

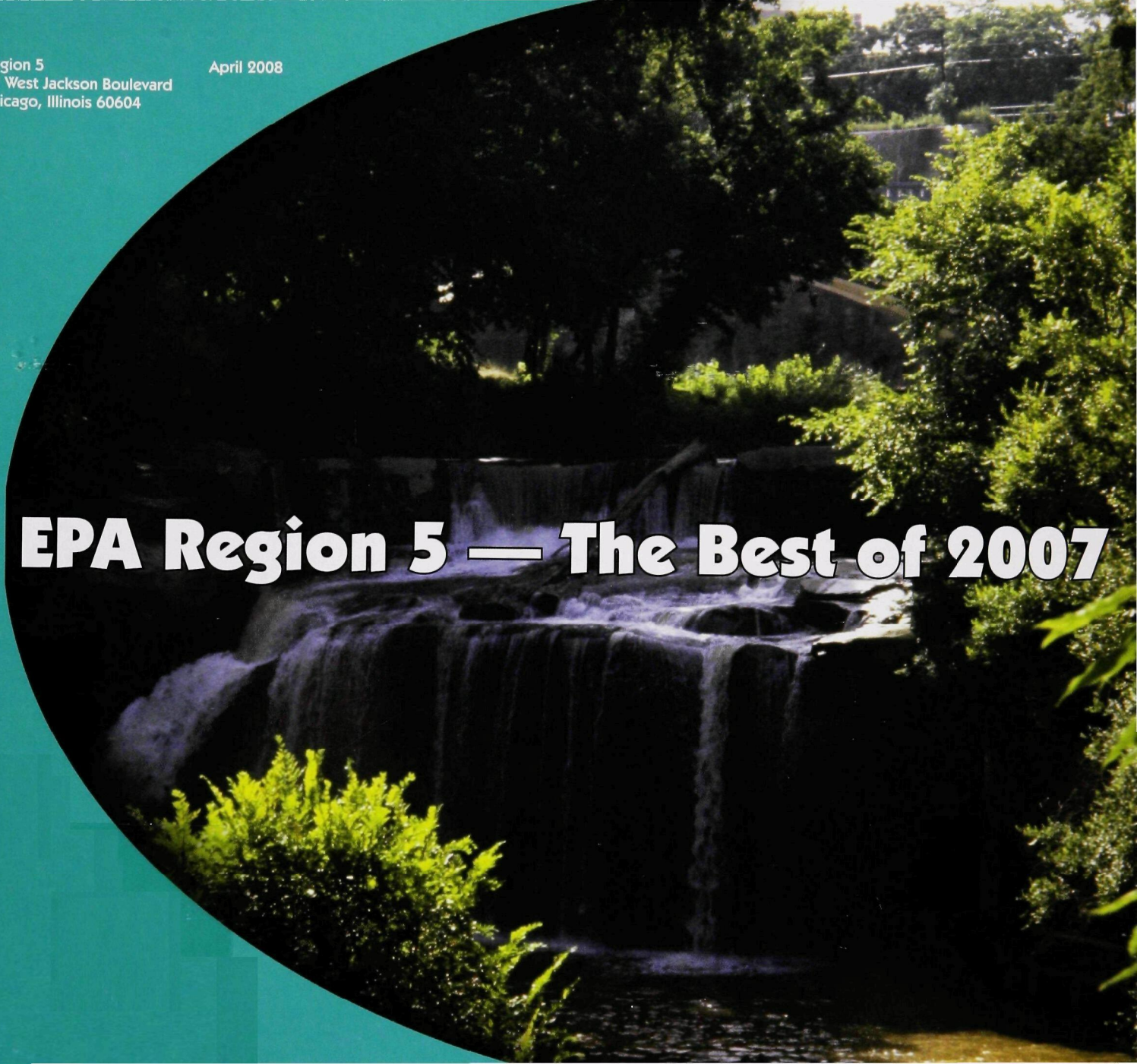
United States
Environmental Protection
Agency

Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

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EPA Region 5 — The Best of 2007



From the Regional Administrator

It's been several years since EPA Region 5 published a report like this one, but we had a number of success stories in 2007 that I wanted to share with you.

For example, Region 5 worked with partners in Michigan to improve environmental factors that affect children's health. We spent a little bit of money and got big results. Now we're taking this successful program to other states. Through the efforts of Region 5 staff and our state and local partners, the air in the Midwest is cleaner today than it's been in the past 35 years. We also made great strides in cleaning up the Great Lakes during 2007, and we took steps to significantly improve water quality in the many other lakes and waterways in our six-state Region. And we improved Region 5's ability to respond to environmental emergencies – whether man-made incidents or natural disasters.

We are proud of the accomplishments in this report, but we did not achieve these results alone. You'll see the word “partner” in a number of the pages in this report. That's because we work closely with the six state environmental agencies in our Region, as well as a host of private-sector partners, including industries and environmental groups, to obtain environmental improvements. Our private-sector partners are taking action to reduce diesel emissions, eliminate childhood lead poisoning and put formerly polluted sites back into productive use.

EPA strives to work with the regulated community in a collaborative way to benefit the environment without placing an arduous burden on industry. This approach has won us many new friends and partners while achieving excellent results. But there are still a few cases in which we must use our authority as a regulatory agency. You'll read about a few of those cases from 2007 also.

I hope you enjoy reading about the many successes Region 5 enjoyed during 2007. Please know that there is much more to be done for the environment, and Region 5's outstanding people are working hard every day to make the Midwest a better place to live. Please join with us in being proactive about the environment. There are many things you can do, from simply recycling and conserving energy, to getting involved with local grass-roots organizations on projects that benefit the Earth.

Please visit our Web site, www.epa.gov/region5, for more information about what Region 5 is doing, and what you can do.

Mary A. Gade

Administrator, EPA Region 5

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Clean Air

EPA Region 5 — The Best of 2007

Innovative approach helps clear the air in southern Illinois oil town



A gathering facility consists of tanks where crude oil is stored before being transferred by truck to a refinery. Hydrogen sulfide gas, called "poison" on PennTex's sign, regularly escaped from the tanks.

The stench was terrible and people were getting sick, but there were no rules covering release of the hydrogen sulfide gas affecting residents of Bridgeport, Ill. EPA didn't even list hydrogen sulfide as a hazardous air pollutant. So it took some creativity and tenacity on the part of Region 5 staff and their federal and state partners, but the people of Bridgeport can breathe a little easier today.

The hydrogen sulfide gas – which is colorless but smells like rotten eggs – leaked from oil wells and oil storage facilities near Bridgeport, a town of about 2,000 in Lawrence County. It was a big problem because there are so many oil wells in Lawrence County you'd think you were in Texas or Oklahoma, not Illinois. Most of them are owned and operated by PennTex Resources Inc., and many are very close to homes or schools.

The Illinois Basin oil field is more than 100 years old. The gas that escapes during pumping has a high sulfur content, so it's called "sour gas." People in Bridgeport had been complaining of headaches, nausea, watering eyes, sleeplessness, fainting, difficulty breathing, asthma, allergies and damaged personal property. Oil field workers reported similar symptoms. People with asthma or chronic lung disease such as emphysema were particularly at risk because hydrogen sulfide could make their symptoms worse.

"Something needed to be done, but there were no federal or state regulations applicable to the situation," said Region 5 project manager Bonnie Weinbach. "So we had to be innovative."



Some PennTex oil wells are in residential areas of Bridgeport. In the background, the buff-brick building on the right is an elementary school; the playground can be seen on the left.

The Region 5 team first needed data. They worked closely with the federal Agency for Toxic Substances and Disease Registry to set up a network of air monitoring stations. It was the first time Region 5's Air and Radiation Division had worked in collaboration with ATSDR on what's called an "exposure investigation." At first the monitoring was limited, but it showed levels of hydrogen sulfide high enough to cause health problems. That led to action.

"The data from the exposure investigation supported ATSDR's determination that this was a public health hazard," said environmental scientist Kathryn Siegel. "We relied on the data and ATSDR's determination to support our actions under the 'imminent and substantial endangerment' clause of the Clean Air Act."

