

2013 KANSAS ENVIRONMENT REPORT



*Our Mission:
To protect and improve the health
and environment of all Kansans.*





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www.kdheks.gov

KANSAS ENVIRONMENT REPORT

2013

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Fellow Kansans,

At the Kansas Department of Health and Environment, we work daily in our mission to protect the health and environment of all Kansans.

Through its six bureaus, KDHE's Division of Environment is doing its part to fulfill Governor Sam Brownback's Road Map for Kansas. Specifically, these bureaus work to grow the Kansas economy, protect Kansas families from environmental hazards, and educate Kansans on how they can assist in keeping our state a great place to live. Throughout 2012 and 2013, the Division of Environment accomplished much that resulted in a positive impact on the Kansas environment. These accomplishments range from the implementation of a Smoke Management Plan to preserve Kansas air quality, to the successes of the Kansas WRAPS project in drastically reducing water contamination.

Through educating the public, the valuable services and data analytics provided by our programs, and policy development, KDHE continues to do the work that is integral to a safe and sustainable environment for the people of Kansas.

Sincerely,

Bob Moser M.D.
Secretary and State Health Officer
Kansas Department of Health and Environment

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Dear Reader,

I am pleased to be able to share this 2013 Kansas Environment report with you. Our mission is to protect and improve the health and environment of all Kansans. This report walks the reader through what we are doing to clear the air, manage our waste, protect our water, repair our environment, and support our environmental programs.

We are proud of the work and accomplishments of our programs and employees. It is through their efforts that the reader will learn about the state's improved air quality, how and why recycling rates in Kansas are increasing, what we are doing to improve and preserve the quality of drinking water both through permitting and non-regulatory group efforts. You will learn about our efforts to protect groundwater from leaking petroleum storage tanks, why it was necessary to relocate citizens from a town in southeast Kansas, and what we are doing to enable contaminated property to be redeveloped and readied for productive use.

Special thanks to the employee committee responsible for preparation of this report. Their efforts are greatly appreciated.

Best wishes,

John W. Mitchell
Director, Division of Environment



CLEARING

the Air

Mission: To protect the public and environment from air pollution

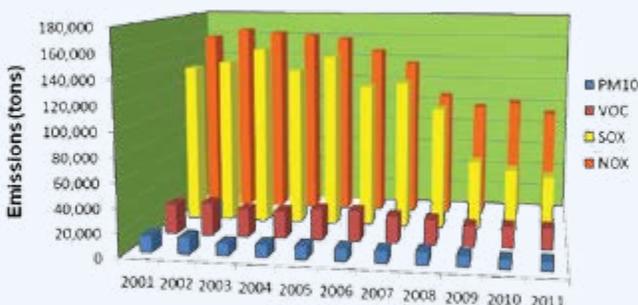
BUREAU OF AIR

Air pollution is generated by modern day-to-day activities. It is not only the emissions from power plants, refineries and other industrial sources that cause air pollution. The daily decisions that each of us make in our driving habits; lawn care practices; home heating and cooling; and other facets of our life can all impact emissions and ultimately air quality. Air pollutant emissions can be categorized into four types of sources. Point sources are industrial, commercial, and institutional facilities that have permits from Kansas Department of Health and Environment (KDHE). Area sources, some of which are regulated by KDHE, are smaller and generally more numerous sources such as household paints and cleaning solvents. On-road mobile sources typically

come from cars, trucks, buses, and motorcycles. Non-road mobile sources include lawnmowers, locomotives and construction equipment. It is important to know where each pollutant comes from and in what quantities, to assess and improve the quality of our air.

Overall, the quality of Kansas' air is good. Kansas has some localized air pollution problems. These tend to be in the metropolitan areas where there are greater numbers of industrial sources of pollutants and more people with concurrent increases in mobile and area sources of emissions. The emission levels from point sources in Kansas have steadily declined over the last ten years. This is offset to a degree by increases in population and the increases

in mobile and area source emissions that track with population. The table below shows the downward trend in emissions of four air pollutants since 2001. The reduction of air pollution involves many participants working to develop solutions such as emissions controls, alternative products such as improved solvents, and broader strategies to protect the air including planning and public education. Actions that individuals and communities take to reduce emissions from day-to-day activities, like engine idling reduction and energy efficiency, are win-win choices that reduce these pollutants of concern, improve air quality, protect the health of the public and improve quality of life.



The Bureau of Air administers the requirements of the Kansas Air Quality Act and implements regulations for the purpose of reducing air pollution. Air pollutants include the criteria pollutants which are particulate matter (PM), nitrogen oxides (NOx), sulfur dioxide (SO2), carbon monoxide (CO), ground-level ozone, and lead, as well as the hazardous air pollutants (HAPs), such as benzene, toluene and formaldehyde. The bureau strives to achieve this mission through three sections within the Bureau: Air Permitting; Monitoring Inventory and Planning; and Compliance and Enforcement.



Jeffery Energy Center

Air Permitting Section

The Air Permitting Section is responsible for reviewing air quality control permit applications and issuing construction and operating permits to facilities which are sources of air emissions. Air permits are the tools used to implement state and federal air quality regulations.

This section issues construction permits and approvals prior to construction or modifications. The proposed construction or modification is reviewed to assure that potential emissions from new or modified equipment will comply with requirements of state and federal regulations. This includes incorporating the requirements of several federal programs. The New Source Performance Standards (NSPS), 40 CFR Part 60, apply to new, modified and reconstructed sources. The National Emission Standards for

Hazardous Air Pollutants (NESHAP), 40 CFR Part 61 and 40 CFR Part 63, regulations are on maximum achievable control technology (MACT) Standards. MACT standards affect new and existing sources and are based on emission levels already met by similar best-performing industries.

The Air Permitting Section issues Class I and Class II Operating Permits. Class I Permits are known as Title V permits because they satisfy the requirements of the federal Title V program and the requirements of 40 CFR Part 70. A Class I Operating Permit is required for major sources of air pollution and provides a complete listing of all air quality regulatory requirements. It is renewed every five years. The Class II Operating Permit has no expiration date and limits the potential to emit of a source to below major source

thresholds that would normally require a Class I Operating Permit.

Construction Documents Issued

2009.....	561
2010.....	517
2011.....	588
2012.....	932

Top Six Industries in Kansas

1. Oil and Gas
2. Electric Utilities
3. Rock Crushers
4. Ethanol
5. Refineries
6. Aerospace

Compliance and Enforcement Section

The Air Compliance and Enforcement Section is responsible for determining compliance and, if needed, issuing enforcement actions in cases of non-compliance. Depending on the type and quantities of emissions, sources are required to obtain permits and conduct activities such as testing, monitoring, recordkeeping and reporting to demonstrate compliance with state and federal regulations. Compliance and enforcement staff use a combination of inspections, performance test evaluations, report reviews, technical assistance and enforcement actions to assure compliance with applicable air quality regulations. Staff from KDHE's district offices and local agencies conduct inspections and investigate complaints that are then forwarded to the compliance and enforcement staff for review. Staff also provide public outreach and compliance assistance and work with several partner agencies to assist sources with regulatory compliance.



Gas compressor engine

Monitoring Inventory and Planning Section

The Air Monitoring, Inventory and Planning Section administers the air monitoring and modeling program to evaluate whether Kansas citizens are exposed to air pollutants in concentrations above the National Ambient Air Quality Standards and determine regional and national air pollution trends. The monitoring section works with local agencies to operate an air monitoring network that provides data from 26 sites around the state. The majority of monitors are located in metropolitan areas to collect data that represents large populations' exposure to air pollutants. There are also two monitoring locations designed to evaluate the impacts of long range transport of air pollutants to and into Kansas.



Balloon over Kaw River



Flint Hills Creek

The planning section is responsible for drafting state regulations to implement the air quality program. This section also drafts State Implement Plan (SIP) revisions for adoption. The SIP is the mechanism required by the Federal Clean Air Act to assure that states protect ambient air quality. This section also assists in drafting legislative bills and special plans such as the Smoke Management Plan.

