City.



DEQ is a participating member of the Interstate Technology and Regulatory Council (ITRC), joining forces with other states, federal agencies, and industry and citizen stakeholders to speed up the agency's approval of the use of innovative technologies for environmental compliance. For example, when consultants for Vance Air Force Base recently proposed using phytoremediation on petroleum-contaminated soils,

DEQ was able quickly to assess the appropriateness of the new technology by consulting an ITRC publication, the *Phytotechnology Technical and Regulatory Guidance Document*. Based on reliable data, DEQ found Vance's remediation work plan both environmentally protective and cost-effective, and approved the project.

To familiarize member agencies with its resources, ITRC hosts

on-site, no-cost training on relevant technical matters. It also offers distance training via live internet audiocasts, supplementing the courses with training materials. ITRC membership has expanded DEQ's ability to provide technical assistance. When interest in alternative landfill cover requirements emerged within Oklahoma, DEQ saw the need for a guidance document. The topic was timely, and the agency was able to join

an ITRC Landfill Covers team. Oklahoma contributed to the resulting document, *Technical and Regulatory Guidance for Design, Installation, and Monitoring of Alternative Final Landfill Covers*, saving more than \$63,000 in staff time by not having to publish the resource independently. In this and numerous other ways, the collaboration and sharing of technical expertise through ITRC is saving Oklahomans time and money. ■

DEQ Criminal Investigations Lead to Indictments

When egregious violations of environmental laws exceeded the scope of administrative enforcement in the mid-1990s, DEQ responded by forming a criminal investigation unit. Nearly a decade later, tracking environmental criminal offenders now keeps two full-time criminal investigators busy. In fiscal year 2005, 24 preliminary investigations resulted in four new

cases. Sixteen cases remain open from the previous year.

According to Senior Criminal Investigator Michael Freeman, his unit worked on fewer cases in 2005 than in any prior year, but the individual cases were more complicated than in the past. A major case involved bridge painters, contracted by the Oklahoma Department of Transportation



Cimarron River bridge.



Sand-blasted lead dust contamination in the Cimarron River.

(ODOT), who allegedly were engaged in illegal transportation and disposal of lead-laden paint waste. According to Freeman, the unit first received information about the violations from a former employee in 2001. With assistance from ODOT and EPA, DEQ led a criminal investigation that eventually involved nine different sites

spanning six Oklahoma counties. Freeman said that the investigation sparked allegations against a second bridge painter, resulting in federal indictments against that company. DEQ is supporting the ongoing federal case. Investigators conducted surveillance and interviewed witnesses; eventually, with a search warrant, they seized



Crew cleaning up contamination from Cimarron River bridge.



Securing the area around abandoned drums in Oklahoma City.

33 boxes of evidence. Their effort led to 42 felony counts in four counties against three individuals and the corporation. Trials are pending.

Due to the scope of the paint-dumping investigation, the unit sought help from DEQ's hazardous waste inspection team. In 2004, seven bridge-painting companies were inspected in 12 counties. As a result, DEQ issued one Administrative Compliance Order and two emergency spill responses; all companies involved have cleaned up their work sites. Also in 2004, criminal investigators and hazardous waste inspectors offered training on bridge painting and lead paint removal violations to the Association of County Commissioners and ODOT inspectors to support future compliance. The training identified common illegal waste disposal practices and outlined the responsibilities of county commissioners and ODOT inspectors under the Resource Conservation and Recovery Act (RCRA). Incidents of improper waste management related to lead paint removal are far fewer now, thanks to the combined strategies of the DEQ inspection and criminal teams.

A second case illustrates the seriousness of the risks posed by ille-

gal dumping. In 2004, DEQ received a complaint that several drums had been left at 8th Street and Meridian Avenue in Oklahoma City. DEQ criminal investigators and hazardous waste inspectors were directed to assess and abate the public risk. They found ten 55-gallon drums leaking at the site. The area was secured and a sample of the contaminated soil was collected. As he was working, an inspector noted with alarm that his stainless steel sampling equipment had begun to dissolve. Analysis showed that the substance in the soil had a pH of 0, a very strong level for an acid. The investigators used extreme caution while pulling further samples and evidence from each drum for the State Environmental Laboratory.

