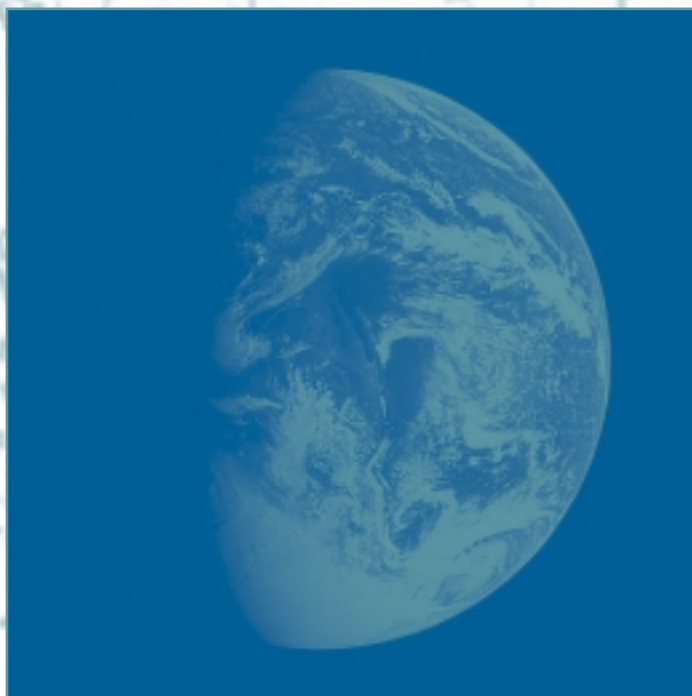


1970

30 YEARS OF ENVIRONMENTAL PROGRESS

2000

**REMEMBER THE PAST**

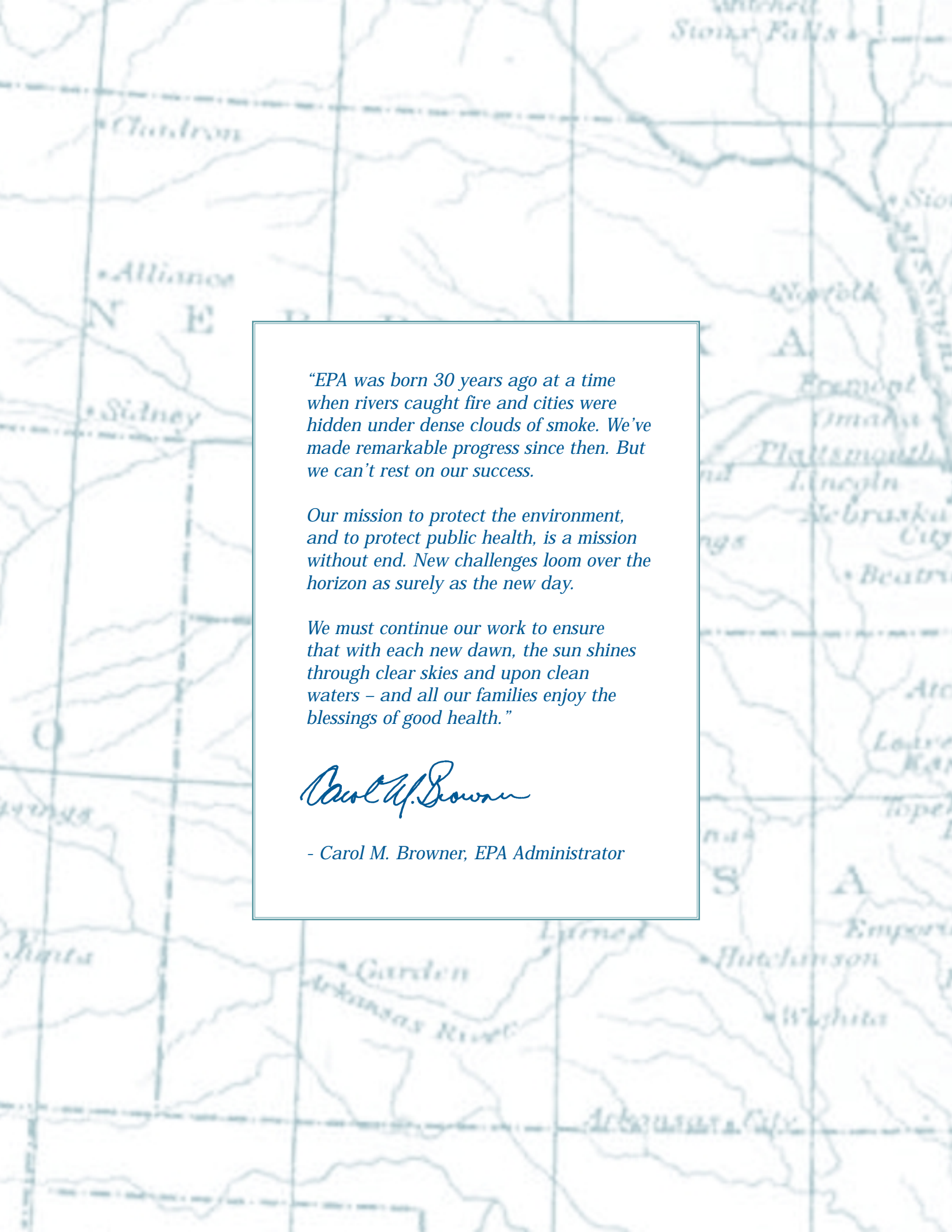


**PROTECT THE FUTURE**



U.S. Environmental Protection Agency  
Region 7  
EPA-903-R-99-005

**IOWA | KANSAS | MISSOURI | NEBRASKA**



*"EPA was born 30 years ago at a time when rivers caught fire and cities were hidden under dense clouds of smoke. We've made remarkable progress since then. But we can't rest on our success.*

*Our mission to protect the environment, and to protect public health, is a mission without end. New challenges loom over the horizon as surely as the new day.*

*We must continue our work to ensure that with each new dawn, the sun shines through clear skies and upon clean waters – and all our families enjoy the blessings of good health."*

*Carol M. Browner*

*- Carol M. Browner, EPA Administrator*



## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII  
901 N. 5TH STREET  
KANSAS CITY, KANSAS 66101

OFFICE OF  
THE REGIONAL ADMINISTRATOR

*Here in EPA Region 7, we're a dynamic and changing organization that never stops looking for better ways to protect the environment and the health of the 12 million people who live in the region. We're involved... and we're evolving. It's wonderful to be a part of that. I came to EPA as regional administrator in 1994 because I knew this would be a great time to be at EPA. A lot of things have changed since then, but that hasn't. Now we've entered a new century – we're doing great things – and it's still a great time to be at EPA.*

*Almost 70 percent of the 286,000 square miles of Region 7 is farmland. But Region 7 is also industrial, with 56 percent of its 12 million people living in metropolitan areas such as St. Louis, Kansas City, Omaha, Des Moines and Wichita. That provides us a full range of environmental challenges, from well water and pesticides to toxic chemicals and incineration.*

*Of late, people have been asking me to predict the future of environmental protection in Region 7. I'm not much on fortune telling. I have no doubt, though, that we will keep the best of what we have learned in the last century. One of the best lessons I'm sure will continue into this century is working closely with our partners: state and local environmental agencies, tribal governments, business, industry, agriculture and citizen groups. Together, we help each other identify needs, achieve common goals, and make the best use of shared resources. In the process, we all work to protect the environment.*

*As for predicting the future, I'll leave that to you. You can see in the pages of this report where we have been. There are many successes, from the restoration of dioxin-contaminated Times Beach to a new Region 7 Headquarters building on an old, abandoned Brownfields site. You can see where we are now, working together to determine our environmental future. But that future depends on you, our partners: what you want, what you will do, and what you will teach your children. When you know these things, perhaps you can predict our environmental future. One thing I know for sure, it will still be a great time to be at EPA.*

A handwritten signature in blue ink, reading "Dennis Grams". The signature is fluid and cursive, with the first name "Dennis" and last name "Grams" clearly distinguishable.