Bureau of Air staff compile an annual emissions inventory of pollutants emitted from permitted facilities and other sources throughout the state. Inventory provides data for air monitoring and modeling to better understand the causes of air pollution and develop pollution reduction strategies for target areas.

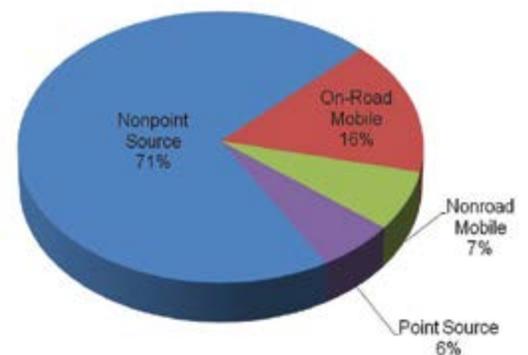
The Kansas Clean Diesel Program is a grant program that uses federal funding allocated by the Diesel Emission Reduction Act. These grants are awarded to diesel fleet operators in Kansas who want to implement fleet improvements that reduce emissions in a cost-effective manner. Past projects include on-road and non-road fleet improvements such as idling reduction technologies for school buses and locomotive engine replacements.

Kansas Point Source Emission Trends

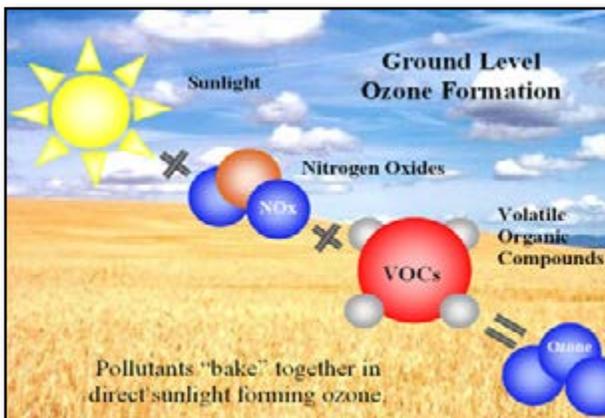
To look at the clear, blue Kansas skies that we commonly have, it can be hard to believe that maintaining good air quality can be an issue. Overall, Kansans generally experience good ambient air quality. The challenge is in

protecting that air quality from both home-grown as well as transported air pollution carried by the strong winds. For instance, one particular consequence of the hot summer weather Kansas experiences is

the impact it has on the formation of ground-level ozone, a pollutant with health impacts, especially for those with respiratory conditions, such as asthma. Ground-level ozone forms under conditions of high temperatures and sunlight as two primary pollutants,



volatile organic compounds (VOCs) and nitrogen oxides (NOx), are photochemically converted to ozone. Controlling these pollutants is essential to reducing ozone pollution.



Kansas Flint Hills Smoke Management

The Flint Hills Ecosystem covers 13 Kansas counties, with prairie land burned around April to improve cattle weight gain, and control invasive trees, shrubs and plants. All rangeland fires produce smoke which can be detrimental to air quality for thousands of people as smoke is carried away from the burned area. Fire Management Practices (FMPs) attempt to reduce the negative effects of smoke that impact air quality, visibility, health, and safety. FMPs reduce smoke-related air quality problems in three ways: by avoiding smoke movement into sensitive areas; diluting smoke concentrations through management and planning; and reducing the total amount of smoke produced.

Smoke from prescribed burning can affect air quality for both nearby and downwind locations. The health of both humans and animals is affected by poor air quality. When wind transport conditions are right, smoke can impact urban areas and present a

health risk to sensitive individuals. A major goal of the Kansas Flint Hills Smoke Management Plan is to reduce the incidence of poor air quality related to prescribed burning in the Flint Hills. Monitors in urban areas measure concentrations of ozone and particulate matter, the two major air quality concerns related to prescribed burning.

KDHE has developed a Smoke Management Plan in cooperation with several agricultural based industries in an attempt to balance the need for prescribed fire in the Flint Hills with the need for clean air in downwind communities. The Plan takes a voluntary approach toward improving air quality during the burn season. The plan does not include any provisions that restrict the burning of grasslands in the Flint Hills. The plan's voluntary approach leaves flexibility in the hands of the land manager but also puts the responsibility on him or her to make wise decisions.

The Kansas State University hosts a website to assist in implementing the Plan¹. This site has been developed to provide one

location for land managers conducting prescribed burns in the Flint Hills to obtain information and access tools to assist them in making burn decisions. The website is the result of the development of the Flint Hills Smoke Management Plan.



Flint Hills Fire

It provides training, regulations, policies, publications, a modeling tool and other links to guide people looking for information on smoke management.

The plan and website are cooperative efforts of countless persons with many perspectives on Flint Hills burning. We encourage land managers to use the site and provide us feedback on organization, content, ease of use, and ways in which the site can be improved for the next burn season.

¹Kansas Flint Hills Smoke Management Plan, <ksfire.org>



Flint Hills Fire



MANAGING

Mission: To minimize the health and environmental impact associated with the generation, storage, transportation, treatment, and disposal of all solid and hazardous wastes in Kansas.

Our Waste

BUREAU OF WASTE MANAGEMENT

In the mid-1990s, Kansas began to seriously look at ways to reduce the amount of solid waste which was being landfilled. The federal Subtitle D landfill regulations had just gone into effect in Kansas and disposal costs were increasing. Nearly half of our counties closed their landfills because they did not wish to upgrade facilities to meet the new standards or because groundwater contamination had been identified at old landfills. Closing a landfill required the transfer of solid waste and money could be saved by reducing the amount of waste to be transferred. In addition, state law required every county to develop a new solid waste plan which had to include some waste reduction practices. A few years later, KDHE implemented a new grant program and the annual WORKS Conference both designed to encourage and stimulate recycling and composting in Kansas.

The above reasons and a growing public awareness and interest in waste reduction led Kansans to voluntarily implement a wide range of waste reduction practices ranging from simple drop-off sites to curbside

collection for recyclables and yard waste. In 2013, the combined effect of all actions increased the Kansas municipal solid waste (MSW) recycling rate to about 34 percent and the per capita disposal rate dropped from over 5.5 pounds per person disposed per day in the early 2000s to about 4.2 pounds per person per day. Nearly two pounds of MSW was recycled each day by the average Kansan in 2012 which ranked Kansas 10th in the nation according to a national study, perhaps the number one rating for all states that do not have statewide recycling mandates or landfill disposal bans.

When the recession hit the nation in 2008, waste disposal went down everywhere and the slow economy was partially the reason; however, it is now clear that even during this time, recycling was growing significantly in many Kansas communities. A wide variety of improvements were being implemented with an expansion of "single stream" curbside collection

of mixed recyclables making a huge difference in many locations. This trend is continuing as local government officials respond to citizen requests to improve recycling services and convenience.