According to Dennis Williams, DEQ Criminal Investigator, however, little evidence could be found and they were unable to identify suspects. "Investigators had an idea of what the substance was and the type of industry that would generate this waste, but after a week of searching, the trail of evidence didn't point to any one individual or company," Williams said. But giving up the investigation at that point would shift the burden of cleanup

continued



Sample spoon dissolving from soil contaminated by a substance leaking from abandoned drums.

to taxpayers.

“We decided to contact Crimestoppers and issue a press release.”

The strategy paid off. Three television network affiliates broadcast footage from the scene. The following day, a witness came forward and DEQ investigators were able to identify four suspects. They discovered a second illegal dump in Grady County and gathered additional evidence. Then on April 16, 2004, DEQ investigators ar-

rested three individuals on felony warrants for unlawful transportation and disposal of hazardous waste. A fourth suspect was apprehended in June. All four pled guilty to two felony counts of illegal disposal of hazardous waste in two counties.

“It was a textbook case,” Williams said. “Thanks to the help of the public and a lot of tenacity and hard work on the part of DEQ, we were able to identify the criminals and get them to clean up their mess.” ■



Inspector Jonathan King training county commissioners on hazardous waste management of lead.



Inspector Jonathan King sampling abandoned drums on Meridian Avenue in Oklahoma City.

Waste Tire Fee: Why Do I Pay It and Where Does It Go?

Waste tires are a significant environmental threat. They hold water and provide breeding grounds for mosquitoes that carry the West Nile virus. Waste tires cannot be buried because they keep “floating” to the surface. When tire dumps burn, they give off toxic fumes in the heavy, black smoke. The Oklahoma Waste Tire Program was created to address the disposal problems. It is designed to reduce, reuse and recycle waste tires by offering financial incentives to businesses that properly handle and use them. To finance the program, consumers pay a nominal fee into the Waste Tire Indemnity Fund when first registering a vehicle or purchasing new tires. The fees are submitted to the Oklahoma Tax Commission, which then pays waste-tire processor claims.

- *Tire Dealer Pick Up.* State-permitted processors contract with transporters to collect waste tires from dealers and deliver them to

the processor’s place of business.

- *Manifests.* A waste-tire manifest tracks the tire from the dealer or generator to the processor who recycles it. “Cradle-to-grave” tracking helps prevent illegal dumping.



Luke Vanraper, J & K Trucking, and Ryan Woodard, T & W Tires in Oklahoma City, sign the Waste Tire Tracking Manifest.



- *Processors.* Four D (Duncan), Able Tire Company (Ada), Frontier Recycling (Tulsa) and Bristow Rubber Recycling (Bristow) are Oklahoma’s waste-tire processors. DEQ issues waste-tire processing permits. The tax commission pays processors for transporting and processing waste tires from the Waste Tire Indemnity Fund.
- *Products: Shred and Tire-Derived Fuel (TDF).* Oklahoma processors convert waste tires into chips and tire-derived fuel. Tire chips are used for feed for crumb rubber, septic drain fields and kiln fuel. Crumb rubber products include asphalt feed, artificial turf, garden mulch and “pour and play” rubber, a cover for playgrounds that creates a safe play area for children.

Whole tires can go straight from the trailer to the cement kiln with little processing. Holcim (formerly Holnam of Ada), Lafarge (Tulsa) and Buzziunicem (formerly Lonsestar of Pryor) cement kilns all burn whole tires. Tires arrive at the kilns in trailers, then are transported up conveyors and are dumped by an automated belt into a feeding system. Finally, they are dropped into a rotating kiln.

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A pile of rubber chips located at Bristow Rubber Recycling.

Left, Luke Vanraper, J & K Trucking, loads tires to transport to processor Four D in Duncan, OK.



Whole tires for TDF.



Crumb rubber used as playground fill for safety.



Feeding system hooks tires and transports to rotating kiln at Holcim.



Crumb rubber after processing at Four D in Duncan, OK. Johnny Monson shows how fine a crumb the process produces.



Tipper dumping tires onto the conveyor system at Holcim Cement Kiln.



Tires are dropped into the rotating kiln.



Bagging machine used to package crumb rubber mulch for garden use.



Conveyor belt taking tires from tipper to kiln feeding system.