EPA then expanded the monitoring until it became the largest monitoring network ever assembled for a single project by Region 5's Air Monitoring and Analysis Section. And the agencies put it together in record time. It's still operating today – in fact, it is now the Section's longest running monitoring operation.

Armed with data from the monitoring network, Region 5's lawyer, Mary McAuliffe, worked with U.S. Department of Justice and Illinois Attorney General's office to pro-

duce the first known judicial consent decree filed under Section 303 of the Clean Air Act, and talks began with PennTex.

During legal negotiations, EPA and PennTex agreed to keep the public informed about the situation that was having such a direct effect on their health. They held a public meeting to brief the people of Bridgeport, and nearby Petrolia, about the health threat and what was being done about it.

Negotiations with PennTex were productive, and the company agreed to the terms of the consent decree, which was filed in April 2007.

"When PennTex purchased the company that owned these wells, they didn't know the size of the hydrogen sulfide problem," Weinbach said. "But they've been very cooperative throughout the process. They're still working with us on expanding and improving their controls."

Yet another "first" on the PennTex-Bridgeport project was the use of a borrowed infrared camera to detect emissions at wells and at gathering facilities, where crude oil is stored until it can be loaded onto trucks for transport to a refinery. The IR camera helped the Region 5 team find out how well PennTex's control measures were working, and detected new emissions sources. It worked so well that Region 5 was able to buy its own IR camera for future use.

There were a number of "firsts" in this project. But the best result was a reduction in hydrogen sulfide emissions of about 50 tons per year.

Because of the long-lasting and special circumstances of the problem, the Bridgeport Team reached out to numerous other agencies around the country to gather the necessary resources and expertise. They collaborated with environmental agencies from four states and consulted with Environmental Response Team-West from Las Vegas, Nev., and the Thermo Scientific Co. in order to build the monitoring network and acquire the necessary instruments.

Their efforts paid off for the people of Bridgeport.



Before the consent decree, PennTex used unsecured barrel flares like this one to burn off hydrogen sulfide gas. These makeshift flares have been replaced with proper equipment.

MCDI has success in reducing diesel emissions



A diesel oxidation catalyst, similar to the catalytic converter on most cars, helps reduce the soot and ozone-causing nitrogen oxides and hydrocarbons from diesel emissions.

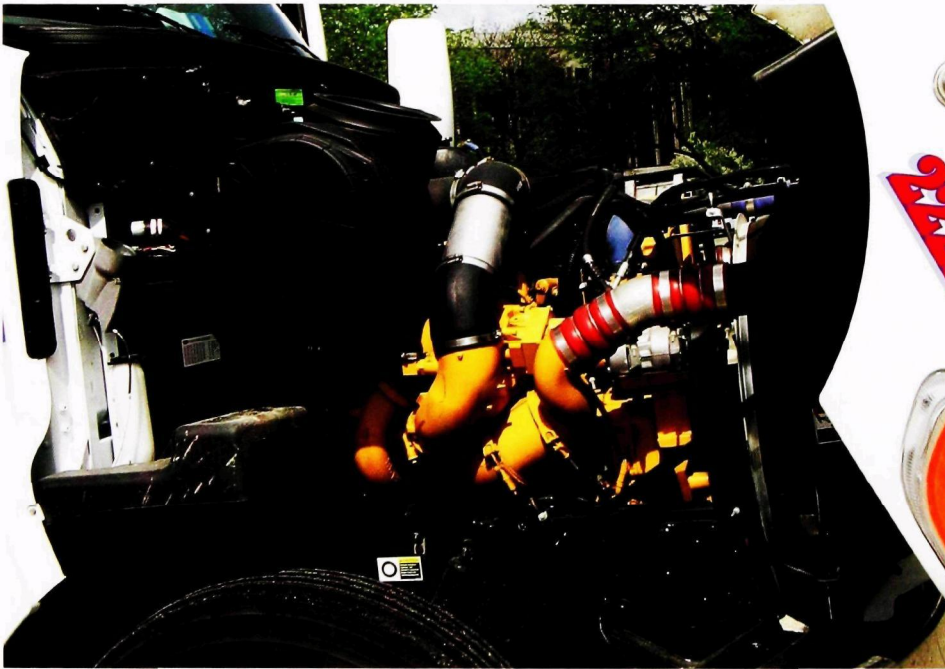
One of the biggest air quality challenges in the Midwest today is diesel engine emissions. That black puff of diesel smoke is familiar to anyone who has ever sat in traffic behind a bus or followed a big rig down the interstate.

But the Midwest Clean Diesel Initiative is out to change all that. MCDI is a voluntary, public-private collaboration in the Region 5 states. Partners include private-sector companies and non-profit organizations, as well as federal, state and local governments.

The focus is on voluntary reduction of diesel emissions through technology, alternative fuels and fuel-efficient practices. EPA has put more stringent rules in place to reduce pollution from new diesel engines. But millions of older engines continue to give off large amounts of pollution, and they can last more than 20 years. So what to do about those already on the road?

That's where MCDI comes in.

"We encourage our partners to take steps that will reduce diesel emissions," said MCDI manager Steve Marquardt. "The best step, of course, is to buy new vehicles or replace older engines with newer,



The best way to reduce diesel emissions is with new, cleaner-burning engines.

cleaner engines. We also promote retrofitting existing diesel engines with devices like particulate filters or oxidation catalysts, using cleaner fuels and doing regular engine maintenance. Emissions can also be cut by reducing idling.”

Simply clearing the air is a good reason to have MCDI, but the health reasons are even stronger. The nitrogen oxide, fine particles and other toxics in diesel smoke contribute to serious public health problems. Diesel emissions are linked to asthma attacks, lost work or school days and even premature death.

Since its inception in 2004, MCDI partners have funded more than \$81 million in clean diesel projects and reduced emissions from more than 370,000 vehicles. And Region 5 has recruited more SmartWay Transport partners than any other EPA region – 162 at last count, which is one-quarter of all partnership members.

There are about 3.3 million diesel-powered engines in the Midwest that MCDI can affect. The ambitious goal is to reduce emissions from 1 million of those diesels by 2010.

MCDI made major strides toward that goal in 2007. During the year, the collaboration gave almost \$1 million in grants to reduce emissions from school buses, garbage trucks and similar vehicles. MCDI awarded a total of \$689,700 for retrofitting school buses, and more than \$231,000 for other diesel engines.

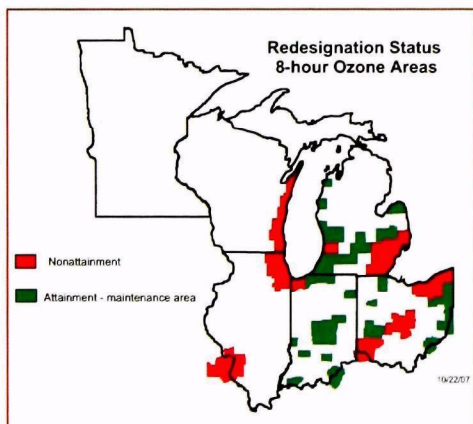
Marquardt said an important 2007 milestone was formation of the 33-member MCDI Leadership Group to provide overall direction and scale up the program. The group supports building coalitions in each Region 5 state to focus on problems in geographic areas, specific vehicle types or technology options.

For example, the Illinois coalition is working with rail companies to reduce locomotive emissions, while in Indiana the effort focuses on highly industrialized Northwest Indiana. Wisconsin is making \$1 million a year in state funds available for a truck anti-idling equipment grant program, and Ohio has secured \$20 million for its Emissions Reduction Grant Program.

"The goal is for these state-level coalitions to secure state funds and leverage private-sector money," Marquardt said. "The leadership of our private-sector partners is very important."

With the efforts of Midwest Clean Diesel Initiative and its partners, that familiar black puff of diesel smoke will soon be a thing of the past.

23 Midwestern communities see smog levels fall



This map of the Region 5 states shows areas redesignated during 2007 in green. Red indicates areas that still do not meet the national air quality standards for ozone.

The air got cleaner in the Midwest in 2007.

During the year, 23 communities in the Region 5 states saw ground-level ozone readings that were low enough to meet air quality standards. And some of the 23 are big cities with long-standing air quality problems.