Dennis Grams, P.E.  
Regional Administrator





# CLEAN AIR

Some elements in the air have very detrimental impacts on human health and the environment. These elements are commonly referred to as “pollutants.” Most of Region 7 has had relatively good quality air for as long as our monitors have been recording air quality data.

## ***Air Pollutants***

EPA has established health-based air quality standards for six criteria air pollutants. These pollutants are: carbon monoxide (CO), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), lead (Pb), and particulate matter (PM). The Clean Air Act requires each state to develop air quality plans, or State Implementation Plans (SIPs), which outline how the standards for these pollutants will be met.

Control of emissions in Iowa, Kansas, Missouri and Nebraska has resulted in marked improvements in air quality. Based on monitoring data from 1988 to 1997, the average pollutant concentrations for each of the six criteria pollutants have been reduced in Region 7. Even with these improvements, our most populated cities frequently exceed air quality standards. For example, St. Louis, Missouri (the largest metropolitan area in Region 7) continues to employ significant pollutant reduction measures to meet the ozone standard.

A more important measure of air quality is the number of people exposed to unsafe levels of air pollutants. In 1990, approximately 3.2 million

residents of Region 7 lived in areas that routinely exceeded one or more of the air standards. In 1999, the total number of people living in areas exceeding the air standards dropped to 1.9 million. This represents a 41 percent reduction in the number of people exposed to unhealthy concentrations of pollutants in less than a decade. Despite this success, 15 percent of Region 7’s population still live in areas with unhealthy air. We continue to work hard to improve air quality for this segment of the population.

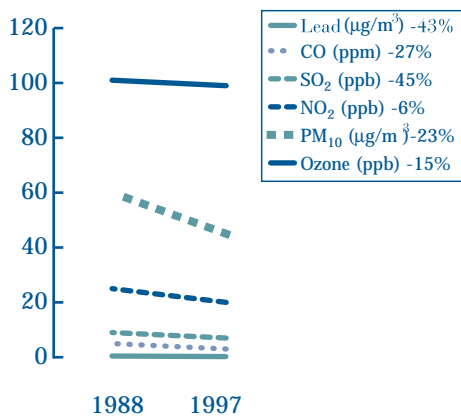
## ***Ozone Consortium***

Region 7’s Ozone Consortium was formed in partnership with many planning agencies in recognition that high ozone concentrations pose serious health threats and that violations of the ozone standard carry with them some of the most difficult requirements of the Clean Air Act. Six cities (Springfield, Missouri; Wichita, Kansas; Davenport, Cedar Rapids, and Des Moines, Iowa; and Omaha, Nebraska), all four state environmental agencies, numerous planning officials and elected officials now participate in this consortium.

## ***Revised Standards***

In 1997, EPA adopted revised health-based standards for particulate matter and ozone. Studies found that the smallest particles (2.5 microns) can cause the greatest damage to human lungs. To give some perspective, the average human hair is 28

## Criteria Air Pollutant Trends



times larger (in diameter) than the largest of these particles. Ozone studies found that the current standard did not adequately protect health.

Continuing air quality evaluations reveal that ozone concentrations in St. Louis and Kansas City areas are exceeding or are very close to exceeding the new ozone standard. At least six other cities in Region 7 have air quality which threatens to exceed the new ozone standard.

### Air Toxics

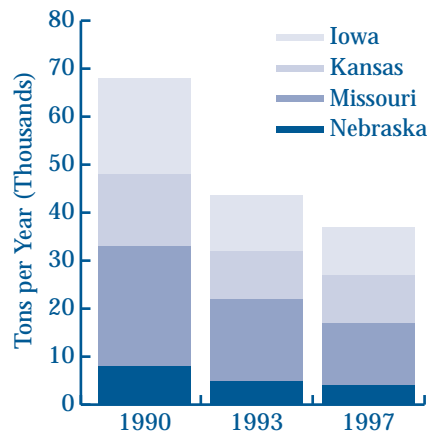
Exposure to other airborne toxic compounds such as benzene, formaldehyde and mercury are also potential threats to human health and the environment. EPA has recently begun to focus attention on nearly 200 air toxic substances.

Region 7 maintains two independent databases which document toxic emissions. The Toxics Release Inventory (TRI) is the oldest of the two

databases. It contains information on toxic releases to air, water and land reported for major facilities. TRI data show that between 1993 and 1997, Region 7's toxic emissions were reduced by approximately 8 percent. The new National Toxic Inventory (NTI) database shows that as much as 70 percent of Region 7's toxic emissions are related to motor vehicles, small facilities, and commercial activities.

Region 7 is working with our states to establish monitoring networks in our most vulnerable areas to evaluate air toxic impacts to communities.

## TRI Emission Trends



### Enforcement – Not Just Fines

When settling federal enforcement cases, Region 7 focuses not only on correction of

violations and remediation of environmental harm, but also on encouraging the violating parties to go beyond the minimum legal compliance requirements by developing supplementary environmental projects as part of the settlements. To take advantage of this program, a company implements a project that will reduce or eliminate the amount of pollutants released into the environment in exchange for a reduced penalty. Region 7 settlements which included these supplemental projects have reduced emissions by an estimated 107 million pounds of pollutants.

### Charcoal Kiln Emissions Reduced Through Partnership

Residents of Missouri's scenic Ozarks had a serious air quality problem until the late 1990s due to the charcoal industry. Charcoal kilns operated without air emission controls, and emitted thousands of tons of particulates and toxic gases, including methanol and carbon monoxide. In 1997, Region 7 and the State of Missouri worked together to develop a solution to this problem and reduce emissions from these sources. Through a settlement agreement, the charcoal products industry agreed to reduce harmful emissions and restore healthful air quality to these Ozark residents.



*The charcoal industry is working with Region 7 to reduce emissions. The emissions strategy will result in a yearly reduction of air pollutants by 30 million tons.*

### **Indoor Air Quality**

EPA studies indicate that indoor air levels of many pollutants may be two to five times, and sometimes more than 100 times, higher than outdoor levels. These levels of indoor air pollutants are of concern, because it is estimated that most people spend as much as 90 percent of their time indoors.

Indoor air quality can be affected by a variety of factors including construction practices; improper storage or use of pesticides and cleaners; elevated moisture levels; and synthetic building materials and furnishings. These factors can lead to a buildup of pollutants such as radon gas; lead; tobacco smoke; carbon monoxide and other combustion pollutants; dust; volatile organic compounds; and pesticides and biological contaminants.

Region 7's program focuses on providing information and technical assistance on improving indoor air quality to the public as well as to other government entities and the private sector.

### **Radon**

Radon is a naturally occurring radioactive gas and the second leading cause of lung cancer. Test devices are used to determine indoor radon gas levels and when they exceed EPA's action level of 4 picocuries per liter (pCi/L). Iowa has the largest number of homes in the nation with radon levels above the action level; Nebraska is third. Region 7's program focuses on providing outreach and technical assistance in evaluating radon levels and mitigating problems where needed.

### **Asbestos**

Asbestos fibers can cause serious lung diseases. Children are particularly vulnerable to the effects of asbestos exposure. EPA's asbestos program centers on public and private schools. There has been an extensive effort to inform elementary and secondary school officials on how to reduce exposure. The law requires inspection of all schools and the development of management plans where asbestos-containing materials are found. These plans, updated regularly, require schools to take actions to reduce or eliminate asbestos exposure. Region 7 has inspected 47 percent of school districts for compliance with the Asbestos Hazard Emergency Response Act.

### **Radiation**

The primary health effects of exposures to ionizing radiation are increases in the risk of cancer and genetic changes such as growth impairment and mental retardation. In order to prevent exposures and incidents resulting in exposure to humans, Region 7's efforts in this area have consisted of providing technical assistance as well as responding to radiation emergencies and participating in emergency preparedness activities.







# CLEAN WATER

**R**egion 7 has a rich and varied abundance of water resources. The major rivers and lakes integrate the overall character of the land, but even more evident, reflect the richness of rainfall in the east that tapers off to the west. The surface water resources consist of about 374,000 miles of rivers and streams, and about 1,145,000 acres of lakes, reservoirs and ponds. These waters are a significant component of Region 7's environmental resources. They provide water for drinking water, irrigation of croplands, and industrial processes. The rivers and lakes also provide habitat for fish and other aquatic species, recreation, barge traffic, and hydroelectric power generation.