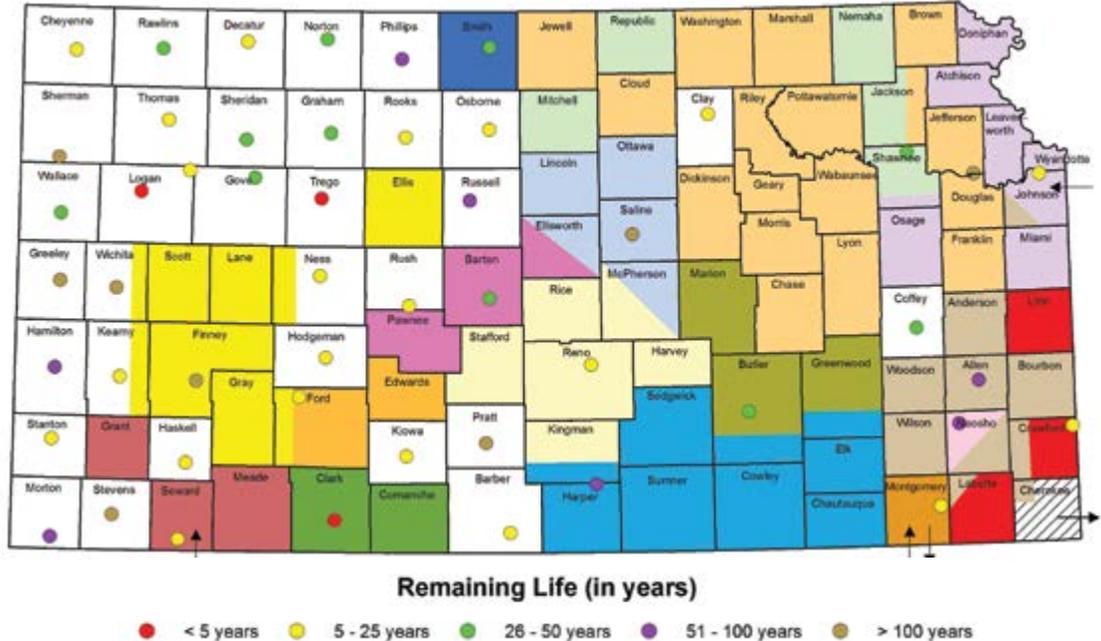
Curbside Collection

In summary, Kansas recycled over one million tons of MSW for the first time in 2011, the last year that a recycling survey was carried out. By diverting over one million tons annually, Kansas is conserving valuable landfill space and natural resources.

The Kansas Solid Waste Disposal System

Kansas laws and regulations allow local governments to make their own decisions regarding how they will manage the solid waste they generate, as long as all relevant standards of design and operation are followed. Consequently, we have a wide range of practices including local landfills, transfer stations, central composting facilities, various recycling options, and more. Overall, Kansas has over 500 permitted solid waste facilities and many hundreds of unpermitted recycling operations.

Despite the growing trend in recycling and composting, most municipal solid waste (MSW) continues to be landfilled -- over 4 million tons in 2012. Of the total amount landfilled, about 800,000 tons is imported each year (mostly from Missouri) and disposed in landfills near the state line. The amount landfilled is certainly significant, but Kansas has excellent permitted landfill capacity, enough to meet disposal needs for at least 30 years, as shown in this map. The map also illustrates which counties transfer their MSW to each regional facility.



Liquids Disposal in MSW

Landfills. In 2010, Kansas received approval from the U.S. EPA to implement the "RD&D program" at Subtitle D landfills which, among other things, allows liquids disposal into lined landfills under the conditions of state-approved operating plan amendments. Previously, liquids were prohibited and landfills were operated in a manner to keep the waste mass as dry as possible. The Bureau of Waste Management (BWM) now recognizes that this "dry tomb" scenario is undesirable from a long-term perspective because dry landfills do not progress toward waste stabilization as quickly as wet landfills and someday dry landfills will "wake up" if liners and caps fail and they will begin producing landfill gas and leachate. Now, BWM encourages landfills to consider liquids addition to accelerate waste stabilization with the side benefit of providing cost effective disposal options for waste generators and revenue for the operating landfills. Landfills that add liquids may also generate more landfill gas which can be recovered and beneficially used.



Land Application

Landfill Gas Recovery and Use Programs.

By 2012, multiple MSW landfills in Kansas were recovering landfill methane gas and beneficially using the gas either directly in industrial processes or to generate electricity. Active landfills that were collecting and using significant amounts of gas included Rolling Meadows Landfill, Topeka (Waste Management, Inc.), Johnson County Landfill in Shawnee (Deffenbaugh), Oak Grove Landfill in Arcadia (Waste Corporation of America), and Seward County Landfill in Liberal. Gas recovery is also occurring at closed landfills in Kansas City, KS and Wichita. In total, nearly 10,000 cubic feet per minute of gas is being collected and beneficially used and more landfills are likely to implement programs in the near future.



Electric Engine, Rolling Meadows Landfill

Groundwater monitoring at MSW Landfills. All MSW landfills and certain construction & demolition and industrial landfills are required to monitor groundwater to ensure that public and private water supplies and other water resources are protected. BWM oversees monitoring activities at 69 active landfills and 95 closed landfills. A total of 127 out of the total of 164 monitored landfills have detected some type and level of groundwater contamination; however, none of these landfills have impacted public water supplies. There is no documented groundwater contamination originating from landfills constructed and operated to meet the Subtitle D standards that were put into place in 1994. All contamination appears to have originated from old unlined landfills.

Oil and Gas Drilling Waste Disposal

In 2011, the Legislature directed KDHE to work with the Kansas Corporation Commission (KCC) to develop an application procedure to allow land-spreading of water-based drilling waste generated by the anticipated increase in horizontal drilling. The first phase in this effort was to establish an online application that would be administered by KCC even though KDHE was the lead agency in developing the technical “best management practices.” That application was developed with input from KCC and other interested parties and was made available in 2012. The bureau was also directed by statute to convert that application procedure into regulations before the beginning of the 2014 legislative session. The primary environmental challenge associated with land-spreading this waste is the high chloride level in the drill cuttings. KDHE worked with agronomy experts from Kansas State University and received input from groundwater management districts related to this issue. The land-spreading best management practices are based upon a maximum acceptable chloride load in the upper one foot of soil (900 ppm).



Oil Rig

At the same time that the land-spreading procedures were being developed, some companies decided they wanted to dispose of drilling waste in MSW landfills that were permitted to accept liquid wastes. Special landfill operating plans were needed to accommodate the large volume of high chloride liquid waste that would be brought to the landfills.

Kansas Medication Disposal Program

KDHE cooperatively implemented a program with the Kansas Board of Pharmacy designed to provide a safe disposal option for unwanted and uncontrolled medications. Households and long-term care facilities now have the option to take their unwanted medications to a participating pharmacy or to a county household hazardous waste collection center. A website is available to find the nearest participating drop off site¹. The total number of participating businesses and counties continues to grow. The goal of the program is to have one or more drop-off sites in every Kansas community to minimize the in-home risks of storing unwanted and sometimes dangerous medications and the environmental impacts of less safe disposal methods such as down the sewer or in household trash.

¹Kansas Medication Disposal Program <kdheks.gov/waste/about_medwaste.html>



Illegal Dump Clean-Up and City Dump Repair Programs

The Bureau of Waste Management continues to administer statewide programs to clean-up illegal dumps and repair old closed city dumps. BWM worked with local governments to clean-up illegal dumps in Hill City, Woodston, Lyon County, Osage County, Leavenworth County, Medicine Lodge, Copeland, Satanta, Finney County,

Wichita, and Wyandotte County. Old city dumps were repaired in Chanute, Bern, Elsmore, Falon, Isabel, and Allen. These programs use solid waste tonnage fee money to carry out clean-up and repair work to minimize nuisance and environmental risks posed by mismanaged solid waste.



Illegal Dumping

Disaster Response Harveyville and Wichita Tornadoes

A rare winter EF-3 tornado struck the small town of Harveyville on Feb. 28, 2012 destroying dozens of homes and a church while resulting in numerous injuries and one fatality. On April 14, an EF-3 tornado struck southeast Wichita causing serious damage particularly to a trailer park and a nearby neighborhood and to the Boeing and Spirit aerospace facilities. Whenever tornadoes or other natural disasters strike, BWM mobilizes to the site to provide technical advice and to make decisions related to debris management.