EPA and its state partners monitor air quality throughout the Midwest, checking for what are called "criteria pollutants." They are ozone, fine particles (better known as "soot"), carbon monoxide, nitrogen dioxide, sulfur dioxide and lead.

"Ground-level ozone and fine particles are the real problems here in Region 5," said John Mooney, chief of the Air and Radiation Division's Criteria Pollutant Section. "All areas of the Region 5 states already meet the national standards for the other four criteria pollutants."

If the air quality in a community fails to meet the National Ambient Air Quality Standards for a particular air pollutant — such as ozone — EPA labels that area as being in "nonattainment" of the standards. State and local officials in nonattainment areas must take steps to bring air quality back to acceptable levels.

When monitoring shows air quality in a community meets the standards over a period of time, that's the first — and often most important — step for an area to be redesignated to being in "attainment."

"These communities worked hard to gain redesignation," Mooney said. "They implemented all kinds of emission reduction programs over many years. The states and local communities also took action to reduce emissions from power plants and from other industrial sources."

Five of the communities are in Indiana, eight in Ohio and 10 in Michigan. That includes cities such as Toledo and the Dayton-Springfield area in Ohio; Flint, Grand Rapids and Lansing in Michigan; and Indianapolis. Many of the communities are in an industrial area and have a significant number of vehicles.

Three Wisconsin communities applied for redesignation during 2007. Major metropolitan areas like Chicago, Detroit and Cleveland are still working on air quality issues and have not yet asked EPA to consider redesignation.

Minnesota is the only state in Region 5 where every county meets the ground-level ozone standard.

Ozone is the main ingredient in smog. It comes from vehicle exhaust, industrial emissions, gasoline vapors and chemical solvents. There are also natural sources of ozone. Smog forms when ozone and other compounds bake in the hot summer sun.

“Reaching attainment with the standard is only half the battle for these communities,” said Mooney. “Now they have to be sure the air continues to meet the standard for ozone. Each community must submit a plan telling Region 5 what they will do to keep from going over the standard again. That’s the whole idea – to clean up air pollution and keep it clean.”

Region 5 will continue to work with local officials in each community to support their efforts at maintaining attainment. Mooney said that usually means keeping the programs in place that helped the community reach attainment, such as cleaner fuel programs and controls on power plant emissions.

As more communities find ways to reduce ozone and other pollutants, air quality in the Midwest will continue to improve.

Clean Water

EPA Region 5 — The Best of 2007



Aerial view of a CAFO in Whiteside County, Ill. Brown areas to the right of the buildings are feedlots. Manure flows into an earthen storage structure that was not designed, operated or maintained to contain the manure.

Region 5 helps Illinois CAFOs pollute less

Experts say a single dairy cow produces about 120 pounds of manure every day. Put 1,000 cows on 5 acres in rural Illinois and you've essentially got a hypothetical town the size of Quincy, Ill., with no sewer system.

In EPA terms, such a large herd of livestock in a small, confined place would qualify as a CAFO, short for Concentrated Animal Feeding Operation. Without proper management techniques, falling rain or melting snow can wash manure into nearby lakes, rivers and streams. Nutrients such as nitrogen, phosphorus and ammonia, and potentially dangerous pathogens such as *E. coli* cause serious problems for those bodies of water.

Manure is not the only problem. Runoff can wash concentrated nutrients into local waters from stockpiles of feed. That not only pollutes the body of water, it reduces the quality of the feed.

EPA Region 5 is trying to ensure that owners and operators follow the right procedures to reduce the effect of water pollution from CAFOs. An important part of that is getting a Clean Water Act permit.

"Our goal for the six Region 5 states is to get at least 75 percent of large CAFOs under a permit by 2010," said Patrick Kuefler, chief of Section 2 in the Water Division's Enforcement & Compliance Assurance Branch. "We're currently at about 63 percent. While we conducted inspections in several states in 2007, we concentrated our efforts in Illinois because the number of facilities with permits was low compared with the other five states in the Region."

Kuefler said his team used EPA databases to locate areas where nutrients or pathogens have impaired bodies of water. Then they looked for possible sources of contamination.

“Where CAFOs were potential sources, we started doing inspections,” he said.

Illinois EPA estimates there may be as many as 500 large CAFOs in the state, but the agency has issued only about a dozen permits. Kuefler said Region 5 Water Division staff conducted 11 inspections at Illinois CAFOs in 2007. In seven of those cases, EPA found problems big enough to warrant issuing what’s known as an “administrative order.”

“The order requires a CAFO operator to stop discharging pollutants into the nearby body of water and apply for a permit from the state,” said life scientist Cheryl Burdett. “It also gives them specific procedures to follow until they get a permit.”

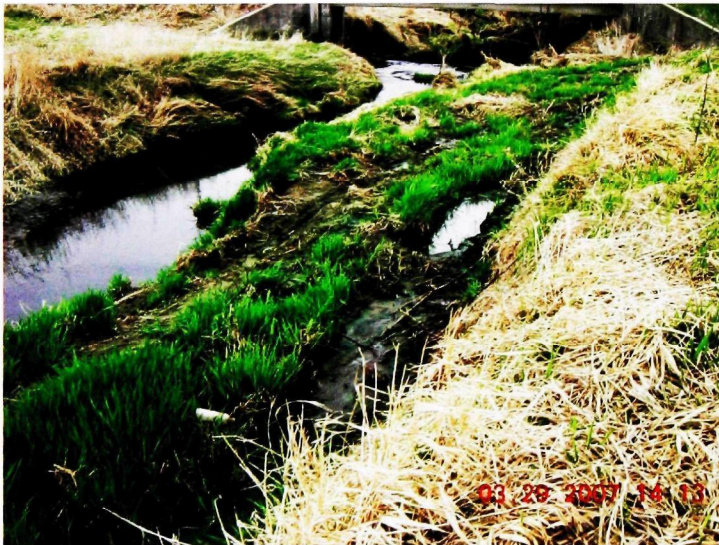
What good does a permit do? Burdett said a typical permit requires the CAFO operator to properly store manure and other waste when it cannot be safely applied as fertilizer on crops. The permit also requires the operator to properly document waste management operations. All this can be very good for the environment.

“One CAFO operator in Michigan made the necessary fixes to get a permit,” Burdett said. “As a result, a body of water near the facility recovered so well that it was taken off the state’s list of impaired waters.”

Of course, it’s not just the local waterways that are affected. Pollution can travel downstream and into larger streams. In Illinois and other Midwestern states, the pollution can flow into the Mississippi River and ultimately to the Gulf of Mexico where excess nutrients have created a “dead zone,” an area without enough oxygen to support life.



This manure storage structure was only a few feet from a creek.



Manure-laden puddles in a creek bed. Abiding by the provisions of an NPDES permit would eliminate this problem.

Kuefler said some operators balk at the idea of qualifying for a permit. The process can be expensive and take as long as a year. But others see the process as an opportunity because they retain and use the nutrients that otherwise wash into local waters. Using manure as fertilizer is a good example.

“Commercial fertilizers are excellent products, but they are made with fossil fuels,” Burdett said. “So capturing manure and using it as fertilizer helps reduce greenhouse gases and is a cost savings for the operator. And as long as the manure is applied properly, the technique protects important bodies of water.”

“Many operators come to realize that every time it rains, some of their money washes away,” Kuefler said. “They find that keeping the nutrients in the feed and using manure as a fertilizer can keep money in their pockets. It keeps the neighbors happier, too.”

Just like installing a sewer system in that hypothetical Illinois town.



Great Lakes becoming greater because of Legacy Act

Arizona has the Grand Canyon, Florida has the Everglades, but no one state or group of people can lay claim to the Great Lakes. Each of the Region 5 states has at least some Great Lakes shoreline, and we share this treasure with our neighbors in Canada – except for Lake Michigan, which is fully within the U.S.

Millions of people depend on the Great Lakes for drinking water, recreation and even for their livelihood. Today, we value this natural resource. In the past, though, we were not so kind. So there is a legacy of pollution around the lakes.

“The biggest culprit is sediment contaminated with PCBs,” said Gary Gulezian, director of EPA’s Great Lakes National Program Office. “This contamination comes primarily from industrial sources that have operated on the lakeshores for many years.”