The quality of surface water resources is judged by their capability to maintain specific uses designated in each state's water quality standards. Each water body is designated for a variety of uses, including swimming, wading, boating, public water supply, fish consumption, or maintenance of aquatic life. About 32 percent of the assessed lake areas and 51 percent of the assessed rivers and streams fail to support uses designated by each state's water quality standards. This results primarily from contamination from pesticides, plant nutrients, sediments, fecal coliform bacteria, and metals.

Monitoring data show that sedimentation was the leading cause of impairment of water quality in streams, while turbidity/suspended solids and

pesticides were the main causes in lakes. Agriculture was the primary source of these impaired uses in both streams and lakes. This comes as no surprise considering the huge acreage in the four states devoted to farming and the reduction in impacts from point sources of pollution. The reduction in point source pollution has been due to expenditures during the past 25 years of billions of dollars for wastewater treatment by both municipalities and industries.

## ***Public Water Systems***

A public water system is defined as any facility that provides water to 25 or more persons, or 15 or more service connections, at least 60 days of the year. This includes not only cities, rural water districts, and large privately-owned utilities, but also subdivisions, mobile home parks, rural schools and churches with their own source of water. There are more than 4,000 community public water systems in Region 7, serving more than 11.4 million people.

EPA has set standards for more than 80 contaminants in drinking water that may be a threat to public health. These standards require routine testing, and set maximum contaminant levels which the public water systems must not exceed. Any exceedances must be reported. In some circumstances, EPA requires that public water systems provide specific treatment levels to protect consumers against potential contamination that is difficult to detect through testing.

The Safe Drinking Water Act amendments of 1996 established a strong new emphasis on preventing drinking water contamination problems through the Drinking Water State Revolving Fund.

Region 7 states are providing more than 50 percent of their project funds for loans to small communities. These loans are used to rehabilitate or develop water sources; install or upgrade treatment facilities; install or upgrade water storage facilities such as treated water reservoirs; prevent microbiological contaminants from entering the water system; and install or replace transmission and distribution pipes to prevent contamination caused by leaks or breaks in the pipe, or to improve water pressure.

### **Groundwater Protection**

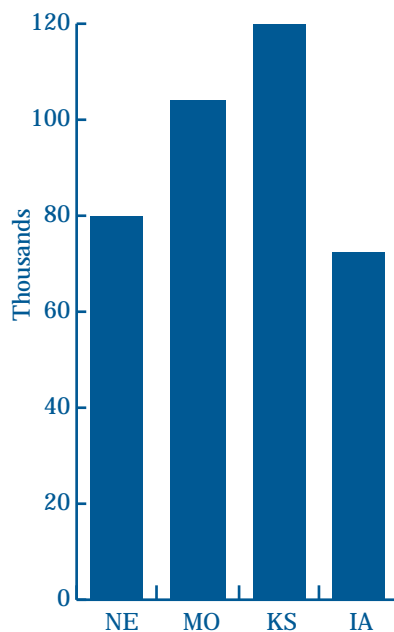
Groundwater is an important resource in Region 7 that is used extensively for domestic and agricultural purposes. More than 85 percent of public water systems in Region 7 rely on groundwater as the drinking water source. In many areas, water from underground aquifers is the only practical source of water. Groundwater has often been taken for granted as a limitless and clean resource.

Region 7 provides funding and support to states, tribes and local governments for source water, groundwater, and wellhead protection programs that emphasize preventing

contamination. Many public water systems have implemented protection programs to safeguard supplies.

All four states have established and implemented a Wellhead Protection Program. Partnering with entities such as the Rural Water Association, Groundwater Foundation, and Midwest Assistance Program provides a back-up system for educating communities. In addition, each of Region 7 states has submitted to EPA its Source Water Protection Program for review and

River Miles



approval. Each state has tailored its plan to provide the best possible protection to its public drinking water supplies.

### **Underground Injection Control Program**

The Underground Injection Control (UIC) program, as part of the Safe Drinking Water Act, is designed to prevent contamination of Underground Sources of Drinking Water (USDW) by injection wells. Basically, a USDW is an aquifer or portion of an aquifer which supplies a public water system or contains a sufficient quantity of groundwater to supply a public water system. Wells injecting into or above a USDW have a high potential for contaminating aquifers that could serve or are currently serving as drinking water sources.

Region 7 has about 13,000 shallow injection wells registered with either EPA or the states. EPA is currently developing additional regulations to provide stricter controls over this type of wells.

### **Management Plans for Pesticides**

The states in Region 7 have developed generic Pesticide Management Plans in preparation of an anticipated EPA requirement to protect groundwater from certain products. These plans are an important management tool for protecting regional water resources.

### **City of Wichita Solves River Problems**

Since November 1973, The City of Wichita, Kansas, has monitored water quality



*Safe Drinking Water Amendments, 1996, established strong new emphasis on preventing drinking water contamination through source water protection.*

downstream on the Arkansas River near Derby, Kansas. Levels of ammonia had been high, and the City's sewage treatment plant was the principal contributor. Ammonia levels were frequently as high as 8 milligrams per liter. The acceptable level for ammonia is about 1 milligram per liter.

During late 1990, the treatment plant initiated nitrification which reduces ammonia discharges. Since that time, levels have measured less than 1 milligram per liter, and fish population data suggest water quality is on the rebound.

In addition, since there is a concentration of aircraft industries in Wichita, the City wanted to reduce two identified metal wastes of concern, cadmium and lead, discharged to the City's sewage treatment plant. An effective pretreatment program from 1988 to 1996 reduced 95 percent of cadmium and 70 percent of lead. Since the City was able to produce high quality biosolids, it developed avenues for applications to croplands. Wichita now has agreements with area farmers to apply safe biosolids on approximately 20,000 acres.

### ***Largest Civil Penalty Under Clean Water Act Levied Against Koch Industries***

One of the nation's largest private oil pipeline companies, Koch Industries, Inc., Wichita, Kansas, agreed January 13, 2000, to pay a \$30 million civil penalty, improve its leak-protection program, and spend \$5 million for purchasing and restoring wetlands and other beneficial environmental projects. It was the largest civil fine ever levied under the Clean Water Act. Koch had spilled three million gallons of oil and related products from 1990 to 1997 into lakes and streams in Kansas, Missouri, and four other states.

The company will pay \$1.5 million to buy and preserve wetlands or wildlife habitat in Kansas and Oklahoma. The company will spend another \$1 million to conduct a pipeline safety study in Texas, Kansas and Oklahoma aimed at educating the oil and gas industry about oil spill prevention.

The company must also hire an independent firm to perform an annual audit for at least three years, and report on whether the company is meeting the requirements of the settlement and applicable environmental laws.





# CLEAN LAND

**R**egion 7's landscape varies from the semi-arid grasslands of the High Plains in western Kansas and Nebraska to lush, rolling hills in the western Corn Belt plains of eastern Iowa; and from the Ponderosa Pine ridges of northwestern Nebraska to the oak-forested hills of the Missouri Ozark Highlands.

Most of Iowa, eastern Kansas, northern Missouri, and eastern Nebraska have been converted to cropland. Significant areas of remaining shortgrass prairie in the western reaches are managed as rangeland for livestock production. Dryland farming during the early part of the century, followed by extensive development of groundwater and surface water resources during the past four decades for cropland irrigation, continues to reduce remaining rangeland areas.

## ***Municipal Solid Waste***

Across the country, many states, communities, businesses, and individuals have found creative ways to reduce and better manage municipal solid waste through a mix of practices that includes source reduction, recycling (including composting), and disposal.

Everyone knows that reducing waste is good for the environment. What most don't know is that solid waste reduction and recycling help stop global climate change. How? By decreasing the amount of heat-trapping greenhouse gases that are linked to everyday trash.

Solid waste reduction and recycling are important parts of pollution prevention efforts in Region 7. Four of the most important programs are WasteWise, Jobs Through Recycling, Pay-As-You-Throw, and Landfill Standards.