Tornado Debris, Harveyville

The Harveyville tornado response was a model of how local and state governments worked together to quickly respond to a major natural disaster in a small community. Within 15 hours, BWM worked with city and county officials to develop a debris management plan on property owned by the city including a debris disposal area, a tree and brush site (for burning or processing), and storage areas for recyclable metal, HHW, waste tires, and appliances. Excellent waste segregation occurred based upon KDHE's



Tornado Debris, Wichita

widely distributed guide and a good site access road was constructed by county road and bridge personnel using available oversized rock. BWM guided the city in the construction of a shallow debris disposal pit and within 24 hours the first loads of debris began to arrive at the site which has now been closed.

Following the Wichita tornado, BWM met with the City of Wichita and Sedgwick County within 24 hours and plans were made to utilize city and county staff to collect debris. KDHE provided guidance to three permitted facilities that would manage debris including the Cornejo construction and demolition (C&D) landfill, the City of Wichita C&D landfill, and the Waste Connections MSW landfill in Harper County. Most trees and brush were taken to a staging area at the city wastewater treatment plant on the southeast side of the city where the material was processed into mulch.

RCRA Corrective Action Authorization

An important part of the federal hazardous waste permitting program is referred to as "RCRA Corrective Action (CA)." Associated laws and regulations address all areas of contamination that may exist at hazardous waste treatment, storage, and disposal (TSD) facilities. TSD facilities often have soil and ground water contamination resulting from past releases of hazardous constituents and CA establishes procedures for performing site investigations, ongoing monitoring, and for implementing corrective measures to control and/or remediate sites.

The U.S. EPA has overseen most aspects of CA in Kansas while KDHE provided limited technical support. In 2012, KDHE and EPA cooperatively

agreed to move forward with state authorization to officially assume these duties. This decision was partially based on input received from the regulated TSD community that hoped to eliminate the dual authority by KDHE and EPA that often creates complications that can delay projects and add costs to all affected parties.

Much KDHE and EPA effort occurred in 2012 and extended into 2013 to apply for and receive CA authorization. Various state regulations required updates and numerous documents comprised the authorization application. In addition, two memoranda of agreement (MOA) were needed to define all project delegation and work share agreements. The application was submitted to EPA in the spring

of 2013 and was authorized in Sept. 2013.

The corrective action program authorization will affect a universe of approximately 50 TSD facilities. Some of the following high priority facilities will be the first to transition from EPA to KDHE oversight including Sunflower Army Ammunition Plant (Desoto), Great Plains Development Authority (Parsons), Farmland (Lawrence), Safety-Kleen (Wichita), Koch Nitrogen (Dodge City), Chem-Waste Management (Wichita), Day and Zimmerman, Inc. (Parsons), and Kansas State University Mixed Waste Landfill (Manhattan). The remaining facilities will be addressed through the annual multi-year permit strategy work share agreement.

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PROTECTING

Mission: To provide safe drinking water, prevent water pollution, and assure compliance with state and federal laws and regulations.

Our Water

BUREAU OF WATER

Each day, every Kansas citizen uses water from our State's lakes, rivers, streams, and aquifers. We drink it and use it in our homes; for recreation; on our farms to water livestock and irrigate crops; and to manufacture goods that are the basis of our economy. Water also provides habitat for many animals and plants. It is critical to our daily lives that Kansas'

water is good enough to maintain all these diverse needs and uses - now and in the future.

The fundamental and shared goal of the water programs implemented by the Kansas Department of Health and Environment (KDHE) is to maintain water quality that supports all the designated uses and the uses for

those who rely on them. Protection is achieved with a variety of tools to keep pollutants out of the State's waters. These range from monitoring the waters, enforcing regulations, to providing financial and technical assistance to support the use of pollution control technologies and practices.

Water quality standards are composed of three parts, definition of the uses of waters, an antidegradation policy, and criteria. The criteria define pollution levels for specific chemical and physical parameters and may be numeric or narrative. The criteria are developed from scientific studies of impacts on humans and aquatic life and consider uses for the individual water body. The standards define the uses of waters and lists those uses for each water in the state. The standards contain an antidegradation policy which seeks to maintain existing uses and protect the higher quality waters and are primarily used by regulators for various types of permits and for assessing water quality of a water body to check that the water is not degrading and that existing water quality is protected from unnecessary pollution. Water quality standards and criteria are set to ensure that uses are maintained and protected¹.

[Clean Water Act \(CWA\)](#)

"The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972.³

The Kansas Surface Water Quality Standards (KSWQS) are required to be reviewed periodically per the CWA. KDHE conducted public meetings in 2011 and is currently modifying the standards before the final public hearing to accept the proposed changes in regulations.

The Kansas Surface Water Register designates potential uses for over 2200 streams segments and more than 300 publicly owned or accessible lakes or wetlands². These water bodies are monitored by KDHE for a large suite of pollutants to determine whether they meet the minimum KSWQS. KDHE's monitoring network has approximately 400 stream, and 350 lake and wetland locations. If a certain water body does not conform to standards, more monitoring is done to determine the problem and allow, if needed, for preventive measures to be taken. For example, closure of a swimming beach because of potential exposure to high bacteria or to blue green algal toxins in the water which may be harmful to humans and/or animals. The data collected by KDHE is available to the public, state and federal agencies, Indian tribes, local governments, private consultants, and academicians.

¹kdheks.gov/water/download/kwqs_plus_supporting

²kdheks.gov/befs/download/Current_Kansas_Surface_Register

³epa.gov/lawsregs/laws/cwa/html

Making Sure Water Quality Meets the Standard



Sunset at Clinton Lake

Every two years a Kansas Integrated Water Quality Assessment report is prepared by KDHE as required by CWA, and is submitted to the Environmental Protection Agency (EPA). This report presents the results from the various surface water monitoring activities. Probabilistic sampling design (selection of sites by computer generated random selection) is used to provide overall information on the level of water quality within the State. In the 2012 report 25 percent of the streams and 9 percent of lakes and wetlands supported all designated uses. The major causes of nonsupport for streams were nutrients primarily resulting from agriculture, natural phenomena, and physical habitat degradation. The major causes for impairment of lakes and wetlands were nutrient enrichment, siltation, elevated turbidity levels, taste and odor problems and zebra mussel infestation mainly due to agriculture, municipal point sources, natural phenomena and introduction of nonnative species.

A large section of this report consists of the 303(d) List which includes the stream segments and lakes with water quality impairments based on assessment of

stream and lake chemistry and biological data. A water body is placed on this list when monitoring finds that pollution levels prevent the lake, wetland, or stream from attaining its beneficial uses. In Kansas, beneficial uses include human recreation, agricultural water supply, and maintaining healthy aquatic life.

Impairment is assessed by comparing actual water quality data to standards adopted in state regulations. To assess water quality, KDHE maintains several targeted surface water quality monitoring programs that collectively fulfill the environmental surveillance/reporting requirements of the Clean Water Act. The stream chemistry monitoring program (180-200 sites assessed /year) is the largest and longest running environmental monitoring operation at KDHE. KDHE also maintains a network of around 150 lakes which are monitored on a rotating basis

If the impaired waters do not meet water quality standards, even after pollution control technology was installed at point sources of pollution, priority rankings have to be established for these impaired waters and Total Maximum Daily Load (TMDL) needs to be developed and implemented. The TMDL sets a limit for the maximum amount of a contaminant (load) that a water body can receive and still meet the water quality standard. The process of developing TMDLs considers the existing quality of the water body, the appropriate standard, and the sources of pollution. The most recent, 2012, Kansas 303(d) List

identified 524 station/pollutant combinations that require a TMDL, which captures 2,610 stream segments. Kansas delisted 403 station/pollutant combinations through 2012, with 117 of these delisted in 2012. Of these 2012 delistings, there are 36 station/pollutant combinations delisted that have TMDLs. TMDL implementation efforts are taking place throughout the state with the guidance of regional Watershed Restoration and Protection Strategy (WRAPS) projects. Several WRAPS projects have been responsible for the success of delisting TMDLs through the implementation process.

What are Designated Uses?