Oklahoma City and Edmond residents to turn in 1,570 waste tires. (For more information, go to www.deq.state.ok.us/LPDnew/education/CommunityCollection.htm)

- **Tire Dumps.** Many tire dumps in Oklahoma are more than 20 years old, dating back to a time when tires were not subject to disposal laws. The old tires are often buried, making accurate estimates of their numbers nearly impossible. The illegal dumps strain program funds and create health and environmental hazards. Stagnant water collects in tires, creating an ideal breeding habitat for mosquitoes and complicating prevention of West Nile Virus. Also, fires occur in tire dumps; a single burning tire may produce up to two gallons of oil and leave behind metal debris. Rather than dumping tires illegally, tire owners can leave their used tires with dealers when purchasing new ones or take advantage of community cleanups.

- **Community-Wide Cleanup Events.** When a local community organizes a cleanup event, tires are often on the list of acceptable wastes. Citizens help avoid illegal tire dumps by bringing waste tires to collection centers for proper disposal. Oklahoma City Solid Waste Department held a cleanup on April 9, 2005. The event inspired 174



Oklahoma City Solid Waste Department employees collecting tires at the Community Cleanup event on April 9, 2005.



Oklahoma City tire fire.



Tiger-Mosquito

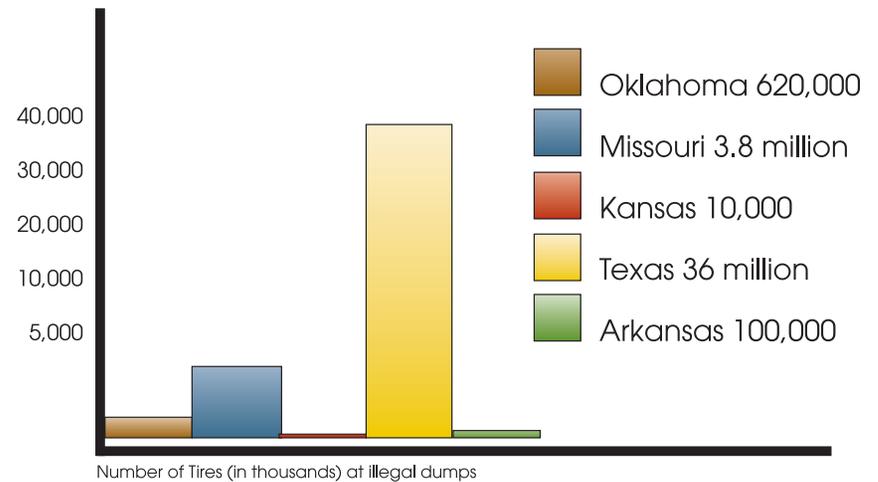


Illegal tire dump.

- Oklahoma's Standing in Comparison with Other States.* Approximately 620,000 tires are illegally dumped throughout the state. Eighty percent of the dumpsites contain fewer than 10,000 tires. Three percent contain between 10,000 and 50,000 tires; only 15 percent contain more than 50,000. Compared with other states, Oklahoma has fewer than average tires in illegal dump sites.

New state legislation affecting the funds available for waste-tire cleanup has been enacted. The fiscal 2006 goal is to remove and recycle another 62,000 or 10 percent of the remaining illegally dumped tires. That goal is conservative. With more funding, community awareness and involvement, a more aggressive goal would be within reach. Meanwhile, public awareness and use of safe and legal tire disposal options can keep the problem from spreading. ■

Illegal Tire Dumps



Leaves begin to show their bright fall colors for the approaching season in Oklahoma.

Waste Tire Recycling Act Passed

Changes are occurring in the tire program. The Waste Tire Recycling Act (House Bill 1606) became law on May 27, 2005, and became effective on July 1, 2005. The following is a summary of its provisions.

- Each year, the amount in the Waste Tire Recycling Indemnity Fund will first be allocated to defray program costs at these rates: 4.5 percent to the Oklahoma Tax Commission (OTC) for collecting and disbursing funds; 3.5 percent to DEQ for administering the Act; and \$50,000 per program audit to the State Auditor and Inspector.
- Up to 10 percent of the Fund may be used to reimburse waste-tire facilities and Tire Derived Fuel (TDF) facilities for capital investments in equipment needed for processing waste tires at the rate of \$20 per ton (not to exceed actual cost).
- The balance of the Fund

can be used to compensate waste-tire facilities for processing waste tires at the rate of \$54 per ton of processed tire material, under the conditions set out in the law. The Fund can also be used to compensate waste tire facilities and TDF facilities at the rate of \$53 per ton of whole waste tires, for collecting and transporting waste tires from Oklahoma tire dealers, automotive dismantlers and parts recyclers, solid waste landfill sites, and dumps that have been certified by DEQ for priority cleanup, when the tires are delivered to a waste-tire or TDF facility. Facilities may not charge dealers, dismantlers, recyclers or DEQ for collection and transportation, and they must collect from any location that has at least 300 waste tires. Compensation will be paid after the waste tires have been processed in accord with

the facility's solid waste permit or when they have been used for energy or fuel recovery. A TDF facility that collects and transports whole waste tires is eligible for compensation only for whole waste tires consumed by the facility.