EPA's R.V. Peter Wise Lake Guardian is the only self-contained, non-polluting research vessel on the Great Lakes. The ship allows researchers to sample the water, aquatic life, sediment and air using state-of-the-art data collection techniques and instruments.

EPA and its Canadian partners have identified a series of 43 "Areas of Concern" around the lakes. Cleaning up these spots – called AOCs – is critical to restoring the health of the Great Lakes ecosystem. In 2002, Congress passed and the president signed a new law, the Great Lakes Legacy Act, to target these AOCs with \$270 million over five years. Legacy Act funds are used to clean up sediment in the AOCs, as well as for site monitoring, evaluation and actions to prevent further contamination.

"We've been very active in using the Great Lakes Legacy Act to clean up contaminated sediment," said Gulezian. "We have completed five cleanup projects to date under the Legacy Act, including two projects in 2007 – the Ashtabula River project in Ohio and Tannery Bay in the St. Mary's River at Sault Ste. Marie, Mich. We also started work on five new projects – two in Michigan, one in Wisconsin, one in Indiana and one outside the Region 5 states in Buffalo, New York."

Earlier, cleanup work was completed at Black Lagoon on the Detroit River and Ruddiman Creek on Muskegon Lake, both in Michigan, as well as at Hog Island Inlet on the St. Louis River in Wisconsin.

After the Black Lagoon project was completed, the community of Trenton, Mich., renamed the site "Elias Cove." The site has received several grants for shoreline restoration and construction of a new marina. The Hog Island and Ruddiman Creek projects have led to development of Habitat Restoration Master Plans funded by other programs, and these blueprints are being implemented.

All of the completed cleanup projects have resulted in new areas, either for recreation, preservation or development.

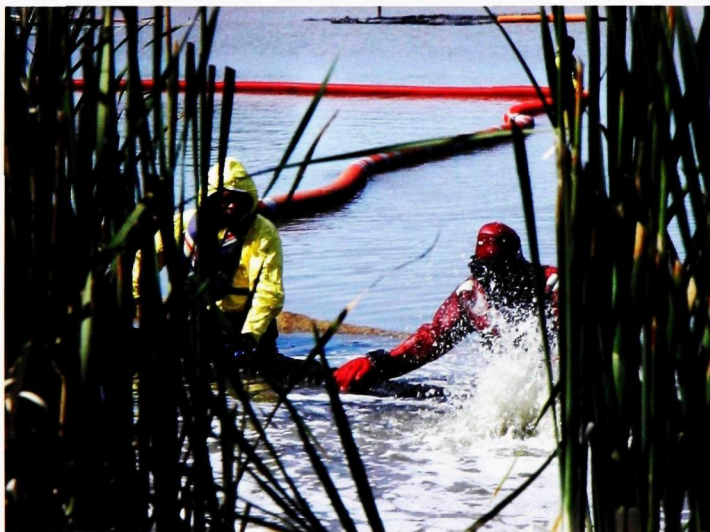
“The Legacy Act really is the cornerstone of the Areas of Concern cleanup program,” Gulezian said. “Cleaning up contaminated sediment is important, not just for restoration of the Great Lakes, but also because cleanups increase property values and they promote economic development.”

The work done in 2007 removed from the AOCs a total of 537,000 cubic yards of sediment that contained more than 900,000 pounds of contaminants. That’s enough sediment to fill every square foot of floor space in the Pentagon building (one of the world’s largest office buildings) with a pile of sediment 4 feet high.

One important aspect of the Great Lakes Legacy Act is its requirement that 35 percent of the funds for each project must come from non-federal sources. Since 2004, EPA has spent about \$53 million to clean up more than 800,000 cubic yards of sediment, and the cost-sharing clause has helped leverage an additional \$44 million in funds from state, local and private-sector sources.



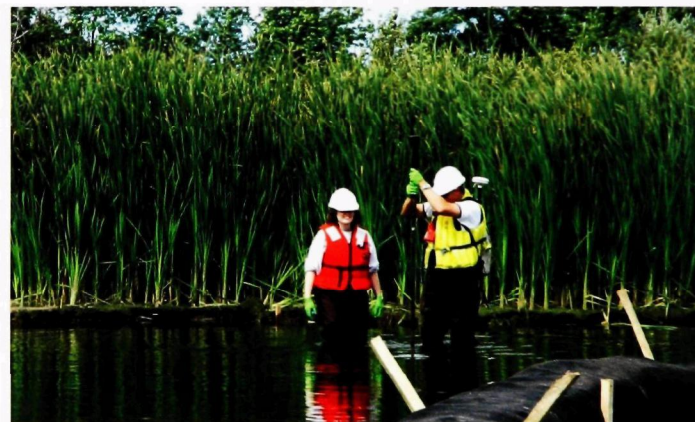
The Great Lakes Legacy Act helped fund dredging of contaminated sediment in Tannery Bay, part of the St. Mary's River Area of Concern near Sault Ste. Marie, Mich.



Habitat restoration is an important part of Great Lakes Legacy Act cleanups, like this work being done in Tannery Bay.

"These Legacy Act projects are true partnerships among EPA, the states and the communities from start to finish," said Marc Tuchman, Sediment Team leader for the Great Lakes National Program Office. "We all have a common goal of getting these Areas of Concern cleaned up and off the list."

It's a goal that's crucial for the restoration and protection of the Midwest's greatest natural resource.



Region 5 contractors set out markers to show areas in Tannery Bay where habitat is being restored after contaminated sediment was removed.

Record TMDL approvals in 2007

In 2007, Region 5's Water Division staff approved a record 865 TMDLs. That's impressive even if you don't know what a TMDL is.

TMDL stands for Total Maximum Daily Load. It's a plan for bringing a polluted body of water back to health — back to where the lake, river or stream can be used safely for its intended purpose. That may be for recreational purposes, for commercial fishing or navigation, or as a source of drinking water.

"Basically, a TMDL is a pollutant diet," said Dean Maraldo, Region 5 TMDL program manager. "It's a measure of how much pollution a body of water can handle and still meet water quality standards. We don't think it's always possible to reach zero water pollution, but we can reach ecology- and human-health-based standards, and the TMDL is one way to do that. Good implementation plans can help guide local efforts to restore the lake or stream."

The states are required, under the Clean Water Act, to prepare TMDLs for every impaired body of water in the state. EPA



This stretch of Powderlick Run in central Ohio was one of many polluted streams in the Bokes Creek Watershed. Agricultural and stormwater runoff, and manure management problems in the watershed killed fish and fouled the habitat.



Once TMDL limits are put in place and restoration activities completed, streams like Powderlick Run become cleaner and more free-flowing. The TMDL limits point source discharges and sets habitat restoration goals for nonpoint source restoration projects in the watershed.

approves those TMDLs, one for each different pollutant going into that body of water. So for one stretch of river, there may be several TMDLs needed.

It's a fact of life that many lakes, rivers and streams in the U.S. are polluted. Some of it comes from what are called "point sources," such as industrial plants that discharge wastewater into rivers as a byproduct of the manufacturing process. And some of it comes from "non-point sources," such as runoff from farms after heavy rains.

"Region 5 has been working to get our six states up to speed," said Maraldo. "We've been providing EPA-approved contractors and other kinds of technical support, and in many cases we've provided funding for TMDL projects. That's one reason we were able to approve a record number in 2007."

The record 865 approvals exceeded Region 5's commitment level, and 2007 was the first time all Region 5 states met their TMDL commitments.

One high-water mark of 2007 was completion of the Green Bay National Watershed Pilot. This was one of three projects selected by EPA Headquarters to demonstrate the advantages of planning efforts that take an entire watershed into account, not just individual bodies of water. Maraldo said watershed-based TMDLs work well when non-point sources of pollution are the primary problems in the watershed.

While watershed-based efforts are still relatively new, Minnesota went a step further with a regional TMDL for mercury – an innovative approach that led to a national first in the development and approval of TMDLs.