In Kansas, the streams, rivers, and lakes and wetlands have designated uses. The designated uses recognized are:

- **Aquatic life support** (supporting the plants and animals that normally live in a natural water body)
- **Recreation** (this might be “contact recreation” such as swimming or “noncontact recreation” such as motor boating)
- **Food procurement** (fishing, etc.)
- **Domestic water supply** (drinking water)
- **Agricultural water supply** (livestock watering and irrigation)
- **Industrial water supply**
- **Groundwater recharge** (for water destined to enter aquifers)

Nonpoint Source



Chase Falls

KDHE is active in preventing or abating nonpoint sources (NPS) of pollution which results mainly from runoff. NPS

pollution is chiefly caused by rainfall moving over and through the ground. As the runoff moves, it picks up and carries away natural and man-made pollutants, finally depositing them into lakes, streams, wetlands and even underground sources of drinking water.

Since over 90 percent of the impaired waters in Kansas are influenced to some degree by NPSs of pollution and because the abatement of those sources is a long-term investment of time and resources, watershed planning and management is key to setting the course for water quality improvement. One of the

key programs involved in NPS control is the Watershed Restoration and Protection Strategy (WRAPS) program. WRAPS is a planning and management framework that engages stakeholders within a particular watershed to implement restoration and protection at the watershed level. It is more of a local citizen stakeholder approach than being merely government at work.

The watershed stakeholders initiate the process. Funds, other resources, guidance and technical assistance are provided for stakeholders as relevant for the particular watershed. A project design is developed and implemented with input from the WRAPS work group consisting of several state and federal agency members. The Total Maximum Daily Load (TMDL) program helps guide these regional environmental improvement efforts addressing NPSs through the WRAPS process.

TMDLs are prioritized and the high priority TMDLs are targeted for implementation work through WRAPS projects. TMDL

implementation improves water quality as producers adopt best management practices to reduce pollutant loading associated with the water quality impairments within specific watersheds. With the implementation of controls on point and nonpoint sources of pollution, water quality improvements will progress and once the water quality standards are met, these waters can be delisted.

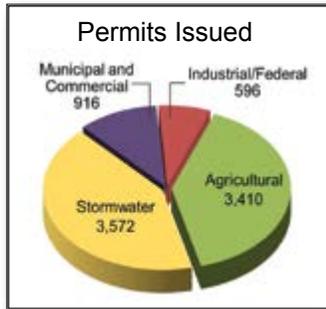
How Can You Help?

- *Using rain gardens, rain barrels, and proper lawn care product applications their impact on water quality.*
- *Make environmentally responsible decisions including appropriate farming techniques, livestock management, and proper stream stewardship.*

As Kansas citizens, we are each responsible for the future of this valuable resource. The majority of water impairments in the United States are caused by nonpoint source pollution.

Point Source

Point source pollution of waters comes from an identifiable source. Sometimes the effluent (water discharged) goes directly into a water body or it may flow through a pipe or into a ditch first. The water is treated before it is discharged and at times it is mixed with runoff. Point sources are regulated according to the NPDES Program established through the CWA. A permit has to be obtained before the effluent may be discharged into a water body.



KDHE is authorized to administer federal and state laws governing the treatment, re-use and discharge of wastewaters. Among the many responsibilities of the agency are periodic reviews of water pollution control permits, the approval of engineering plans, and specification for wastewater treatment facilities and sewage collection systems, as well as the

development of stormwater best management practices. The development and management of operator training and certification programs is also the responsibility of the agency. KDHE also administers the Kansas Water Pollution Control Revolving Fund (KWPCRF). The KWPCRF provides a source of low interest loan money for wastewater treatment facility projects.

While city sewage and industrial wastewater clearly require permitting and treatment, large animal feeding operations are also required to manage their wastes. Concentrated Animal Feeding Operations, in addition to some livestock markets, and livestock truck washes are required to have permitted wastewater controls. Wastewaters generated by these treatment facilities and operations are subject to technological effluent limitations,

An important function of KDHE is to protect all surface and groundwater resources in the state by controlling discharges from various municipal, commercial, and industrial wastewater treatment facilities, permitted concentrated animal feeding operations, and urban stormwater runoff.

and the Kansas surface water quality standards. Individual permits normally are issued for a period of five years, and all are reviewed by KDHE prior to re-issuance. The Industrial Program Section (IPS) administers regulatory permitting programs of industrial wastewater. KDHE issues general permits for the control of stormwater runoff from construction and industrial sites, larger cities, and urbanized counties. Stormwater management plans have been implemented in 58 of the state's largest municipalities/counties/governmental entities and their surrounding areas to reduce the effects of stormwater runoff to their receiving streams.

	2012	2013
Certified Water Operators	1,942	2,132
Certified Wastewater Operators	1,679	1,860
Water Operator exams given	251	103
Wastewater Operator exams given	207	90

Geology



KDHE's Geology Section was instrumental in filling and stabilizing legacy salt caverns near railroad tracks in Hutchinson to significantly reduce the risk of potential adverse impacts to the railroad. KDHE also regulates 500 hydrocarbon storage salt cavern wells and 44 brine storage ponds associated with the storage operations and has been working with the hydrocarbon storage industry to prevent unintentional brine spills. The storage facility operators over the last few years have made a substantial investment in preventing these brine spills from occurring. The approaches used to address the problem vary, depending on the conditions present at each facility. This includes replacing any plastic lining piping. The number of spills has been reduced from 91 in 2009 to 41 in 2011.

KDHE and Kansas Geological Survey developed and implemented a web based water well record submittal system for water well contractors. Numerous benefits include better data integrity and instant population of the water well data base used by a number of entities for hydrogeologic information were realized.

Public Water Supply

One of the important functions of KDHE is to assist public water supply systems in protecting public health and achieving compliance with all state and federal drinking water regulations. The agency oversees more than 1,000 public water supply systems (PWSS) including municipalities, rural water districts, and privately owned systems. These systems may serve a small community of several families or cities of more than 300,000 persons. Private domestic/residential groundwater wells are not considered PWSS and are not regulated by the state.

Water may come from a raw source – e.g. ground water wells, surface intakes from streams or lakes - or it may be purchased from another entity. Each public water supply system is evaluated every three years to ensure continuing compliance with eight core areas of operation and maintenance and to ensure the public is receiving the best quality water possible. PWS staff is available to provide assistance to public water supply systems and will refer the systems to third party technical assistance providers as appropriate.



Big Hill Lake

Nutrient Reduction Strategy

Kansas, like most agricultural states, sees substantial influence by nutrients on its aquatic environment. While agriculture is the dominant land use throughout the state, urban impacts are also present in many of the Kansas waters. Nutrients, particularly phosphorus and nitrogen, are necessary to sustain life, fueling production agriculture and suburban landscapes alike. Problems arise when the amount of the nutrients load entering Kansas streams and lakes exceeds the capacity of those water bodies to assimilate the nutrients into a balanced and diverse community of aquatic plants.

Once nutrients become excessive, primary productivity by plants proceeds at an accelerated pace, displacing ecological diversity with dominance by a few species that enjoy competitive advantages for growth over less tolerant species. This is referred to as eutrophication. Large swings in dissolved oxygen and pH occur in concert with the heightened photosynthetic response triggered by a glut of available nutrients. During the night, the respiration of the expanded plant population and decomposition of organic material produced from the photosynthesis process depletes the available oxygen in the water column to the detriment of desired aquatic life, including macroinvertebrates (water critters visible with the naked eye), mussels and fish. In time, continued eutrophication shifts aquatic communities from those associated with clean water to those more tolerant of stressful conditions.