- The Fund can be used to compensate a person, corporation or other legal entity that has obtained a permit or other authorization from the U.S. Army Corps of Engineers or a local Conservation District to provide services for erosion control projects. Compensation is at the rate of \$2.80 per tire for waste tires with a tire rim diameter greater than 17.5 inches, and \$0.80 per tire for tires having a rim diameter less than or equal to 17.5 inches. Applicants who install erosion control projects must meet the same collection and transportation requirements as other facilities. They will not

receive collection-and-transportation compensation; however, they are not restricted to truck tires in their collection requirements.

- The Fund may be used to compensate a unit of local or county government that submits a plan for the use of baled waste tires in an engineering project to DEQ at the rate of \$0.50 per tire.
- Any amount remaining in the Fund can be used to compensate TDF facilities and waste-tire facilities that produce crumb rubber, at the rate of \$29 per ton.
- After the above, any amount remaining in the Fund is to be disbursed as additional compensation to waste-tire facilities and TDF facilities for collecting and transporting waste tires from Oklahoma tire dealers, automotive dismantlers and parts recyclers, solid waste landfill sites and dumps certified by DEQ as a priority, and delivering them to a waste-tire

General Motors Fuels Oklahoma City Plant with Landfill Gas

or TDF facility. The OTC will apportion payments among qualified applicants according to the percentage of waste tires collected and transported.

- If the amount in the Fund is insufficient, the amounts paid to the above applicants will be prorated.
- A facility receiving compensation for collection and transportation must demonstrate annually that at least 5 percent of the tires come from tire dumps or landfills on the priority cleanup list or from community-wide cleanup events approved by DEQ.
- Applicants must demonstrate compliance with the provisions of the Act by filing applications, reports and other documentation required by OTC and DEQ.
- OTC must make periodic compliance inspections of tire dealers and motor license agents to ensure compliance with fee-payment requirements.
- OTC must make periodic inspections of applicants to ensure compliance with reimbursement requirements. The Playground Act was repealed. ■



A flare that treats methane gas not being used for energy.

DEQ has been a long-time advocate of practical uses for landfill methane. Now General Motors is opting to use methane as a low-cost fuel for its local assembly

plant. The generation source is the nearby Southeast Oklahoma City landfill that otherwise would have to dispose of the gas as a waste product. When household solid

waste breaks down in landfills, it creates methane or natural gas that, if unrecovered, can be a problematic air pollutant. Landfill

continued



Compressing landfill gas for pipeline transmission.

gas has a lower heating value than its petroleum-based counterpart. The gas is typically collected and treated, and then disposed of with a carefully designed flare system. However, further treatment can transform the waste product into a valuable energy resource. Compressing the gas allows it to be transported by pipe-

line to nearby industries. General Motors' assembly plant needed a low-cost source of energy and the plant was within pipeline reach of the Oklahoma City landfill. Need and location crossed paths to create an opportunity for productive use of energy produced by the decomposition of a major Oklahoma waste stream. ■



Pipeline transmission.



Sand Springs Petrochemical Complex Cleanup In Progress

Waste was discovered within the banks of the Arkansas River.

From 1900 through the early 1970s, a 225-acre petroleum refinery and solvent-recycling facility operated in Sand Springs. After the facility's closure, refinery waste remained at the site. This included several buried pits of petroleum

wastes and three large pits of acid sludge wastes. The area was in close proximity to the Arkansas River, and it became an EPA Superfund site. The initial Superfund cleanup concluded in 1995 with the excavation, treat-

ment and disposal of the wastes in a hazardous landfill constructed on-site. Atlantic Richfield, the company that last operated the refinery, performed and paid for the cleanup. Then during maintenance on the landfill, more waste

material was discovered outside the dike on the Arkansas River. Between October 2004 and February 2005, Atlantic Richfield removed approximately 17,583 tons of waste from the river bank. Poor weather conditions hampered

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their progress and about 9,100 tons still remain, with work scheduled to resume in September 2005. EPA and DEQ will review annual ground water data and review the site every five years, ensuring that the cleanup measures continue to be effective. ■



Remediation begins.