“Region 5 worked closely with the Minnesota Pollution Control Agency on the regional TMDLs for mercury,” Maraldo said. “This was a huge deviation from the traditional system, and it represented 500 of the 865 TMDLs we approved during the year. Some states are already doing TMDLs for entire watersheds, but Minnesota’s regional TMDL approach, addressing waters located across the state, was a first.”

Most of the mercury that pollutes a lake or stream actually starts out as air pollution from the smokestacks of coal-fired power plants and other industries. Rain picks up the mercury out of the air and deposits it in water. This is called “air deposition” of mercury, and it’s a non-point source that’s difficult to control. In Minnesota, 99 percent of the mercury in bodies of water got there through the air.

The difficulty in trying to regulate non-point sources of mercury is that some of those sources are outside the state’s control. Mercury in the air over Minnesota, for example, may have come from a state well to the west. This unique regional TMDL approach includes many emission reduction goals for industrial sources, including those outside Minnesota.

EPA Headquarters knows all about TMDLs, and they were impressed with Region 5’s leadership in this important arena. So much so, in fact, that Region 5 was awarded additional funds in 2007 to lead a national effort to develop and publish a TMDL/stormwater integration guidance document. You should be reading about that in these same pages next year.

Clean Land

EPA Region 5 — The Best of 2007

Cleanup completed at Region's most expensive Superfund site

It was a pretty big celebration. After all, EPA had spent \$4.4 billion over nearly 20 years, and now the project was finally finished. The EPA Administrator was there, as were federal, state and local elected officials, the press and local residents – many of whom worked at the site from the early 1950s until the old facility closed in 1989.

The occasion was a ceremony to mark what EPA calls “construction completion,” or the end of major cleanup work at a Superfund site. The place was the Fernald Superfund site, about 20 miles northeast of Cincinnati, more appropriately known as the Feed Materials Production Center site. That was the name this place went by during the Cold War days when it produced uranium for the nation’s nuclear weapons program. It was a name that – at the time – concealed the true nature of the work being done there, as well as the environmental risk that work posed to plant employees and local residents.

“This was the most expensive cleanup completed in Region 5 so far,” said Jim Saric, Region 5 remedial project manager for the Fernald site. “Closing out this site – which we refer to as a ‘megasite’ – proves that large, complex sites like Fernald can be cleaned up, and that federal and state agencies can cooperate to get the job done.”

Saric says Region 5’s success at the Fernald site is a model of how to effectively work with other agencies and local residents to establish a vision for the site and attain a consensus.

Region 5, working closely with state partner Ohio EPA, oversaw the cleanup at Fernald. Responsibility for getting the work done, however, fell to U.S. Department of Energy, which owns the 1,050-acre site.

“We took a balanced approach to the cleanup at Fernald,” Saric said. “We all agreed that we needed to get the higher-level radioactive material off the site and remove contaminated topsoil. We also were able to reach agreement on leaving the less-contaminated material – and there was a lot of it – in an on-site landfill. Working together on this probably saved about \$2 billion in costs and several years of work.”

Saric said it took a lot of creativity to bring everybody – especially the residents and former plant workers affected by the site – on board. Being “on board” was literal in this case, since one of the innovative aspects of the cleanup process was development of a Fernald board game.

“There were different colored chips that represented pollution,” Saric explained. “The players could choose to leave materials on-site or move materials off-site. We let area residents and people from other agencies play the game to help them become more aware of the site’s complexity and the financial compromises that had to be made. The game opened a lot of eyes and helped people get a better idea of what had to be done.

“Getting the community involved early was important to success,” Saric said. “Over the course of the project we spent lots of time in public meetings. Fernald was a model site.”

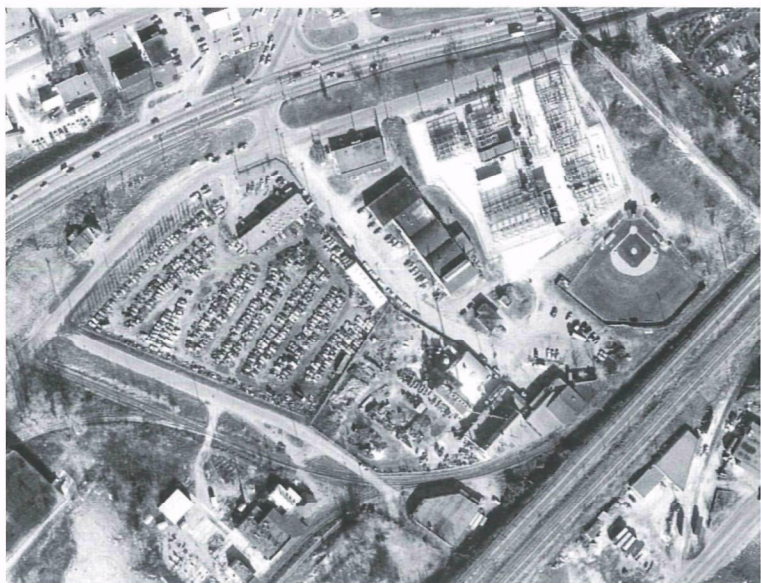
After demolishing 200 buildings and digging up 2.5 million cubic yards of contaminated soil, the result is an area now known as the Fernald Preserve.

“The area will never be redeveloped, and the ground water is still being cleaned up,” Saric said. “But we created a nature preserve that provides a habitat for the Indiana bat and includes the nation’s largest man-made wetland, complete with lots of native grasses.”

There’s also a museum that shows how use of the land went “From Weapons to Wetlands.” One exhibit shows visitors what the Fernald site was once used for, and explains America’s involvement – and Fernald’s role – in the Cold War. There’s also an environmental education aspect to the museum, showing school groups how wetlands work and why they are important to our environment.

All in all, worthy of a big party.

Brownfields: A feel-good story



An aerial view of the Highway 7 Business Center, the former National Lead Superfund Site, in St. Louis Park, Minn., before redevelopment.

“Neither a borrower nor a lender be” was good advice in Shakespeare’s time, but today Region 5 is helping make great things happen throughout the Midwest through revolving loan fund grants in EPA’s Brownfields program.

Brownfields are abandoned, idled or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination. EPA awards grants to help communities and other stakeholders put these properties back to work.

Region 5 awarded 86 grants in 2007, worth a total of \$27.7 million. About half of all grant applicants each year are repeat customers – communities that have received grants in the past and are applying for additional funds.

Some of those grants are used to assess properties, some are for getting the cleanup done and some are specifically for job training programs. But where Region 5 excels, according to Brownfields program manager Joe Dufficy, is in grants that establish or add to revolving loan funds. Communities use the EPA grant to lend money to other communities or to private interests involved in redeveloping brownfields.

“The number of grants we’ve awarded in Region 5 overall has remained fairly constant for the last few years,” Dufficy says. “But through 2007, Region 5 communities have made more than 40 percent of all such loans in the nation.”

Dufficy says that while an assessment or cleanup grant helps one community, a revolving loan fund grant can help several communities, and if managed well can become self-sustaining over time.

“Milwaukee is a good example,” Dufficy says. “They have been receiving revolving loan fund grants every year since 2002. They loan the money for specific projects, so there aren’t cleanups just for the sake of a cleanup – there’s an immediate turnaround. Plus, the city gets interest on repayment of the loan, and they benefit in other ways, such as more taxes and more jobs from the redeveloped properties.”

Region 5 communities made 16 loans totaling more than \$11 million in 2007, more than in any previous year.

“The Brownfields program really is EPA’s best feel-good story,” says Dufficy. “The first brownfield to be redeveloped was right here in the Midwest in 1994, so we feel like Region 5 was the birthplace of brownfields. Since the national Brownfields program started in 1995, EPA has spent nearly \$800 million nationally to put property and people back to work. In the Region 5 states, that translates to more than \$160 million in grant funding, which in turn has generated more than \$2 billion in cleanup and redevelopment investments, 22,000 acres made ready for reuse, and 5,000 new jobs created.”

About 27 percent of brownfield cleanups in the nation are in the six Region 5 states. If the Bard lived in the Great Lakes region today, he just might revise that famous line from Hamlet about borrowing money to add, “except for the Brownfields program’s revolving loan fund grants.”