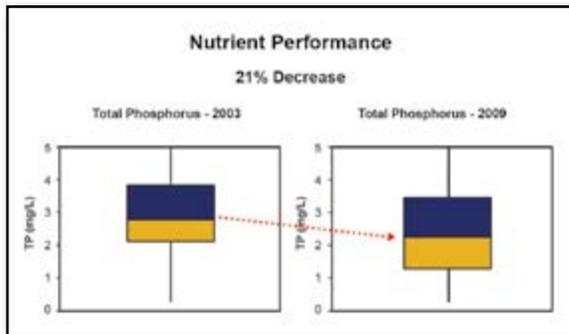
Increase in sediment: erosion of stream bank

The obvious manifestation of excessive nutrients has been the emergence of blue-green algae blooms in lakes and the presence of filamentous strings of attached algae on the bottoms of streams. The greater dominance of these undesirable conditions, the less likely the water body will support its designated uses – recreation, high quality aquatic life and drinking water supply. Therefore, excessive nutrients present a detrimental impact on the environmental and economic vitality of Kansas surface waters.



Possible source of NPP: urban runoff

While outbreaks of undesirable conditions spurred by eutrophication will not be eradicated in the near future, the goal for Kansas is to reduce the magnitude, duration and frequency of those outbreaks. In other words, future blooms should not be as extensive, long-lived or occur as often as those currently seen. Rather than immediately seek a desired level of phosphorus or nitrogen in streams or lakes, KDHE has focused its efforts toward immediate reduction of nutrient loads from man-made sources. This act recognizes that 1) current loadings are excessive and detrimental; 2) efforts to establish the correct nutrient levels are fraught with uncertainty and contention; and 3) there are implementation steps that can be taken now to reduce nutrient loads from both permitted point sources and nonpoint source activities present in the watersheds of afflicted water bodies. Early emphasis has been on reducing the nutrient loads from large wastewater facilities. Investment and implementation of treatment technology has reduced phosphorus content of wastewater by 21 percent and nitrogen by 31 percent.



The next point of emphasis will be effecting reductions in loads coming from nonpoint sources in the watersheds of nutrient impaired water bodies. The Watershed Restoration and Protection Strategy groups established in certain watersheds with the aid of EPA Section 319 and State Water Plan Funds have watershed plans with designs on reducing phosphorus loads by at least 30 percent in the coming years. Total maximum daily loads established by KDHE form the goals for restoring support for the designated uses of waters impaired by excessive nutrients. Scores of TMDLs have been in place for many lakes and reservoirs in the state for years and new TMDLs for nutrients in streams are now in development.

All of these efforts are coordinated through a Nutrient Reduction Framework developed jointly between KDHE, the Kansas Water Office, the Kansas Department of Wildlife Parks and Tourism and the Kansas Department of Agriculture. Continued improvement in water quality previously hampered by excessive nutrients is expected from these efforts, but full achievement of water quality standards will take years, if not decades, of investment in treatment.

Storage Tank and Dry Cleaning Programs

The Storage Tank program and Drycleaning Cleanup Program operates trust funds specifically targeted towards environmental cleanup for these commercial industries. The trust funds are designed to benefit closed and operating gasoline stations and drycleaning stores to clean up releases of fuel and solvents that have occurred during their operations. These programs ensure that environmental issues do not prevent continued use or redevelopment of these commercial properties that are cornerstones of our communities. The trust funds provide a significant benefit to Kansas communities by reducing or removing environmental liabilities from properties through closure of sites.



Remediation Trailer

The programs provide water treatment systems to ensure citizens have access to clean drinking water in municipal PWS systems.

The programs also provide funding and technical guidance at numerous site cleanups throughout the state.

The storage tank program oversees cleanups at more than 1300 sites while the drycleaning program manages cleanup efforts at more than 80 sites.

Although the contaminants for the cleanup are different: petroleum at storage tanks sites and chlorinated solvents at drycleaning sites, the methods of cleanup are often similar: excavation of contaminated soils, soil-vapor extraction, and air sparging.

Contaminated soils are removed whenever possible to address the source areas of

groundwater contamination. Soil-vapor extraction uses a blower attached to wells installed above the water table to induce a vacuum on the soil to remove volatile compounds. Air-sparging injects air into



PWS Treatment Vessels City of Colby

wells installed in the groundwater to induce volatilization of dissolved-phase contaminants. Soil-vapor extraction and air-sparging are usually conducted in tandem to maximize the removal of volatile compounds.



Contaminated soil removal at future Wal-Mart Supercenter, City of Augusta

Treece, Kansas Removed from the Risk A Town Relocated



Moreland Tire - Treece

Treece, Kansas was a small town of 120 residents in Cherokee County, Kansas located on the Oklahoma state line. Treece was part of a large mining area covering parts of Kansas, Missouri and Oklahoma. This area was a major supplier of lead, zinc, and iron ore from the late 1800s to mid 1960s. Many years of mining left the region with piles of ground up rock (chat) as high as a 10-story building and tailings ponds contaminated with lead, cadmium and zinc. Exposure to these metals is hazardous to human health, especially children. The health threat, together with a history of collapses due to undermining beneath the town, led the US Environmental Protection Agency (EPA) to offer to relocate people living in and nearby Treece.

The voluntary relocation project started in Jan. 2010. The goal was to remove people from the area and prevent another generation of exposure and hazards from past mining operations. Much of the exposure was from children playing in contaminated chat or people living in homes with impacted dust tracked in from outside. The dust can be breathed

in or ingested when children put their hands or other dirt covered objects in their mouths. Children are more sensitive to the health effects of lead than adults. Fetuses exposed to lead in the womb, because their mothers have a lot of lead in their bodies, may be born prematurely and have lower weights at birth. Exposure in the womb, in infancy, or in early childhood also may slow mental development and cause lower intelligence later in childhood. Lead exposure can also cause problems in adults, such as increases in blood pressure, anemia, and impaired nervous system or kidney function.

EPA provided up to \$3.5 million and KDHE added a 10 percent match of \$388,888 to buy out the homes of people in Treece. A governor-appointed, five-member Trust with the support of KDHE oversaw the relocation efforts. All residents requesting assistance were relocated as of July 1, 2012. The relocation included the purchase of 120 properties including a church, four city properties, two businesses, sixteen vacant houses and other buildings, sixty-five residences, and thirty-two vacant lots. All the buildings were demolished and the streets, driveways and sidewalks were removed, as well as the water tower. One resident and the owner of a storage building remain in the city limits. Nine residents, one church and a vacant gas station declined to be moved in the relocation area just outside the city limits.

With no remaining city government in place, the Kansas legislature passed a bill in 2012 dissolving the city as a corporate body. Cherokee County officially removed the town as a taxing unit in response to the town's dissolution. The remaining land was planted to grass and will be auctioned to the highest bidder for use as a wildlife area or for livestock grazing. An Environmental Use Control is placed on each property preventing future human occupation.

Redeveloping Contaminated Property

BER emphasizes reuse and redevelopment of contaminated property in its cleanup projects whenever possible. The Voluntary Cleanup and Property Redevelopment Program (VCPRP) and the State Brownfields Program are two prime examples of programs that promote the economic redevelopment of underutilized properties in Kansas. In 2011, the VCPRP reached a milestone of issuing the program's 200th "No Further Action" determination letter which by statute provides the landowner relief from future environmental liability concerns making property more attractive for redevelopment by prospective buyers. Since the inception of the program in 1997, approximately 2,500 acres of property has been cleared for redevelopment purposes.



Before: Large areas of petroleum contamination



Before: Acid waste and runoff



After: State of the Art Stadium Butler County Community College

The State Brownfields Program works with Kansas communities to conduct cost-free environmental assessments that clear properties for reuse and redevelopment. These assessments encourage economic growth and job creation in our state. Since 2010, the program has conducted more than 200 Brownfields assessments and cleared over 1,600 acres



Cleanup: Removing contamination



After: Reusable property

of property for redevelopment. Some project examples include manufacturing restarts/relocates, health clinics, hospitals, libraries, community buildings, fire stations, main street storefronts, and commercial real estate, all of which are vital components to economic growth and prosperity in local communities. These programs facilitate economic growth while protecting human health and restoring the state's valuable natural resources.