Hudson Oil Refining Company Superfund Site

The Hudson Oil Refining Company Superfund site is a 200-acre, abandoned crude oil refinery that was active for more than a half century, from 1922 to 1982. The site lies to the west of Cushing, Oklahoma, along State Highway 33. DEQ is conducting a Remedial Investigation and Feasibility Study. The study will determine the type and location of contamination and proposed cleanup options.

Soil core samples are collected for analysis.





Core is examined for potential contamination.

Environmental samples have been taken of soil, ground water, air and water, and from sediment from on-site ponds and Skull Creek. The samples were collected in summer and fall of 2004 and in March 2005. The Remedial Investi-

gation Report, due August 2005, will contain information from the sampling. The study is expected to be completed by January 2006. Site documents are on file at DEQ in Oklahoma City and at the Cushing Public Library. ■



A Geoprobe is used to examine the subsurface.

Fort Sill Ahead of the Cleanup Curve

When Fort Sill began its environmental cleanup project in 1987, the Army base wasn't expected to finish until at least 2014. This year, Fort Sill was able to declare the project

complete, nine years early and \$21.8 million under the projected cost. Base environmental officials credit their association with DEQ and especially with the Voluntary Cleanup Pro-

gram for contributing to their success. Innovative technologies such as the Site Characterization and Analysis Penetrometer System (SCAPS) that locates contaminants in

soil and ground water made the difference in the project time line and budget. The project was performed under a Defense and State Memorandum of Agreement. ■

Former Metal Plating Facility Cleaned Up

Heirs to an abandoned electroplating facility specializing in nickel and chrome plating could not afford to clean up hazardous waste left on the property, so DEQ requested assistance from the EPA Superfund Removal Program to assess and clean up the chemical wastes left on-site. DEQ, EPA and the City of Tulsa collaborated on the cleanup.

An investigation revealed that the south wall of the sandstone structure was permeated with hexavalent chromium. Before the agencies could determine the

Metallic crystals formed in the plating vats.



best way to clean up the property, the situation escalated into an emergency. A stolen pickup truck crashed through the front door of the building, undermining the structure. EPA mobilized an emergency response to remove the chemicals, demolish and properly dispose of the building, and test the soil under the foundation for contamination. The action was successful, and the site is now a clean, grass-covered city lot that can safely be reused for commercial development. ■



S&K Industries in Tulsa.



Demolishing the building.



Interior of building with drums of chemicals.



Stolen truck crashed into building.

Woods Tank Farm

Woods Tank Farm was an illegal storage and disposal facility for wastewater, used oil and chemicals. The owner operated an oil-recycling operation, as well as a shipping company. The Oklahoma City site contained 85 tanks and approximately 200 drums. Many of the tanks were used underground-storage tanks that have been put into service as above-ground storage tanks. The majority have no secondary containment to catch spills.

An unnamed creek borders the site to the west. The creek flows 0.2 mile before entering the Oklahoma River. DEQ and Oklahoma City have documented several chemical releases from the site and have received complaints about vapors originating there. A vagrant set a fire on the property in 2001. EPA subsequently installed a fence around the facility and the city tried to control access.

Also in 2001, EPA authorities enforcing the Resource Conservation and Recovery Act (RCRA) determined that the owner was ille-

gally storing hazardous materials. They issued an order to the owner to clean up the facility. The owner claimed insufficient funds, so a limited cleanup of solvents was performed under RCRA enforcement authority. However, wastes remained on the site and reportedly more wastes were added. In 2005, EPA with assistance from DEQ and Oklahoma City performed a Removal Action, removing all wastes from the site. ■



Underground-storage tanks lined up on the surface of the property.



Workers sample contents of tanks.