The completed Highway 7 Business Center in St. Louis Park, Minn., was cleaned up with a combination of grant and loan funds partially funded by brownfields and administered by state and county agencies.

Region 5 winning in the Resource Conservation Challenge

It's a real challenge, this environmental protection business. Part of that challenge is convincing the rest of the country that it's not just EPA's job – it's everybody's job to be a good steward of the environment.

That's the philosophy of the Resource Conservation Challenge, a national program that promotes recycling and pollution prevention through better management of materials. Reuse and recycling programs help conserve energy and cut down on the flow of waste into the nation's landfills.

"One of the RCC's four main goals is to help move our nation beyond our current recycling rate of about 33 percent," said Jerri-Anne Garl, chief of the Land and Chemicals Division's Materials Management Branch. "While our efforts resulted in greenhouse gas reductions of nearly 50 million tons of carbon, equivalent to the annual emissions of 39 million cars, we know there is more we can accomplish. The primary focus for additional recycling is on paper, packaging materials, food scraps and yard trimmings. We're also encouraging greener management of electronic equipment and industrial byproducts, as well as a reduction in the use of 31 toxic chemicals."

Some industrial byproducts – primarily coal combustion products, construction and demolition debris, and foundry sands – can be effectively used in building highways and in other construction projects. Using these materials in construction products like concrete or asphalt can result in significant energy savings and greenhouse gas reductions. Region 5 is working to get the word out on these materials and their uses. In the fall of 2007, Region 5 hosted two forums on the beneficial recycling of asphalt shingles and foundry sands. Hundreds of people learned about the many uses of these materials in construction. Already, the impact of these forums can be seen in new recycling efforts that have started in Illinois, Wisconsin and Michigan.

Removing the 31 priority chemicals – including lead, mercury and cadmium – from the environment is critical because they are persistent, bioaccumulative and highly toxic. Through the National Partnership for Environmental Priorities Program, Region 5 encourages companies to reduce the use or release of 4 million pounds of priority chemicals by 2011. Region 5 currently has 23 partners who have reduced more than 165,000 pounds of priority chemicals. Region 5 also collected mercury and other toxic chemicals from 143 schools in 2007.

Another area where Region 5 excelled in 2007 was the Federal Electronics Challenge. This program encourages federal facilities and agencies to buy greener electronic products and manage obsolete electronics in an environmentally safe way. The program encourages the use of Energy Star electronic products to help reduce energy use. Through the Energy Star program and by reusing and recycling electronics, the Region saved more than 4.9 million kilowatt-hours of electricity and 1,423 metric tons of carbon dioxide, a greenhouse gas, that would have been expended to run equipment longer or to make new equipment. During 2007, Region 5 transferred or donated 347 desktop computers, 32 laptops and 275 old monitors with cathode ray tubes.

Region 5 also makes grants available to address all the pillars of the RCC. For example, this year our grants are supporting several efforts in Chicago to increase recycling in stadiums, multi-unit residential buildings and businesses. The results of these efforts can be used by other urban centers. With support from EPA grants, the Chicago Waste-to-Profit Network, a collaborative network of Chicago-area businesses, identified innovative recycling and market opportunities by linking partner industries and diverted more than 20,000 tons of waste from disposal in its first year.

Finally, Region 5 promotes the national WasteWise program, a voluntary partnership program designed to reduce waste. There are close to 200 WasteWise partners in Region 5. One of them, Subaru of Indiana, recycled 13,000 tons of waste and nearly eliminated all of its production waste. Several other partners received awards last year for their exceptional waste reduction efforts.

With numbers like those, it's easy to see how well Region 5 is meeting the challenge of resource conservation.



Computers are packaged for recycling. Region 5 participated in the Federal Electronics Challenge, donating hundreds of old computers for reuse.

Communities and Ecosystems

EPA Region 5 — The Best of 2007

Region 5 is getting the lead out

EPA wants to eliminate childhood lead poisoning by 2010. Since most of the reported cases of this disease are in the Midwest states, Region 5 is playing a major role in achieving this goal.

Thanks in part to Region 5's efforts over the past 10 years, the percentage of children with elevated blood-lead levels in this part of the country has dropped by 15 percent, according to Mardi Klevs, chief of the Chemicals Management Branch and a member of Region 5's lead reduction team.

She got her eyes from Grandma, her laugh from Dad
and her **lead poisoning** from home.

LEAD HURTS KIDS

Most homes built before 1978 contain lead. Lead poisoning is found in more than 20,000 Chicago children each year. Protect your child from harmful lead found in and around your home.



Get Your Child Tested Today!
CALL 1-800-424-LEAD



This public-service ad was placed in Chicago Transit Authority buses and "el" trains throughout the city.

"The actual numbers are down as well as the percentage of cases reported in the Region 5 states," Klevs said. "But Region 5 still has a disproportionate share of the problem because the Midwest has many older buildings that still have deteriorating lead-based paint on some window frames."

Region 5 lead program specialist Phil King explained that opening and closing those windows creates a small amount of dust containing lead.

"The child touches the dust, the hand goes into the mouth and the child gets a dose of lead," King said. "A child can become poisoned by ingesting or breathing a very small amount of lead dust. So we have to eliminate or control lead-based paint hazards."

And the numbers show Region 5 is having success with a four-pronged approach – public outreach and education, state capacity-building, enforcement of environmental laws, and initiatives with public and private partners.

"We probably have the most extensive outreach effort of all the EPA regions," King said. "We have booths at home shows, baby fairs and other community events. We hand out a lot of printed educational material and talk to a lot of people about the dangers of lead-based paint in older structures."

In 2007, Region 5 gave away more than 276,000 brochures and other handouts – more than in any previous year. Staff members attended 27 events during the year and filled nearly 800 requests for information.

"Our state partners are just as committed to this issue as we are," said Tony Martig, chief of the Region 5 Water Division's Toxics Section. "The second part of our approach is working with the states to help them do more at the state level. We have a good relationship with each of the six state environmental agencies. We share ideas and success stories."

But there are still landlords who have not gotten the message about lead-based paint, and Region 5 sometimes must use its authority as a regulatory agency. Klevs says the Region does an exceptional job of targeting high-risk areas.

"We've been aggressive about that," Klevs says. "We work with local organizations that track childhood lead poisoning, and they know where the problems are. If a landlord won't cooperate with our attempt to help fix the problem, then we take legal action. In more than half of the cases we settle. The landlord agrees to make the building a safer place for children. And that's really our goal."

The fourth part of Region 5's effort is partnerships with state agencies, private organizations, community groups and other federal agencies, such as Department of Housing and Urban Development. Region 5 also partners with EPA Region 7, based in Kansas City and responsible for Iowa, Nebraska, Missouri and Kansas. This region also has a large number of children with elevated blood-lead levels.

"This is a fairly new approach," Martig said. "We met with our Region 7 counterparts in St. Louis in 2007. Part of that meeting was a technology transfer forum that helped both regions."

Martig said three major initiatives with Region 5's partners are under way. In the first, Region 5 is working with the banking industry to make low-cost loans available for the replacement of windows. The second is targeted lead grants for higher-risk communities in the Region 5 states. EPA awarded nearly \$1.2 million to 13 communities in 2007 to support lead poisoning prevention and cleanups in many of our hardest hit cities. A third initiative has state environmental and health agencies working with hardware stores to reach do-it-yourselfers and remodeling professionals with educational materials on lead-safe building and remodeling practices.

Finally, Region 5 is proud to have had a role in the recent development of EPA's new Lead Renovation, Repair and Painting Rule, which will require renovators who disturb lead-based paint to have the proper training and follow practices to reduce lead dust. The new rule is expected to be published in April 2008.

The goal of eliminating childhood lead poisoning in the United States by 2010 is a real challenge. Region 5 continues to make great strides toward that goal, and we're looking forward to celebrating when we reach it.

Children benefit from Region 5 initiative in Michigan

The mission was to create an effective program in a specific geographic area that would improve children's environmental health by leveraging local resources, and that could be copied in other areas. Mission impossible? Not for Region 5 staff from the Air and Radiation Division and the Land and Chemicals Division, who put it all together.