Before: Bankrupt facility

Another program, the State Cooperative Program, provides an alternative to the EPA Superfund Program, and is instrumental in addressing large, complex cleanup sites without the negative stigma of listing those sites on the federal National Priority List. Recently the program has worked with the City of Lawrence to address environmental issues at a 467 acre former nitrate manufacturing facility. The property will eventually be a high end business park and gateway to the eastern side of Lawrence.

This project clearly demonstrates that local – state partnerships are the key to promoting business and growth while protecting public health and the environment.



Cleanup: Demolition of buildings and soil cleanup



After: Future Business Park

NW Star Valley Road Reclamation Project

Work was recently completed on another successful KDHE Surface Mining Section (SMS) Reclamation Project. The NW Star Valley Road Abandoned Mine Land Reclamation Project reclaimed 1,640 linear feet of dangerous highwall within KDWPT Mined Land Wildlife Areas Unit 38 and Unit 42, a popular Cherokee County fishing area.

Prior to construction, people driving down NW Star Valley Road, just a couple of miles south of West Mineral, found themselves dangerously close to deep water

filled impoundments left from mining activities 60 years prior. With the use of federal funding, the SMS engineered, contracted and managed the construction of the project designed to eliminate the hazardous conditions.



Reclaimed Mining Land Cherokee County

Earth fills and a rock coffer dam were used to construct recoverable slopes along the west project area. The most cost effective reclamation method for

the remaining road was to move the existing roadway away from the dangerous highwall. This entailed

working closely with both KDWPT and Cherokee County officials to permanently change the road layout. The project was bid in early 2011 with Preston Construction Incorporated of Columbus, Kansas being the low bidder.

In order to comply with US Army Corps of Engineers requirements, a stop log water control structure on an existing marsh was rehabilitated in order to enhance and protect 9.4 acres of emergent wetland. Construction required that the work comply with a Cherokee County Floodplain permit and a Bureau of Water Stormwater Permit. In total, over 32,500 cubic yards of earth was moved, about 18,000 tons of various sized rocks placed, one new boat ramp was installed and 19 acres were seeded to a mix of warm season native grasses.

Partnerships

BER is the state interface with various federal environmental cleanup programs. The BER Surface Mining Section, located in Frontenac, administers the federally mandated active mining program for reclamation of coal-bearing land. BER provides technical assistance and regulatory oversight for the U.S. Environmental Protection Agency and the U.S. Department of Defense for their remediation programs. The federal programs address some of the largest and most serious hazardous waste sites in the state. Remedial actions emphasize installing alternate water supplies for affected residents; removing, capping and/or treating contaminated soils to prevent human contact with pollutants; and abating sources of pollution that threaten the environment of the state.

What You Should Know

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BER performs functions that directly protect public interests through its State Water Plan program that performs remedial actions at orphan sites and focuses on providing alternate water sources to affected households, and the BER Spill Response program which provides a 24-hr spill hot line and program staff that respond to sudden releases from industrial sites, traffic and rail accidents, and pipelines.

Bureau of Environmental Remediation
 Gary Blackburn, Director
 1000 SW Jackson, Suite 410 Topeka, KS 66612-1367
 Phone: 785-296-1660 Fax: 785-296-1686
www.kdheks.gov/ber



SUPPORTING

Mission: To administer all environmental program operations at the six Kansas Department of Health and Environment district offices and provide scientific, technical, and operational support for KDHE Division of Environment programs.

Environmental Programs

BUREAU OF ENVIRONMENTAL FIELD SERVICES

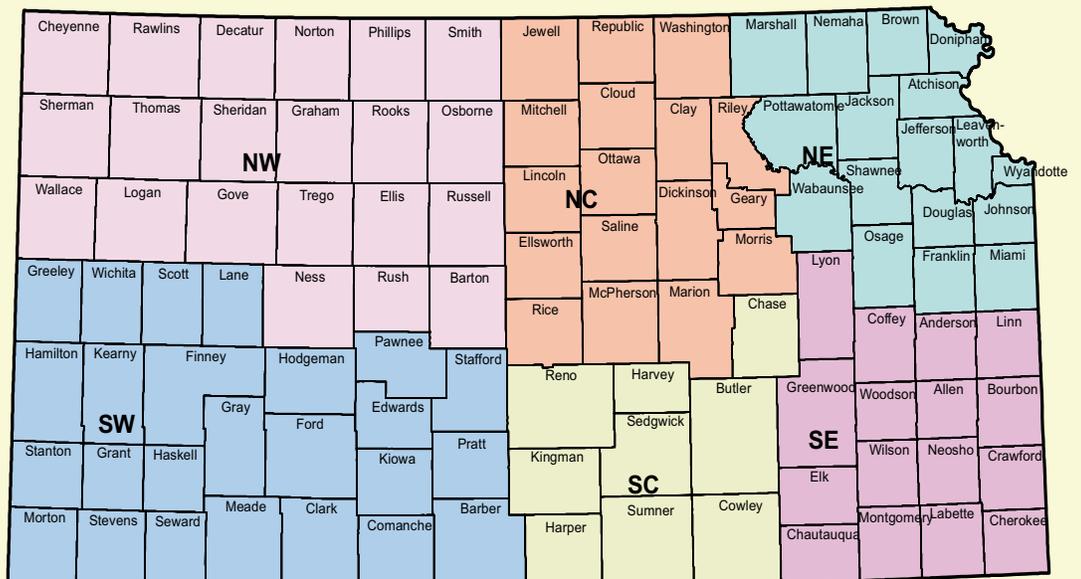
KDHE maintains six environmental district offices. The map shows the locations of the district offices and the counties served by each office.

Another important role of district staff is to provide assistance to the regulated community to help them understand and comply with the environmental laws that apply to their facility. The Division of Environment

promotes voluntary compliance by the regulated community by helping them correct violations. Enforcement is reserved for the most serious situations or uncooperative facilities.

District office staff supports the important regulatory programs within the Division of Environment by performing field work. Field staff observe and document compliance by the regulated community with important state and federal environmental laws that are designed to minimize the release of pollutants into the air, water and soils of the state. In addition, staff can identify environmental conditions that pose an immediate threat to the environment or human health and prompt immediate actions to eliminate those conditions.

District Offices

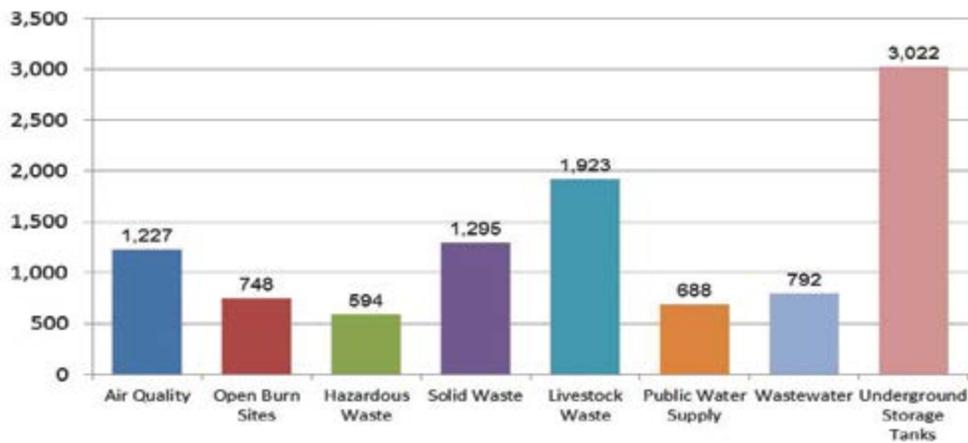


Inspections and Investigations

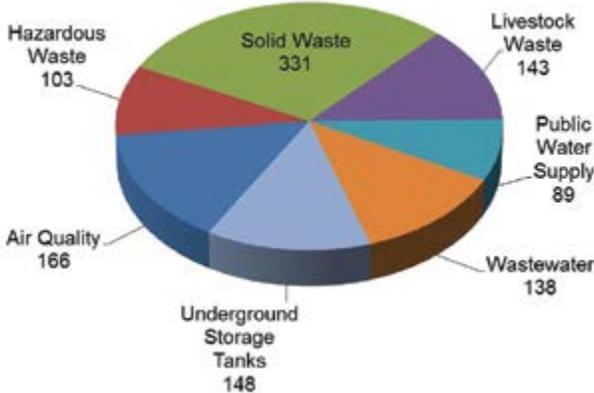
Field work includes routine compliance inspections, complaint investigations, and other special pollution investigations. The diagrams below show the number of each of these field activities performed by district staff during the period from Oct. 1, 2010 until Sept. 30, 2012.