## ***Climate Change Impacts***

A solid waste grant in Iowa was used to examine the impact of solid waste management options on greenhouse gases in Iowa. Iowa's 1995 solid waste diversion levels resulted in greenhouse gas benefits that were larger than half of the priority options identified in Iowa's Climate Change Action Plan. This is particularly significant because these reductions have already been achieved, well in advance of the state's 2010 target date.

## ***Hazardous Waste Cleanup: Superfund***

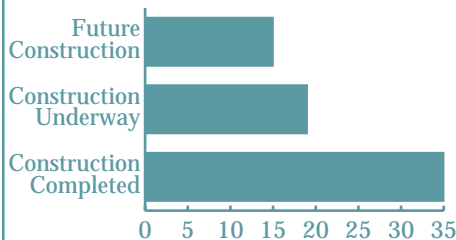
Years ago, people did not understand how certain wastes or practices might affect their health and the environment. In response to citizens' growing concern over health and environmental risks posed by closed or abandoned hazardous waste sites, Congress established the Superfund Program in 1980. Some common hazardous waste sites include abandoned warehouses, manufacturing facilities, processing plants and landfills.

Hazardous wastes sites are initially identified and reported by a variety of sources, such as citizens; businesses; local, tribal and state governments; EPA and other federal agencies. When a potential



hazardous waste site is reported, EPA screens the site to determine what type of action is necessary. Some sites do not require any action. Others are referred to the states, to other EPA programs, to other federal agencies, or to those responsible for cleanup or other action.

National Priority List Sites  
in Region 7



To date, 3,085 potential hazardous waste sites have been identified in Region 7. Approximately 2,489 (about 81 percent) of these sites have been assessed and removed from EPA's inventory, because they required no further action.

For some sites, Region 7 performed on-site investigations including the testing of the soil, water, and air to determine what hazardous substances were left at the site, and how serious the risks may be to human health and the environment.

Of the 69 Region 7 sites that have been listed on the National Priorities List, 54 (78 percent) have the final remedy in place or under construction.

### **Times Beach**

#### ***Reborn as Missouri Park***

Some sites take several decades to clean up. The Times Beach Superfund site, southwest of St. Louis, was a formerly incorporated town where roads were sprayed with waste oil for dust control in the early 1970s. Region 7 confirmed the site was contaminated with dioxin during a 1982 investigation. Twenty-six eastern Missouri properties were also sprayed with the contaminated oil.

The nearby Meramec River flooded Times Beach in 1982. Residents were forced to evacuate. The Centers for Disease Control recommended that the residents who evacuated, as well as those who returned following the flood, be permanently relocated. EPA transferred \$33 million to the Federal Emergency Management Agency for the permanent relocation of residents and businesses in 1983. By the end of 1986, all residents were permanently relocated.

Cleanup consisted of excavating the contaminated soil from all

sites and storing it at Times Beach until a permanent remedy was identified. EPA selected incineration as the permanent remedy to destroy the dioxin. An incinerator was brought to the Times Beach site in 1996.

The incinerator operated from March 1996 to June 1997. More than 263,000 tons of dioxin-contaminated material were treated. Once the operation was completed, the incinerator was demobilized and removed, and the site was restored.

The Times Beach site is now Missouri Route 66 State Park, which opened on September 11, 1999.



*The Times Beach site is now Missouri Route 66 State Park, southwest of St. Louis.*

### **The Removal Program**

The highest priority of the Superfund program is to make hazardous sites safe for those who live or work nearby. These activities may include temporarily relocating people, providing people with

alternative drinking water, and securing sites to eliminate human risks. Superfund's removal program delivers a quick, limited-cost response to



immediate threats posed by the release of hazardous substances.

Region 7 receives an average of 1,110 hazardous substance release notifications a year. It is advantageous for private companies or parties to assist in cleanups and avoid additional expenses. EPA steps in only if state and local authorities exhaust all efforts and resources to address a hazard or to identify Potentially Responsible Parties (PRPs).

### **Pesticides**

Few chemicals have had as much impact or been the subject of as much controversy in recent decades as pesticides. A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests include insects, mice and other animals; unwanted plants (weeds); fungi; or micro-organisms like bacteria and viruses. Many household products are pesticides.

One of the primary goals of the pesticides program is to ensure the proper application and use of pesticides. In Region 7, approximately 5,500 private and 4,500 commercial pesticide applicators were certified in 1999, and an additional 29,000 private and 9,300 commercial applicators were re-certified.

### **Hazardous Waste Management**

Americans make and dispose of chemicals and waste products in

large quantities. Since 1945, the amount of waste generated in the United States has multiplied more than 500 times.

The Resource Conservation and Recovery Act (RCRA) regulates hazardous wastes through their entire life cycle. Hazardous wastes are those which are ignitable, corrosive, reactive (explosive), and toxic. Many other wastes are listed as hazardous based on their source.

Region 7 has 100 facilities ranked high for corrective action cleanup. Twenty of these facilities are in Iowa, 22 in Kansas, 36 in Missouri, and 22 in Nebraska. Region 7 has achieved human health protection for 18 percent of the facilities, just under the 1999 national goal of 20 percent. For migration of contaminated

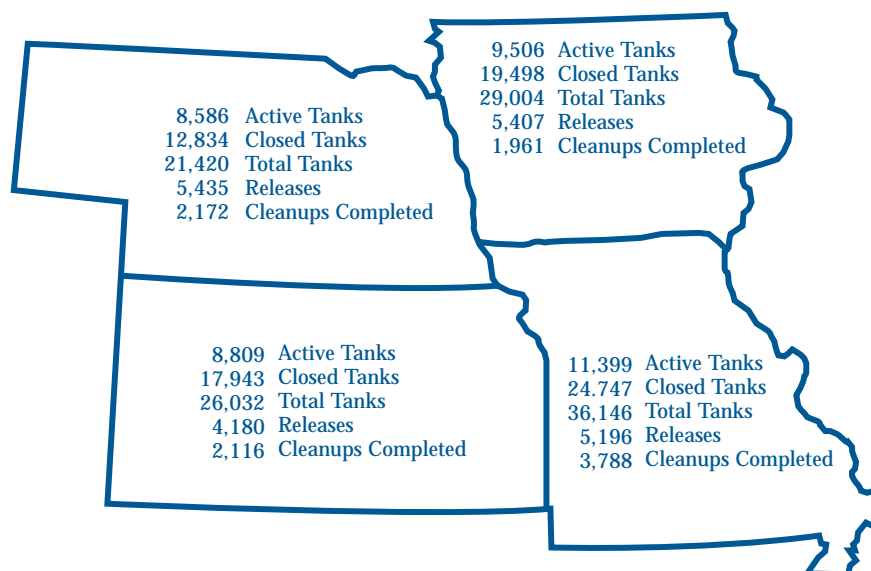
groundwater, Region 7 has achieved controls at 17 percent of high-ranked facilities, well ahead of the 1999 interim goal of 10 percent.

While progress on these short-term cleanup indicators has been good, much work remains to ensure that all immediate and long-term risks associated with these facilities have been addressed.

### **Underground Storage Tanks**

The national strategic plan for the Underground Storage Tank (UST) program has three key goals: to complete the cleanup of leaking tank sites; to prevent future leaks with corrosion protection and leak detection devices; and to approve state programs to replace the federal program.

### **Underground Storage Tanks at a Glance**





# LIVABLE COMMUNITIES

During the past two decades, population growth has occurred primarily within Region 7's urban areas as people move from rural locations. More than half of Region 7's population resides within the urban areas, yet Region 7 retains its original rural character. For example, 75 percent of the towns have populations of 1,000 or less.

## ***Children's Health in Region 7***

Research has shown that children may be more susceptible to diseases linked to environmental exposures. Many EPA actions are directed toward ensuring that America's children are protected from environmental health hazards. These actions include regulations and standards, science and risk assessment, public awareness, community-based programs, and education. While EPA's Office of Children's Health Protection is primarily involved with the first two, Region 7 is more involved in the latter components.