The result is the West Michigan Children's Environmental Health Initiative. In 2007, Region 5 operated on several fronts to attack the problem of environmental factors affecting the health of children, such as asthma triggers, lead-based paint and hazardous chemicals. In EPA terminology, the WMCEHI is a successful "multi-media" project.

"We wanted to have a positive effect on children where they live, learn and play," said MaryAnn Suero, children's health program manager in the Region's Land and Chemicals Division. "We chose West Michigan because there were already about 30 organizations there involved in environmental health. We built our collaboration around three local champions: Get the Lead Out, Grand Rapids – now the Healthy Homes Coalition of West Michigan – West Michigan Asthma Network and West Michigan Environmental Action Council."



Region 5's MaryAnn Suero trains facilities managers from 30 different school districts on how the environment can affect children's health. The training was held at Kent Intermediate School District.



Unused chemicals cleaned out of a school science lab are sorted by chemical properties at a collection center.

The initiative started in a four-county area, then expanded to take in 10 counties in West Michigan, centered on the Grand Rapids area.

"We built a partnership with local community groups and agencies, but also with Michigan departments of environmental quality, health, education and agriculture," Suero said.

Most of the effort focuses on reducing environmental hazards in homes and schools.

"We took a holistic approach to creating healthier homes because the problem is not one-dimensional," Suero said. "For example, if moisture gets into a home – and that's a common problem – it can cause mold, which is an asthma trigger. Moisture may also attract pests such as cockroaches and increase the dust from deterioration of lead-based paint. Many homes need all interventions, not just one."

Region 5 also joined with partners at U.S. Department of Housing and Urban Development to train 60 property managers who hold HUD contracts to run apartment buildings for low-income residents. The managers learned techniques to keep the environment in their buildings safer for children.

Schools posed some of the same challenges as homes, and then some.

"We conducted training on environmental hazards for facility managers and for science teachers," said Jack Barnette, WMCEHI project manager for the Air and Radiation Division. "We taught school district staff members about the indoor environmental quality tools EPA has specifically for schools, and we helped science teachers improve their management of

chemicals in their classrooms. In 2007 alone, we helped teachers remove about 5,500 pounds of potentially dangerous chemicals that were not being used.”

Improving environmental health for children was the initiative’s primary purpose. But Region 5 had other issues in mind.

“A major goal was sustainability,” said Barnette. “We knew at some point Region 5 would move on and the community would step up, and they did. The community successfully competed for two major federal grants to continue the program. They also formed a partnership with a health maintenance organization. The HMO has worked with the community to decrease the incidence of asthma-related emergency room visits, which is a cost-benefit to the HMO, but it’s a quality-of-life-benefit to the people of West Michigan.”

It’s all part of what the community refers to as improving “the triple bottom line” of the environment, social justice and economics.

Another challenge was portability – could the program be transported to other areas with similar success? Region 5 has already started trying to answer that question by working with potential local champions in the Fort Wayne, Ind., area. Duplicating West Michigan’s success in other parts of the Midwest will mean better health for millions of potential beneficiaries – children of all ages in the six Region 5 states.

Mission accomplished.



At the Battle Creek Area Mathematics and Science Center in Battle Creek, Mich., science teachers from 25 school districts learn how to properly maintain chemicals in a classroom.

Compliance And Stewardship

EPA Region 5 — The Best of 2007

BP permit issue raises public awareness

2007 was a year in which people showed how concerned they are about the environment, especially the Great Lakes. And it was a year in which many of those same people learned more about water pollution and the regulatory process. All thanks to a wastewater discharge permit issued to BP by the state of Indiana.

BP applied for the permit – actually a renewal of a long-expired National Pollution Discharge Elimination System permit – because the company planned a major expansion of its Whiting, Ind., refinery. BP wanted to refine Canadian tar sand crude oil, which is plentiful but requires more processing than normal crude oil to turn into fuel, and results in more pollution at the refinery.

The Indiana Department of Environmental Management proposed a new permit that allowed the refinery to increase its discharge of ammonia and a pollutant called “total suspended solids” into Lake Michigan. IDEM cited parts of state and federal laws that allow such increases under specific circumstances. Region 5 reviewed the permit and determined it was not outside the scope of the Clean Water Act.

Then the Chicago Tribune ran a front-page story that shocked people. It said the new permit allowed the refinery to “dump” more ammonia and TSS into Lake Michigan than did the previous permit. As other media outlets picked up the story, more Chicagoland residents learned the details and thought it had to be a mistake. EPA would never let that happen, would they?

“The story really captured the public’s attention, and EPA got a lot of phone calls from people who were upset,” said Peter Swenson, acting deputy director of Region 5’s Water Division. “We talked to a lot of people who didn’t know that sometimes it’s legal under the Clean Water Act to discharge pollutants into Lake Michigan, as long as they’re at safe levels. They didn’t understand that Indiana’s permit was within the law. We had to explain that, yes, pollution needs to be controlled but it can’t always be brought down to zero.”

Area residents – most of whom get their drinking water from Lake Michigan – saw the increase in pollution levels as a step backward. Many were upset

that state and federal agencies approved the higher levels. But Swenson said that in fact, BP originally requested even higher ammonia discharge limits in its permit application, and that IDEM did not approve that request.

Public reaction to that was so great that something needed to be done, and Region 5 acted quickly.

Regional Administrator Mary A. Gade convened a Lake Michigan Summit that brought together elected officials, environmental groups, industry organizations and BP executives.

"The summit was a success on several levels," Swenson said. "Primarily that we brought stakeholders and critics together in the same room with BP to discuss positive ways the company could reduce pollution in other areas – voluntary actions the company could take to minimize the effect of the increased discharge levels. Also, the permitting process was opened up to the public, and many people gained a greater understanding."

After the summit, and following extensive negotiations, BP agreed to abide by the discharge limits in the original permit, and the public outcry died down.

Swenson pointed to a "Chicago Magazine" article from August 1970 that predicted Lake Michigan would be essentially "dead" by 1979 because of industrial pollution.

"We've come a long way in the more than 30 years since that article," he said. "We've had great success in cleaning up and protecting the Great Lakes, and some people have come to believe that we're actually taking pollution levels to zero."

Now they know that's not the case, and that we have a long way to go before reaching the ultimate goal of eliminating pollution. But the awakening of the public in this matter did make a difference, and ultimately helped to prevent the increase of pollutants into Lake Michigan.

Permit renewal not routine

The nation's largest steel mill was applying for a renewal of its state-issued permit to discharge a limited amount of pollutants into Lake Michigan. Normally, that would be a routine procedure. But news of the permit renewal hit the media only a few months after a public outcry over a similar permit was issued to the nearby BP refinery. That permit allowed the refinery to increase the level of pollution it discharges into the lake.

Residents of Chicagoland thought, "Here we go again." But this issue was different.

U.S. Steel had applied in 1999 for renewal of a permit originally granted in 1994 for its plant in Gary, Ind. National Pollutant Discharge Elimination System permits must be renewed every five years, but in the mid- to late-'90s there was a backlog of permit renewals. It was a nationwide problem.

"By the time 2007 rolled around, Indiana Department of Environmental Management had worked hard to reduce its backlog," said Steve Jann, deputy chief of the Water Division's NPDES Programs Branch. "And they were successful. Indiana went from having one of the biggest backlogs in the country to having one of the smallest."

U.S. Steel's renewal application was part of that effort to eliminate the backlog.

"This was a huge permit, with IDEM proposing a number of more stringent limitations," said Region 5 attorney Gary Prichard. "But unlike the permit for BP, U.S. Steel was generally not asking for increases in discharge limits and there was no plant expansion going on."

However, when the permit hit Region 5 for its federal review, Region 5 had questions.

"We had some concerns about the permit," Prichard said. "People in Gary, and in the Chicago area, were very interested in this because of the earlier BP permit. U.S. Steel's permit was a completely different situation. But once again, EPA took extra steps to show the public exactly what EPA's role is in the permitting process."

Normally, EPA would simply explain its concerns to IDEM and the state would revise the permit. This situation, though, provided an opportunity.

"IDEM had already conducted public meetings on their permit, but we decided to have a public hearing on our objections to the permit," said Jann. "We also sought public comments on matters beyond EPA's specific objections. It was a little unusual to do that, but it really helped. We listened to all sides and made the whole process much more open. People learned more about what the regulatory process can and cannot do."