Duncan Refinery Voluntary Cleanup Site

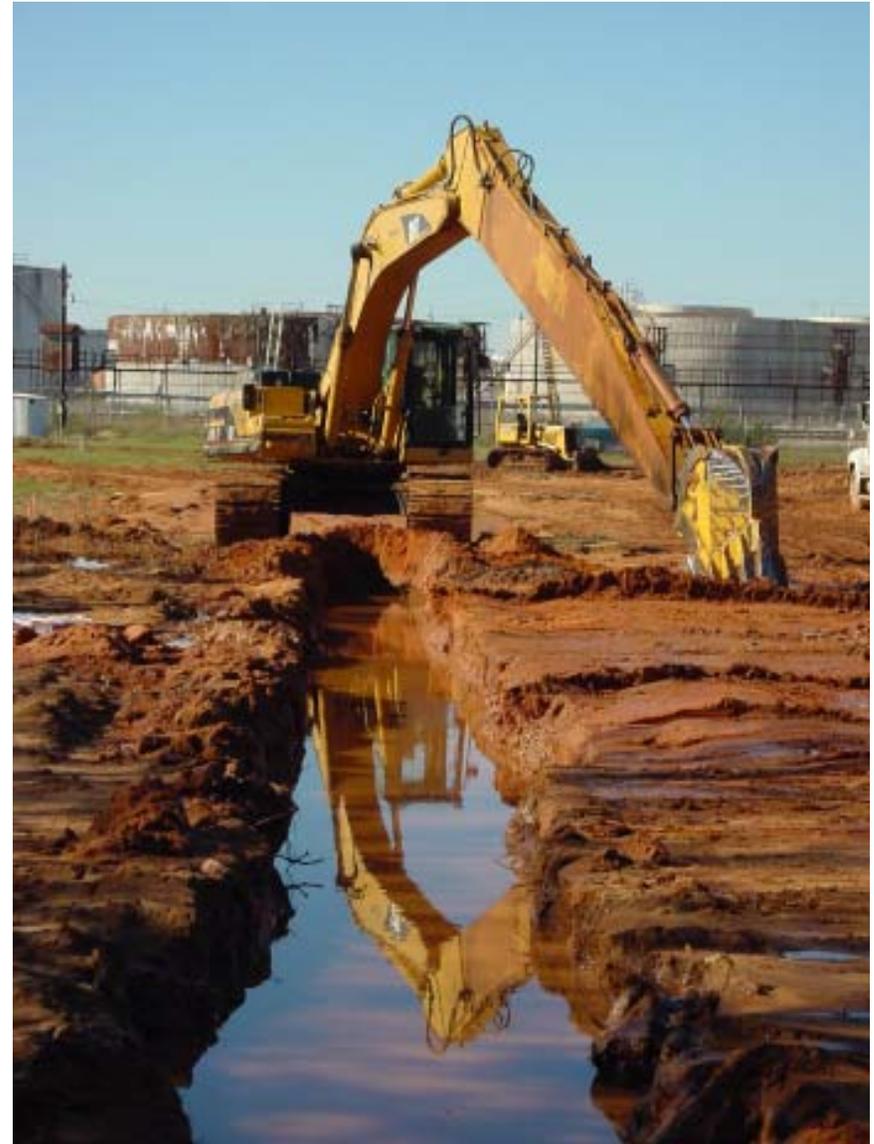
Duncan Refinery is a 400-acre, inactive oil refinery located in Stephens County, five miles south of Duncan, Oklahoma. In 2003, DEQ, Stephens County and ConocoPhillips entered into an agreement providing for the cleanup of the site for the county to use for future industrial develop-

ment. In accord with the agreement, in 2004, ConocoPhillips began construction on two interceptor trenches next to Claridy Creek to keep oil and phenol from seeping into the water. In February 2005, the company began refinery demolition activities.

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Duncan Refinery.



Construction of interceptor trench.



Investigation of the hydrogen fluoride tanks.

ConocoPhillips will be performing asbestos abatement, then will empty and remove any remaining tanks, process vessels and pipes. Once demolition is completed, ConocoPhillips will perform a site-wide environmental investigation to determine the extent of any additional environmental impacts. After the environmental issues have been addressed, the county plans to market the site for redevelopment. ■



Filter drums used to capture hydrogen fluoride vapors.



Asbestos abatement of the transite roof of a maintenance building.