Region 7 contributes through Environmental Justice (EJ), Community-Based Environmental Protection (CBEP), Brownfields, the American Indian Program, and the Office of External Programs. For instance, the American Indian Program and the EJ program channel information and support into tribal lands to protect Region 7's Native American

children. The EJ, CBEP, and Brownfields programs/initiatives have helped to protect Region 7's minority and low-income children. All the community-based programs contribute to the protection of children's health and vitality, primarily through partnerships with other organizations and nonprofit agencies.

Each of these programs also relies on the expertise and efforts of partners to administer enforcement and ensure compliance with environmental regulations. Additionally, it has been through the tireless efforts of Region 7's major program divisions, which ensure clean air, water and land, that Region 7's children's health efforts have been successful. A perfect example is Superfund's lead removal activities. Certainly, it is this partnership of enforcement that is most effective in protecting children's health.

## ***Lead***

Despite significant reductions in blood lead levels over 15 years, lead poisoning remains a serious health risk for children. Iowa, Kansas and Missouri are delegated the authority to implement and enforce lead accreditation and certification programs. These responsibilities are handled by Region 7 in Nebraska and on tribal lands. The state



health departments in Iowa and Kansas are also expected to conduct the renovation and remodeling activities disclosure program in their states.

EPA and Housing and Urban Development implement the real estate notification and lead disclosure program in all states. EPA has funded a number of studies that indicate that both children and adults in localized parts of Region 7 have elevated blood lead levels – for example, in the inner cities of Omaha and St. Louis, and around old lead mining and smelter sites in Jasper County in Missouri and Cherokee County in Kansas.

### ***Lead Removal is Top Priority in Jasper County, Missouri***

The Jasper County Superfund site is an inactive lead-zinc mining and smelting area in southwestern Missouri. Mining operations began in the 1800s and included hundreds of mines and 17 smelters. One smelter in the City of Joplin, which operated until the 1970s, resulted in air emissions contaminating a large area of soil. About 7,000 acres are contaminated with more than 100 million tons of surface mining wastes.

Sample results show that soil, groundwater, and surface water are contaminated with lead, zinc and cadmium. Risks include contaminated groundwater, soil, or mine wastes. About 5,000 residences within

### ***Environmental Education***

To encourage an environmental ethic, Region 7 uses its mascot Charlie Chipmunk to entertain and educate children about the benefits of recycling to help clean neighborhoods, as well as the dangers of lead-based paints to young children. Charlie Chipmunk and his friends make visits to school rooms and assemblies; march in street and park parades; appear at health fairs and have a huge part in making Earth Day an annual success. Charlie tells his stories through booklets, has a rap song and has his own web site: [www.epa.gov/region07/kids/charlie.htm](http://www.epa.gov/region07/kids/charlie.htm). In 1999, Charlie performed for nearly 6,000 children at schools, Earth Day events in Kansas City, Kansas, and the Kansas City Zoo.

Other activities of benefit to children and teachers are the

the sites were found to have contaminated yard soil above EPA's action level for lead. The Missouri Department of Health's 1994 study found that 14 percent of children under seven years old had elevated blood-lead levels. The study concluded that the most significant source of contamination was the residential yard soils.

In 1994, Region 7 began to prioritize the cleanup efforts. Numerous daycare centers and residences were identified as having soil lead concentrations

Environmental Education grants which began in 1992. Through 1999, a total of 222 grants were made in Region 7 totaling \$1,335,442 and given for a variety of projects. While the largest grant available is \$25,000, the smallest grant—just \$200 – was made to a St. Louis kindergarten teacher who developed a video which teaches children about recycling.



*Charlie Chipmunk makes appearances at a variety of youth events to spread the recycling message and that kids can be free of lead-paint dangers.*

at levels requiring quick action. A removal action began in January 1995 which targeted these daycare centers and residential yards. About 2,500 properties were identified for cleanup. Approximately 1,700 properties have been cleaned. Cleanup should be finished by the fall of 2000.

Community involvement is a significant part of site activities, including a Community Advisory Group and a Technical Assistance Grant. EPA, the Missouri Department of Natural Resources, the Missouri Department of Health and the Agency for Toxic Substances and Disease Registry work together as a team. A health education program at the site alerts parents to the dangers of lead.

### ***Environmental Justice***

The region's Environmental Justice (EJ) Program has developed training and a schedule to train EPA staff. Interim regional EJ guidance is under development to determine specific steps which should be taken to address environmental justice in our work. The staff can map sites and communities for EJ to determine if there is a disproportionate burden.

Grants are used in the Environmental Justice program to ensure equal environmental and health protection to everyone. The Dallas County, Iowa, Environmental Health Department used its grant to check blood lead levels in a low-income, minority community. Of 956 children tested, more than 10 percent had blood lead levels equal to or greater than the standard of 10 micrograms per deciliter. The national average is 4.4 percent. More than 42 percent of the county homes were built before 1950 when lead-based paints were commonly used.

Twenty-one children with high blood lead levels, living in 10 homes, were discovered between April-September 1999. Nine of 10 rental units are now considered lead-free. Only five additional children with high blood lead levels have been identified since the program was initiated. The county health department is partnering with private clinics to increase screening efforts, and intends to offer lead testing at spring kindergarten roundups.

### ***American Indian Program***

The federal government has the responsibility to work with federally recognized tribes on a government-to-government basis and to ensure that the rights of sovereign tribal governments are fully respected.

Region 7 is home to nine federally recognized American Indian tribes located in Kansas (four), Nebraska (four) and Iowa (one). Region 7 tribes have been collecting data, assessing their environmental conditions and determining priorities for program development. Eight of the nine tribes in Region 7 have been awarded grants. Using these grants, four tribes are in varying stages of developing pesticide programs; four have been assessing the presence of lead paint contamination; four have been testing for radon in reservation homes and other buildings; five have been assessing surface water quality; and six have been using funding to plan for open dump closures,

to operate recycling programs and develop tribal codes.

### ***Risk Management Plans Benefit Rural Areas***

Environmental risks due to chemical accidents and explosions are more likely to occur in rural areas than in large city complexes. These risks exist in small, rural communities at facilities where businesses or utilities store large amounts of chemicals, including anhydrous ammonia used as fertilizer, gaseous chlorine used to disinfect drinking water, and propane used as a fuel.

Facilities submitted more than 14,500 risk management plans (RMPs) to EPA in June 1999. Nearly 18 percent or 2,635 of these plans came from Region 7 businesses. Iowa, Kansas, Missouri and Nebraska rank in the top 12 states in the nation for the most RMPs submitted.

Region 7, with state and local partners, has worked to eliminate and minimize potential risks through pollution prevention and emergency planning and preparedness programs. Owners have identified the hazards associated with the chemicals that they manage. Local emergency planning committees coordinate their plans to handle any potential problems.





first court cases involving uncontrolled hazardous waste site; 250 parties involved; \$25 million cleanup ... Cleanup decision on eliminate lead-containing drinking water coolers ... **1989** EPA announces Toxic Release Inventory (TRI) database ... EPA



# HEALTHY ECOSYSTEMS

Surface waters, wetlands, forests and prairies of Region 7 provide nationally significant habitat and environmental conditions essential to the survival and diversity of the rich variety of plant and animal species. These habitat areas, and the associated indigenous and migratory species, form Region 7's ecological resources.

Region 7 covers several eco-regions, including the dry, short-grass and mid-grass prairies of the western and central Great Plains, the tall grass prairie areas of the Flint Hills and western Corn Belt plains regions, the forested hills of the Ozark Highlands and the alluvial plains of the Missouri and Mississippi Rivers. Region 7 contains portions of two North American migratory waterfowl pathways, the Mississippi and the Central Flyways.

The principal factor affecting regional ecological resources is loss of habitat, particularly the physical destruction of habitat through land conversion to agricultural uses. Other factors include stream channel modification, river navigation, flood control, diversion of streamflow for irrigation, mining activities, and roadway construction. Increasingly, conversion of natural areas and "old stage" agricultural lands to urban development causes habitat loss. Although agricultural

development and corresponding land conversion have slowed during the past decade, agricultural production continues to impact ecological resources.