Once Region 5 expressed its concerns about the permit, the state had a choice – rework the permit to take care of EPA's concerns, or do nothing. If IDEM had chosen to do nothing, they would have passed on responsibility for issuing the permit to EPA. That didn't happen. IDEM is committed to work with EPA to resolve all objections to the permit.

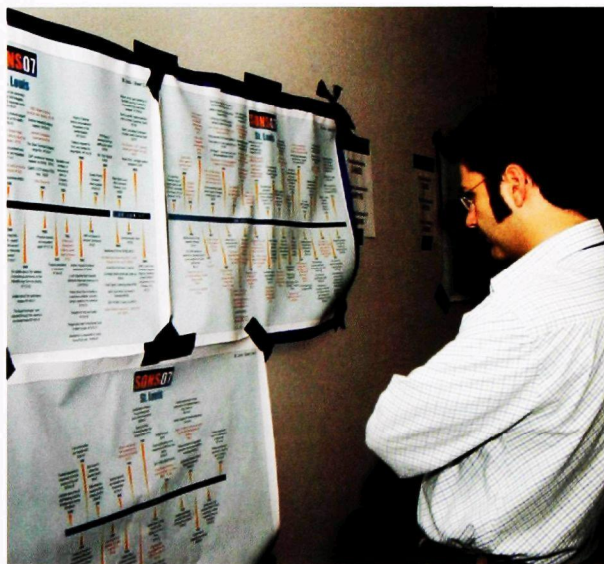
"IDEM has said they will resolve EPA's questions about the permit," said Jann. "I think people have more confidence in the process now."

As routine wastewater permit renewals go, it was far from routine. But the outcome promises to be increased water quality protection and a more open regulatory process.

Homeland Security and Emergency

EPA Region 5 — The Best of 2007

Disaster strikes the Midwest – on paper



A SONS '07 participant checks exercise resource charts. .

It was a nightmare. A tornado ripped open a huge storage tank, spilling two million gallons of diesel fuel into Lake Michigan and threatening water supplies for millions of people. As emergency responders were en route, a massive earthquake jolted the New Madrid Fault in Missouri, rupturing pipelines and causing oil and chemical spills in several Midwest states.

The good news – it wasn't real. The bad news – someday, it could be. And that was the whole point of the emergency preparedness exercise called SONS '07 – or "Spill of National Significance." SONS was designed to test EPA's ability to respond to a major environmental disaster.

"Similar exercises have been done in the past, but this was the first time EPA was the lead federal agency," said Ann Whelan, program analyst in the Superfund Division. "It was also the first time a disaster exercise was based on an inland spill. All the previous scenarios were based on spills happening in the ocean with the Coast Guard as lead agency. This exercise covered a very large area and involved a lot of people."

Four EPA regions participated in SONS '07, with Region 5 taking charge. In addition to the Coast Guard and other federal agencies, there were players from 10 states and numerous local governments, as well as from the private sector.

"SONS challenged EPA in ways we may have been overlooking," said Whelan. "But that's the purpose of a big exercise like this – to find our vulnerabilities and fix them. Everybody

Preparedness

EPA Region 5 — The Best of 2007

learned a lot. I think one thing we all learned is that we have tremendous capacity in Region 5, not just from EPA but from our partners at the local, state and federal levels.”

Whelan said the lessons learned from SONS included a need for an expanded and upgraded Regional Operations Center and a need for more Region 5 staff to be trained in incident response. Senior staff members are looking for space in Chicago’s Ralph Metcalfe Federal Building for a new emergency operations center, and every Region 5 employee is being trained in the basics of the National Incident Management System. In addition, Region 5 is recruiting and training new members of its Response Support Corps.

One of the most significant lessons learned during SONS was the need for immediate access to up-to-date databases and maps, including geographic information systems, called GIS.

“The first day we spent a lot of time setting things up,” said Steve Goranson, chief of the Resource Management Division’s Office of Information Services. “We quickly learned that it’s very important to have access to data on the first day. When incident reports started coming in to the operations center, we needed to know what the hazard was and who was affected. We also learned that GIS information is very important from the beginning. It’s important in targeting resources.”



An EPA Region 5 team checks water quality in Lake Michigan as part of the SONS '07 exercise.

Goranson said Region 5 work groups are already improving data quality and accessibility, including GIS information on specific locations that might be susceptible in a natural or man-made disaster. He said regional response teams are being trained in GIS systems so they can get to an incident faster and with better data.

"When an incident is reported, people in the operations center need the best address possible," Goranson said. "We need to be as thorough as we can with information so responders know what they need to deal with. Are there any schools in a half-mile radius of the incident? Are any bridges out? Are there hospitals nearby?"

Whelan said an important facet of SONS was the second week of the exercise, which was an attempt to examine what the issues would be for the affected area at several points in the future – two weeks after the destruction caused by the tornado and the earthquake, then three months, six months and two years after the disaster.

"Of course, we've learned a lot from the real-world of Hurricane Katrina," she said. "That helped us in the SONS exercise because we knew the importance of looking two years out, and we knew some of the questions we should be asking."

Whelan said other lessons learned included the importance of keeping elected officials at all levels informed about incident responses.

Hurricane Katrina was proof that when it comes to natural disasters, it's a matter of "when" and not "if." Some experts use the same phrase when talking about a possible catastrophic New Madrid earthquake. But because of SONS '07, Region 5's emergency response teams are now better prepared to deal with the real-life nightmare that would pose.

Chicago Regional Lab plays homeland security role

When homeland security experts consider “worst case” scenarios, a terrorist attack on American soil with chemical weapons is pretty near the top of the list. In 2007, Region 5’s Chicago Regional Laboratory played a major role in keeping the nation safe from the effects of deadly nerve agents, blister agents and mustard compounds.

The lab developed important new ways to detect the presence of chemical weapon agents in surface water – chemicals such as sarin gas and other deadly compounds that can be used as weapons.

Since the lab is not certified to handle substances like sarin, EPA scientists studied the degradents – chemicals that are left over after the agent degrades, or breaks down. Most chemical weapon agents can’t be seen or smelled. The tests offer a way to identify the agent by the trail it leaves.

“Chemical agents degrade in water and other environmental situations,” said Dennis Wesolowski, the lab’s director. “EPA’s National Homeland Security Research Center asked us to come up with ways to detect the degradents that would be in surface water after the chemical breaks down. If you can identify the degradents, then you know a particular chemical weapon agent was used. It’s also a water quality test, because the degradents are harmful, too.”

Wesolowski said Chicago Regional Laboratory scientists developed and validated tests for 16 dangerous chemical compounds. Now the accuracy of the tests must be independently confirmed – an important part of the scientific process.

“The next step is to have other labs validate the tests,” he said. “We’ve already started doing that, working with other EPA regional labs as well as state labs and commercial facilities.”

The tests developed at Region 5's lab could save lives in the event a deadly chemical agent ever gets into a public drinking water supply – whether it gets there accidentally or by design.

Wesolowski says any well-equipped environmental laboratory could conduct the tests.

“Any federal lab and most of the state labs could do it,” he said. “Labs operated by big cities like Chicago would most likely be able to do the test, as would many commercial labs.”

Wesolowski said the basic technology of testing water samples could be adapted for other purposes.

“When the inter-lab validation is completed, we’ll be looking at developing a wipe test,” he said. “A technician could wipe down a surface and find out if a chemical agent had been used. We’ll also explore using the same technology in testing soil samples. This would be a way to determine if the soil is safe after an attack.”

Tests were also developed to detect the presence of dangerous pharmaceutical products such as LSD, or hazardous industrial chemicals that could be put into drinking water.

While nobody wants to see a worst-case scenario actually happen, the Chicago Regional Laboratory is helping EPA, and the nation, be better prepared.

Contact Information

Environmental Hot Line:

800-621-8431

(8:15 a.m. to 4:45 p.m., Central Time)

From the Region 5 states: Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin.

On the Web:

www.epa.gov/region5

Use our online comment form to send us a comment or question, or send e-mail to r5hotline@epa.gov.

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