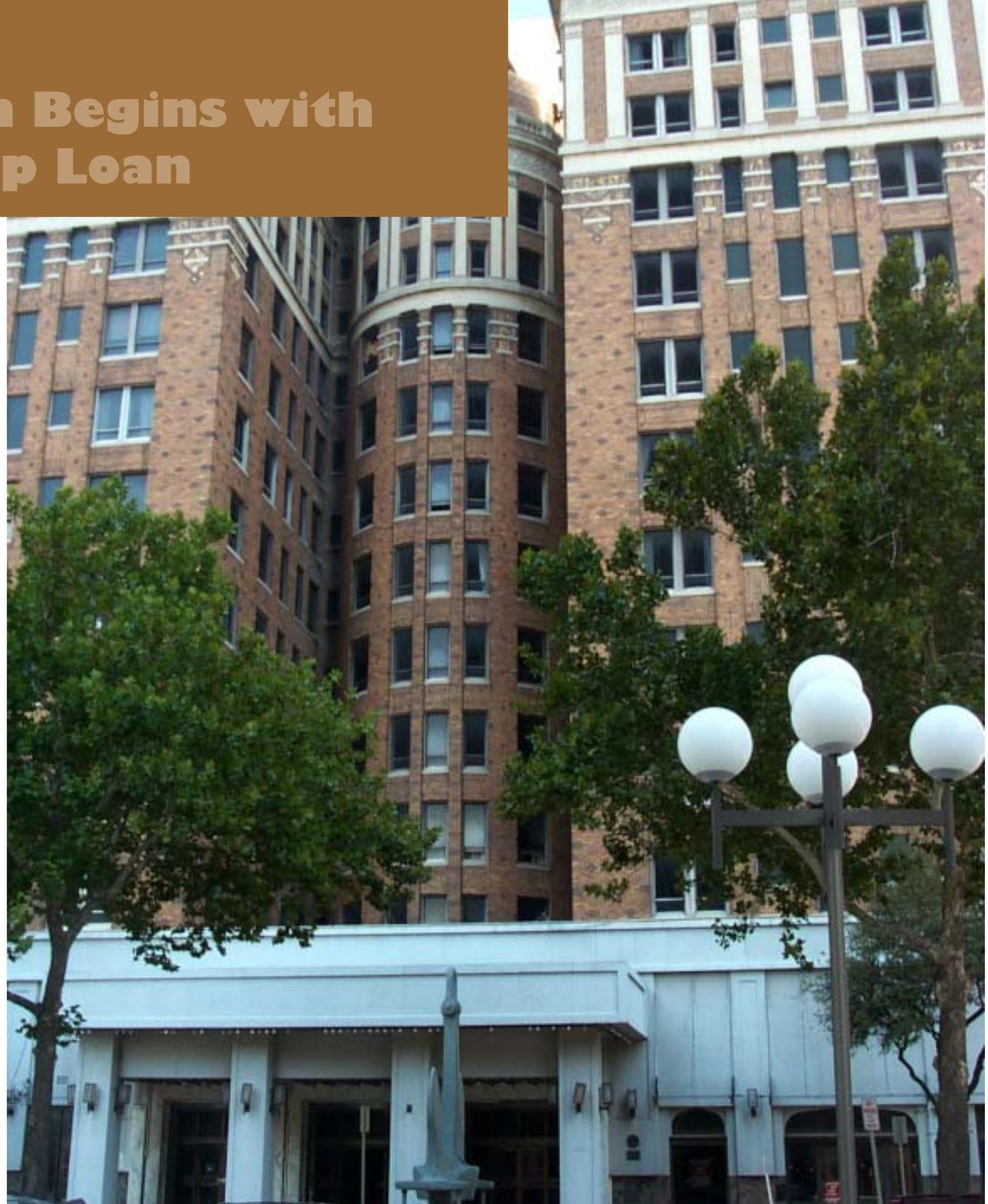
Restoration Begins with DEQ Cleanup Loan

The historic Skirvin Hotel, the oldest hotel in Oklahoma, has lain vacant since 1988 in spite of several attempts to reopen it. In 2001, the city acquired the hotel to preserve the Oklahoma landmark. The 14-story Oklahoma City building is on the National Register of Historic Places. Restoration could provide an attractive downtown hotel, which could help the city compete in the regional convention market. The city of Oklahoma City developed a public-private partnership to finance the restoration project.

A loan from the DEQ Brownfield Cleanup Revolving Loan Fund became a small, but vital component of the financing plan. The \$780,000 loan will fund cleanup of hazardous materials in the building. The old hotel contains friable asbestos, lead paint, mercury thermostats and PCB-containing fluorescent light

continued

The Skirvin Hotel in downtown Oklahoma City.





Holes in the roof have caused extensive water damage within the building.

ballasts. Other environmental problems, such as bird droppings that harbor the fungus that causes the respiratory disease histoplasmosis, will also be resolved. The relatively

small cleanup loan will allow the city to move forward with its \$46.4 million restoration project and re-opening the grand, old hotel in fall of 2006, as the Hilton Skirvin . ■



Friable asbestos covers equipment and piping throughout the facility.