Historically, the dry climate of western Kansas and Nebraska "preserved" much of the natural prairie as rangelands. However, development of the region's water resources for irrigation has increased conversion of rangeland. During the past three decades, the use of agricultural pesticides and fertilizers has increased significantly. These chemicals may contaminate water and land resources, and affect biological diversity through direct toxicity or subtle changes to the balance of plants and animals.

Wetlands provide essential habitat for many plant and animal species and are areas of transition between land and water. They are the vital link between the dry, upland areas and permanent, deeper waters. Water levels may fluctuate from day to day, season to season, year to year. The amount and duration of water reaching a wetland has a significant influence on the type of vegetation that will grow. This affects the function and value of a wetland to humans and other creatures. Because wetlands possess characteristics of land and water, they are ideal for creatures which dwell in both habitats.

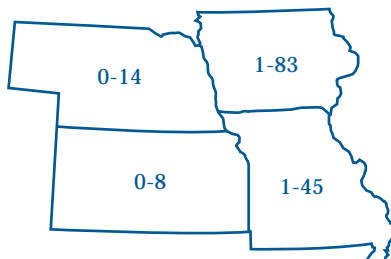
More than three million acres of wetlands in Region 7 are adjacent to rivers and streams, in isolated forests, in fields and meadows, along ponds and lake edges. Although there is no typical wetland type, there are wetland types occurring in Region 7 that are similar in nature and functions because of a common water source, a soil type, or historic formation pattern.

Some wetland types in Region 7 include: prairie potholes, wet prairies, scrub-shrub wetlands, playa lakes, fens, bogs, bottomland hardwood wetlands, and forested wetlands. These wetlands range from under an acre to thousands of acres. Water depths can be as shallow as saturated soil to standing water six feet deep. Water levels vary throughout the year.

Between the mid-1950s and the mid-1970s, wetland loss in the United States was due to filling and draining for agricultural and urban development. Iowa has lost more than 89 percent of its wetlands and Missouri more than 87 percent. These two states rank third and fourth among U.S. states in wetland losses. Nebraska and Kansas have seen fewer historical wetland losses. Recent national surveys indicate that although the percentage of wetland loss to agriculture is decreasing, our wetlands continue to be degraded. Many Region 7 wetlands have been impaired because of hydrologic

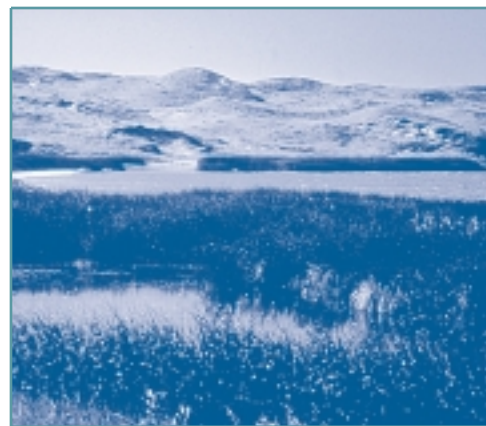
modification, nonpoint source runoff from agricultural lands, and contamination with toxic materials such as metals and pesticides.

#### Bald Eagle Pairs 1982 vs. 1998



In addition to wetland resources, two of the largest U.S. rivers, the Mississippi and the Missouri, are located within Region 7. The Missouri River is the longest river in the United States, and the Mississippi River drainage area encompasses 40 percent of the lower 48 states. Both rivers have vast areas of associated wetlands. The Platte River in Nebraska is also an important resource in Region 7. This unique braided, multi-channeled prairie river supports several endangered species, including the remaining population of whooping cranes.

The important river systems in Region 7 have been altered greatly due to channelization, levees and impoundments. Today, the Missouri River is one-third the size and two-thirds as fast as it was when Lewis and Clark made their voyage of discovery. The Mississippi River channel has



*Wetlands in the Nebraska Sandhills.*

become so separated from its flood plain (through flood control measures) that the river's ability to cleanse itself of nutrients has been reduced. This has contributed to the low oxygen zone in the Gulf of Mexico.

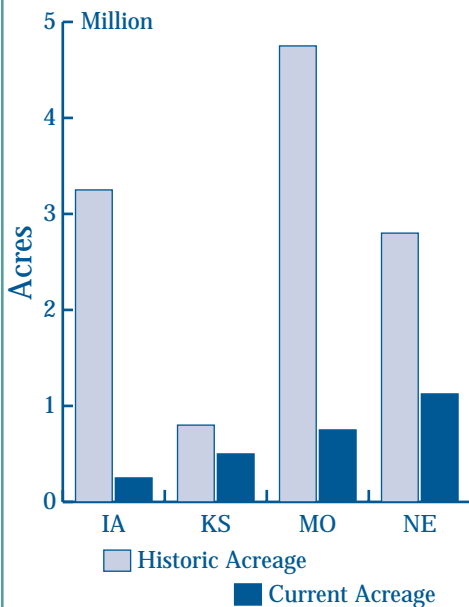
The values of the wetlands, rivers and streams in Region 7 are numerous. For example, wetlands reduce flooding by temporarily storing water and releasing it slowly, which reduces flood peaks. The importance of this function of wetlands became particularly compelling during the Great Midwest Flood of 1993, which was the most devastating flood in modern U.S. history, costing more than \$20 billion in damages.

Wetlands influence groundwater discharge and recharge; influence local and regional weather and climate; maintain water quality by filtering pollutants; reduce shoreline erosion; and provide important

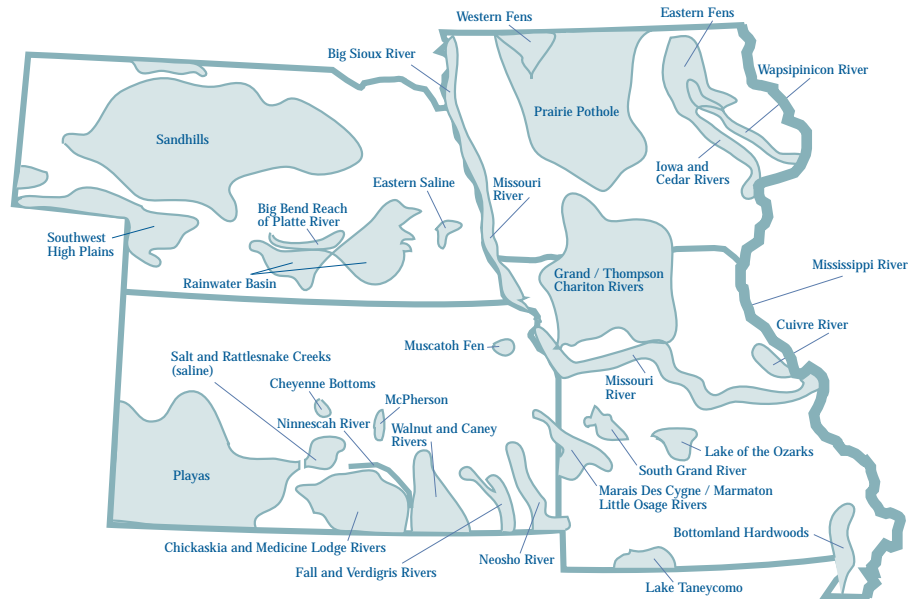
habitat for a variety of plants and animals, many of which are threatened or endangered. Wetlands provide recreation, hiking, birdwatching, hunting and fishing. Further, because of the presence of water and a large amount of dissolved nutrients, freshwater wetlands are among the most productive ecosystems on the planet.

Rivers and streams are vital to the ecological and economic health of Region 7. Major cities, such as St. Louis, Omaha and Kansas City, grew up along the rivers. Streams and rivers provide recreation, a means for transporting millions of dollars of goods a year, a source for municipal water supplies, and habitat to support fish and wildlife.

Wetland Losses in Region 7



## Major Wetland Regions



In 1994 and 1995, Region 7, with the states of Nebraska, Kansas and Missouri, executed the first Regional Environmental Monitoring and Assessment Program (ReMAP) study, "Estimating the Status of the Health of Fisheries in EPA Region 7." This was the first in a series of Region 7 ReMAP projects. The study determined the health status, or quality, of the stream fisheries in Region 7 and established baseline data which could be used to assess long-term trends in stream fishery health.

### Hillsdale Lake

Hillsdale Lake is a federal reservoir near Olathe, Kansas. In the mid-1990s, a group of citizens living in its watershed became concerned over levels of nutrients, and turbidity.

They formed the Hillsdale Water Quality Project. To develop a long-term management plan for improvements, members turned to Region 7 for assistance. Regional specialists served as consultants.

Water quality is holding its own in the face of increased suburban development.



*Citizens' action with assistance of a Region 7 team lead to reducing turbidity and high nutrients in Hillsdale Lake, near Olathe, Kansas.*





accelerate phaseout of chlorofluorocarbons (ozone layer depleting chemicals) to end of 1995 (five years earlier than originally affected, and recovered thousands of drums in 4-state area ... EPA announces Common Sense Initiative ... EPA reports

# HEALTHY PLANET

## **T***Technology Transfer in Central and Eastern Europe*

Several Region 7 programs conduct international activities in cooperation with other agencies and foreign governments. These activities recognize the linkage between environmental issues and the creation of new markets for U.S. technology, and the development of equivalent standards for multi-national producers such as agriculture.

Regional staff members have worked on projects in Poland, Romania, Slovakia, Lithuania, Estonia, Ukraine and Russia. These projects involved environmental issues, such as water pollution from agricultural practices in Russia, Poland and the Baltic States. EPA's projects stimulated the adoption of environmentally sound practices based on educational programs, regulatory control and economic incentives.

### ***Poland Agriculture and Water Quality Protection Project***

Agriculture and related activities have a direct impact on large segments of the human population and ecological infrastructure of Poland. Poor agricultural and rural waste management practices contribute significantly to the degradation of surface and groundwater quality.

The Poland Agriculture and Water Quality Protection Project (PAWQP) was a four-year effort designed to address agricultural water pollution problems. The PAWQP was a cooperative effort between Region 7 and the Polish Ministry of Agriculture and Food Economy. The project was implemented by the Center for Agricultural and Rural Development (CARD) at Iowa State University, Ames, Iowa, and the Institute for Land Reclamation and Grassland Farming near Warsaw, Poland.

Project activities focused on three areas: demonstration of environmentally and economically sustainable agricultural practices; dissemination of educational information; and development of policies.

### ***The Istra River Basin Small Watershed Management Project***

The Istra River Basin Small Watershed Management Project introduced environmental management methods to address water quality problems observed in the Istra River watershed near Moscow, Russia. Evidence provided by Russian agencies indicated that the water supply for the City of Moscow was threatened by contamination. Since the Istra River system

provides about 20 percent of the drinking water for the City, more than 12 million Russian citizens were at risk of health problems. The Istra Project, which officially began in 1995, consisted of four components – environmental education, monitoring, geographic information systems, and agriculture – which were implemented emulating the concept of community-based environmental protection.

### ***Nemunas River Delta – Kursiu Lagoon Project***

The Nemunas River drains 73 percent of Lithuania as well as portions of Belarus, Poland, and the Kaliningrad Oblast of the Russian Federation. The outflow from the Nemunas River is the Kursiu Lagoon

which has major economic and ecological significance.

Region 7, under a grant from the State Department, initiated this project to develop a scientifically and economically defensible plan to manage the system. A corollary goal was to assist the Lithuanian environmental research and management community in developing the capacity to address environmental problems on an integrated, whole-ecosystem basis through application of state-of-the-art technology.

### ***Great Plains International Data Network***

The Great Plains has had significant environmental alterations from human activities over two centuries. The ability of the Great Plains to sustain and replenish itself has become a significant concern.

The general goal of the Great Plains Data Network was to initiate international cooperation between agencies in Canada, the United States and Mexico, and to identify environmental, social and economic challenges facing the Great Plains.

The network will educate its members on data and technical issues through sharing and integrating data. Educating the public on important research results should encourage changes in the management of the Great Plains region.



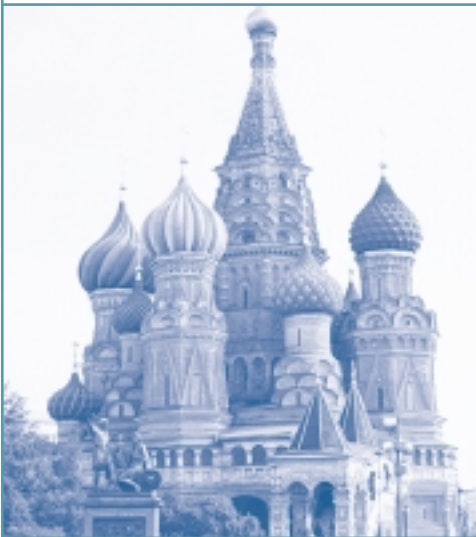
*Thailand receives technical assistance from EPA Region 7. Originally the site of an air quality study, Thailand is now receiving help in building other environmental programs.*

### ***Redeveloping Abandoned Property: Brownfields***

In some areas, properties once used for industrial and commercial purposes have been abandoned and many are contaminated. These areas are called “Brownfields.” Since 1995, EPA has funded 13 cities, counties and colleges for Brownfields Assessment Demonstration Pilots in Region 7. These pilots will test redevelopment models, remove regulatory barriers, and facilitate site assessment, environmental cleanup and redevelopment efforts.

### ***Brownfields Activity in Missouri Lead Belt***

The City of Bonne Terre, Missouri, on the northern edge of the Missouri Lead Belt, has suffered economically from the closure of mines more than 20 years ago. Mining waste has contaminated soil and surface



*Russia is an area for environmental work by EPA Region 7. Staff helped Russians with agricultural water pollution issues. Pictured is St. Basil's Cathedral in Red Square, Moscow.*



water in some areas. Bonne Terre residents and potential new businesses are concerned about the potential human health and environmental risks, particularly from the fine lead tailings blown by the wind.

Through its Brownfields effort, Bonne Terre will evaluate potential environmental risks and develop a 140-acre commercial/retail zone plus industrial park on Brownfields that lie near Superfund mine waste properties. The City Council has sanctioned a Bonne Terre Brownfields Committee, including a representative of the Council, the City Manager, the City Economic Development Director, and a representative of the Mineral Area College to carry out the Brownfields project. This Brownfields project will restore otherwise undevelopable land within the city limits into productive use, and create a model plan to help neighboring municipalities facing similar challenges.

### ***Kansas City is a Brownfields Showcase Community***

Region 7 opened its Brownfields Showcase Communities project in September 1998. The area, including Kansas City, Kansas, and Kansas City, Missouri, was selected as one of 16 showcase cities chosen from among 231 applicants nationwide. Unified Government Mayor Carol Marinovich of Kansas City, Kansas, and former Mayor Emmanuel Cleaver of Kansas

### ***5,000th Removal Action Celebration***

A celebration was held when the EPA announced its 5,000th removal action at the Great Lakes Container Superfund site, northeast of downtown St. Louis, Missouri, in September 1998. Region 7 celebrated this accomplishment with EPA headquarters and other state and local officials.

The facility, abandoned in 1985, had been a drum reclamation plant. Hundreds of drums, some containing hazardous substances, were illegally buried at the site with trash and used tires dumped on the 11 acres.

Fire at the site in 1995 alerted officials to the hazards and prompted several environmental investigations. Discovered were high levels of lead, polychlorinated biphenyls

City, Missouri, held a “ribbon-tying” ceremony, uniting the cities. Other participants included government officials, business leaders and community groups – all partners in the Brownfields Showcase Communities project.

The Brownfields Showcase Communities project has federal agencies working in partnership with local communities to revitalize urban areas through reuse of Brownfields properties. Kansas City is a national model demonstrating the benefits of a

(PCBs) and other hazardous substances in the soil.

In all, EPA excavated and removed 55,000 tons of contaminated soil; collected 680 drums of hazardous substances; removed asbestos-containing materials; decontaminated and removed buildings, cisterns and tanks; and treated and discharged 580,000 gallons of water.