Vestiges of its former grandeur can still be seen...also some of its current residents can be seen roosting on the ledge above the windows.



Lead paint is peeling from the walls throughout the hotel.



Trespassers have used the hotel for shelter and parties. A recent fire on the first floor was attributed to trespassers.

Harbor of Miami Benefits from Targeted Brownfield Assessment

The Targeted Brownfield Assessment Program, which serves nonprofit and government organizations without charge, was recently able to save an Oklahoma homeless shelter from buying land that would have proven useless for its purposes.

On any given day, the Harbor of Miami provides as many as 25 homeless individuals and families with shelter, food, clothing and medical care. As the number of people served has grown, the shelter's septic system has become less and less adequate. The organization was considering the purchase of an adjacent property to expand the system's capacity, but was concerned about the lot's previous usage. A representative approached DEQ to learn more about the condition of the land and how, as a new owner, the shelter might limit liability for any past environmental contamination.

No environmental problems surfaced during the course of its investigation, but DEQ did discover



A children's play area in front of the Harbor of Miami shelter.

that the neighboring facility had been built on construction-debris fill. The land was unsuitable for a septic system. Had the Harbor purchased it, the property could not

have been used for that purpose. With that option closed, DEQ helped the shelter explore alternative ways to solve its problem. The organization is now negotiating

with the city to pay for a lift station to enable it to tie into the city's infrastructure. The Harbor is certain to find a workable way to expand its capacity to serve those in need. ■

Oklahoma's Good Idea Gets National Attention

As knowledge and appreciation of our environment grows, people often want to know how to do their part to keep it healthy. DEQ promotes a personal environmental impact campaign that shows how super-sized consumption results in super-sized waste: USE LESS STUFF!

Last November, Stuart Lieberman, a homeowner advice columnist for the online periodical *Realty Times* (www.realtytimes.com), featured the USE LESS STUFF! campaign for his national audience.

Lieberman praised Oklahoma and DEQ for offering "a better,

more efficient way of eliminating what ends up in our landfills." He encouraged adopting USE LESS STUFF! across the United States. More information about this and other ways of taking personal action can be found at www.deq.state.ok.us/mainlinks/uls/index.htm. ■



Hazardous Waste Delisting Rules Approved

New rules for the exclusion of a waste from the hazardous waste universe became effective when approved recently by the state Legislature and the Governor. The waste exclusion or "delisting" rules, first proposed on January 8, 2004, were approved with modifications by the Hazardous Waste Management Advisory Council (HWMAC) on January 11, 2005. The Environmental Quality Board approved the

rules on March 4, 2005. No legislative changes were made and the rules became effective on June 15, 2005. The delisting rules have fees attached to offset the petition review process. The many HWMAC meetings addressing the rules were attended by several representatives of Oklahoma industry; they reported satisfaction with the results.

The benefit of delisting a waste is largely economic. In-

cluding reductions in disposal and transportation costs, savings can be as much as 80 percent. The amount of paperwork such as manifests and government reporting should also decline. Some companies also like the "greener" image that results from not producing wastes classified as hazardous.

Oklahoma earned the delisting authorization from EPA.

As a result, facilities in this state can now petition to have certain waste streams that can be safely managed in other ways "delisted." Approximately 37 percent of the waste of 193 large-quantity generators in Oklahoma is disposed of in-state. Of all hazardous waste generated in Oklahoma, up to 71 percent remains in Oklahoma or the surrounding states. ■

Scouts Host Mercury Thermometer Exchange

With a little help from their DEQ friends, and sponsorship by Environmental Management, Inc. of Guthrie, Oklahoma, Edmond Eagle Scout Troop 339 hosted a mercury-thermometer exchange at Edmond's annual Child Safety Fair, on June 11, 2005. Disposal of older thermometers is a problem since mercury is a hazardous substance that should not be tossed in the household trash. The exchange gave Edmond residents a chance to trade their glass mercury thermometers for safe, new digital models.

DEQ helped the scout troop find a sponsor who provided the replacement digital thermometers and proper transportation and recycling for the mercury collected at the event. DEQ also provided educational materials for use in planning the event, and assisted with safe collection station setup. The scouts were pleased to have a meaningful way to earn their environmental merit badges. ■



Edmond Eagle Scout Troop 339 works to earn an environmental merit badge by conducting a mercury thermometer exchange.