The site is now restored for potential industrial use, making way for continued economic development in the St. Louis metropolitan area.



*Director Michael Sanderson, Region 7 Superfund Division; Timothy Fields, Jr., Assistant Administrator for Solid Waste and Emergency Response, Washington, D.C.; Assistant Regional Administrator Nathaniel (Nat) Scurry, Region 7 Office of Policy and Management; and Region 7 Administrator, Dennis Grams.*

focused, coordinated effort to address Brownfields. EPA is providing \$600,000 in funding and technical assistance to the metropolitan area to help the cleanup and redevelopment.

Chicagoand Bicycle Federation



# FUTURE CHALLENGES

**I**ndustrial expansion, urban sprawl, increasing numbers of vehicles traveling Interstate highways, and pollution prevention all offer challenges to Region 7 as well as the other nine regions which make up the Environmental Protection Agency. World population hit 6 billion in 1999 – actually doubling since 1960. Credit the increase to people living longer and fewer infant deaths.

Industrial expansion and urban sprawl are posing additional air quality management challenges to Region 7's air program and our states' environmental agencies. Urban sprawl in the U.S. doubled in the 1990s. In a five-year period – 1992 to 1997 – developers took 16 million acres of land at a rate of 3.2 million acres yearly. Compare it to the ten-year period between 1982 and 1992 when the yearly rate was 1.4 million.

New research indicates some of the air quality health-based standards are not adequate for protection. Pending the results of ongoing legal deliberations regarding these standards, millions of Region 7 residents may be added to those who live in areas with unhealthful air. Three years of data collection on particulate matter is needed. Particulate matter and ozone remain as future challenges.

Air toxic emissions and exposures are largely uncharacterized in Region 7. The region must improve its toxic modeling and monitoring to evaluate the problems and work with national efforts to reduce these toxic emissions. Success depends on developing air quality plans in partnership with impacted communities. Managing emerging health and environmental threats will be the challenge to add to already achieved successes. The Ozone Consortium in Region 7 explores voluntary transportation and fuels planning measures to prevent violations of the health-based standard.

The air program in Region 7 will seek to meet EPA's National Strategic Goals to improve air quality for citizens living in areas that do not meet air quality standards for carbon monoxide, sulfur dioxide, lead and nitrogen dioxide by 2005; and to improve air quality for those areas not meeting the air quality standards for ozone (smog) and particulate matter by 2010.

Region 7's toxic emissions are created by motor vehicles and small facilities or other commercial activity. Fuel strategies and pollution prevention initiatives will be important to achieve the national goal: a 75 percent reduction from 1993 levels of toxic air emissions to reduce public health threats by the year 2010.



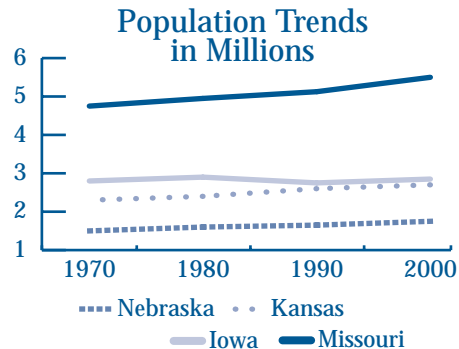
This four-state region has extensive agricultural activity – more than 120 million acres under cultivation – and tied to it is the issue and challenge of sustainable development. Sustainable development adds new questions and considerations to everyday decisions: What are the long-term impacts, and have environmental impacts been incorporated into the decisions as well?

Region 7's water programs division administers the pesticides program. During 1999, our states conducted 3,800 pesticide inspections. A most challenging enforcement issue is complaints that sprays drift to adjoining properties instead of an intended field or to a neighboring home, causing physical exposure or foliage damage. These misapplications result in enforcement either by the state or Region 7.

More fully characterizing the extent and nature of water pollution through improved monitoring programs presents a major challenge to Region 7. This will mean helping to build monitoring consortiums in each state that have adequate resources and effective strategies appropriate for each state.

The Iowa legislature appropriated \$1 million and established a monitoring council to revise its monitoring strategy. Members of the Kansas Biological Survey collect and store databases through the

Central Plains Center for BioAssessment. Kansas exchanges information between scientists, government officials and the public on water quality.



Through a memorandum of understanding, Missouri will combine databases and expertise of its Department of Natural Resources with the Department of Conservation to conduct monitoring on a three-year cycle. Nebraska's Department of Environmental Quality is in its third year of a five-year rotating basin cycle that depends upon random water sampling.

Region 7 must work with other federal, state and local agencies to respond to natural and man-made disasters. EPA and our partners must be prepared to act with a coordinated response to floods, earthquakes, and even if necessary, terrorist attacks.

One of the most recent exciting industry/public/government partnerships is a voluntary effort to improve chemical safety and emergency

preparedness within Wyandotte County, Kansas, where the Region 7 office is located. These efforts have resulted in a chemical safety guidebook for the community.

The idea initially came out of an EPA compliance assistance workshop, and from it, the formation of the Wyandotte County Coalition for Chemical Safety. In addition to local companies, the coalition includes the American Red Cross, Kansas University Medical Center, United Government of Wyandotte County, Kansas City, Kansas and the EPA.

The guidebook contains information on emergency notification procedures as well as evacuation plans. Distribution of the guidebook has been through public forums including a local health and safety fair during the 1999 Earth Day weekend.

In considering future challenges, we must continually evaluate our health-based standards using strong science and the best technology. We must use new technology to reduce pollution from current sources. Chemicals must be evaluated for impacts on both people and places.

**Regional Office**

The new Environmental Protection Agency Region 7 office building, located in Kansas City, Kansas, is an excellent example of a public/private partnership for reuse and greening of a former Brownfields property. The new EPA Regional Office building boasts an expansive view of the confluence of the Kansas and Missouri Rivers, and the spectacular skyline of Kansas City, Missouri. It was once the site of an abandoned hotel. Historically, the property was also home to a gas station, tin shop, battery repair facility, slaughterhouse, furniture shops, and a paint store. The degraded condition of the property prior

to redevelopment, in addition to its former historical uses, supported the perception that it was contaminated with hazardous materials. This perception hindered reuse of the property. However, an environmental assessment of the property detected only low levels of lead contamination that were below any action levels.

Working on a cost-constrained project, Region 7 was able to obtain a design, materials and products for the new building that met various green criteria such as energy efficiency, recycled material content, and less toxic products. As an outgrowth of that effort, the EPA green team members continued to



work on assembling green concepts, and developed an accountability method to make contractors for federal buildings consider these concepts.

### *Directory of State Environmental and EPA Region 7 Offices*

**Iowa Department of  
Natural Resources**

Henry A. Wallace Bldg.  
502 East 9th St.  
Des Moines, IA 50319-0034  
(515) 281-5918  
(515) 281-8895 (Fax)  
[www.state.ia.us/dnr/](http://www.state.ia.us/dnr/)

**Kansas Department of Health  
and Environment**

400 SW 8th St., Suite 200  
Topeka, KS 66603-3930  
(785) 296-1529  
(785) 368-6368 (Fax)  
[www.kdhe.state.ks.us](http://www.kdhe.state.ks.us)

**Missouri Department of  
Natural Resources**

P.O. Box 176  
Jefferson City, MO 65102-0176  
(573) 751-3443  
(573) 751-7627 (Fax)  
[www.dnr.state.mo.us](http://www.dnr.state.mo.us)

**Nebraska Department of  
Environmental Quality**

1200 N St., Suite 400  
P.O. Box 98922  
Lincoln, NE 68509-8922  
(402) 471-2186  
(402) 471-2909 (Fax)  
[www.deq.state.ne.us](http://www.deq.state.ne.us)

**U.S. Environmental  
Protection Agency,  
Region 7**

901 N. 5th St.  
Kansas City, KS 66101  
(913) 551-7000  
(913) 551-7066 (Fax)  
(800) 223-0425 Action Line  
[www.epa.gov/region07/](http://www.epa.gov/region07/)



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