Routine compliance inspections are performed at regular intervals at permitted facilities or facilities that have notified KDHE they generate regulated hazardous wastes. These routine inspections help facilities maintain compliance with environmental laws and their permits. Complaint and special investigations are typically prompted by citizen reports to KDHE. KDHE takes reports by citizens seriously. All citizen reports are responded to by district personnel, often in coordination with other KDHE, state or local agency staff.

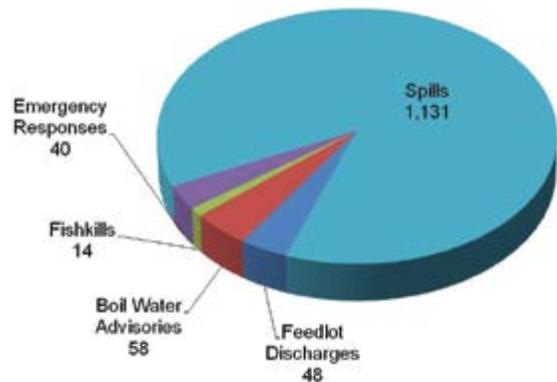
Routine Compliance Inspections
October 2010 - September 2012



Complaint Investigations
October 2010 - September 2012



Special Investigations
October 2010 - September 2012



Bureau of Environmental Field Services
 Leo Henning, Director
 1000 SW Jackson, Suite 430 Topeka, KS 66612-1367
 Phone: 785-296-6603 Fax: 785-291-3266
www.kdheks.gov/befs



PROVIDING

Analytical Information

Mission: To provide timely and accurate analytical information for public health benefit in Kansas and to assure the quality of statewide laboratory services through certification and improvement programs.

HEALTH AND ENVIRONMENTAL LABORATORIES

The Kansas Health and Environmental Laboratories (KHEL) directly supports programs within the Division of Environment by analyzing water, soil and air samples for contaminants. The results of analytical testing performed by KHEL are used extensively by programs to establish baseline



Sample Collection

of two important water programs, the Public Water Supply and Watershed Planning, Monitoring and Assessment.

About 1,100 public water supplies across Kansas collect and submit samples to KHEL, where they are analyzed

to determine compliance with drinking water standards established by the federal Safe Drinking Water Act. Staff in KDHE's Watershed Planning, Monitoring and Assessment Section collects samples from streams, lakes and wetlands across Kansas for analysis by KHEL. The analytical data obtained from these samples is used to establish background water quality conditions across the state,

as well as to identify areas where surface water quality is impaired. This information is used to develop Total Maximum Daily Loads and watershed plans to restore water quality. For more information about these programs, refer to the *Protecting Our Water* section of this report.

KHEL also analyzes water and soil samples that are collected by Division of Environment personnel in the Bureau of Environmental Remediation (BER) and Bureau of Waste Management (BWM) who oversee the investigation and clean-up of contaminated sites across the state. Staff compares analytical data generated by KHEL with enforceable clean-up standards set at levels that

are protective of public health and the environment. For more information on these programs, refer to the *Repairing our Environment* and *Managing our Waste* sections of this report.



Sample Receiving

environmental conditions, identify conditions that exceed legal pollutant limits or pose public health threats, prepare plans to restore environmental conditions, and prepare enforcement actions.

The vast majority of samples analyzed are water samples collected as part



Laboratory Testing

Radiochemistry Laboratory

Another vital role of KHEL is to analyze environmental samples collected within 90 miles of the Wolf Creek Nuclear Power Plant. These samples include, but are not limited to, surface water, groundwater, sediment/soil, vegetation, food (e.g. milk), fish, and biota. The Radiochemistry Laboratory has the capability to analyze environmental samples for alpha and beta particles and gamma rays released during the decay of radioactive molecules. This routine measurement of radionuclide activity serves to establish baseline data so that any unplanned release from the power plant can be quickly detected. In the event of a nuclear accident at Wolf Creek, the radiochemistry laboratory would be called upon to analyze samples which would determine the extent of resulting contamination.



Automated Gamma Spectroscopy



Uranium Distillation Step

Chemistry Laboratory

Reliable data is produced on the presence and quantity of natural and manmade pollutants that may be found in Kansas waters, soils and waste sites. The Environmental Chemistry Laboratory analyzes samples for public water supplies and for several KDHE environmental programs. Drinking water samples are monitored for many compounds which are regulated by the Safe Drinking Water Act. KDHE programs such as the Bureau of Environmental Remediation and the

Bureau of Waste Management submit samples to the Chemistry Laboratory as part of environmental monitoring and clean up programs. The Organic Chemistry Unit can analyze samples for 124 organic compounds which include pesticides, herbicides, solvents and hydrocarbons. The Inorganic Chemistry Unit can analyze samples for 61 inorganic compounds which include minerals, metals, nutrients and a number of other compounds and properties such as total suspended solids and dissolved oxygen.



Metals Analysis



Pesticide Extractions



Volatiles GC-MS Analysis

Environmental Microbiology Laboratory

The Environmental Microbiology Laboratory monitors drinking water and its sources for the presence of disease-causing organisms. Since it is not practical to test for each possible waterborne infectious disease due to the associated time and cost, KHEL tests for “indicator” organisms whose presence indicate that other disease-causing organisms may also be present. Most of these organisms are common to the intestinal flora in humans and animals.

The ideal “indicator” organisms are coliform bacteria. The Environmental Microbiology Laboratory uses the Colilert (Idexx) test medium to detect coliforms. If coliforms are present, the Colilert test medium can additionally detect the presence of a specific coliform, E. Coli, which is the best indicator of fecal contamination.

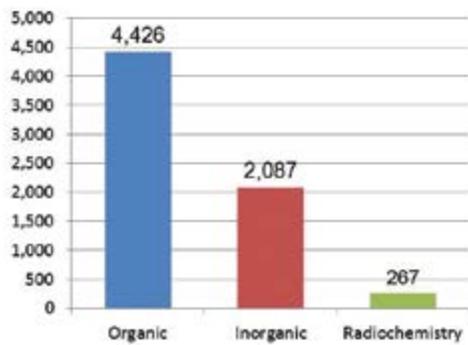


Testing Public Water Supply Samples

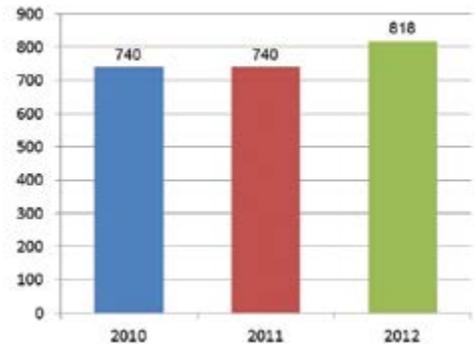
Sample Breakdown by Unit for the Environmental Section

The charts below show the number of samples that were submitted to the KHEL for analysis during 2010, 2011 and 2012. The number of individual chemical compounds for which each sample was analyzed greatly exceeds the number of samples as shown in the "Total Number of Parameters Analyzed" chart.

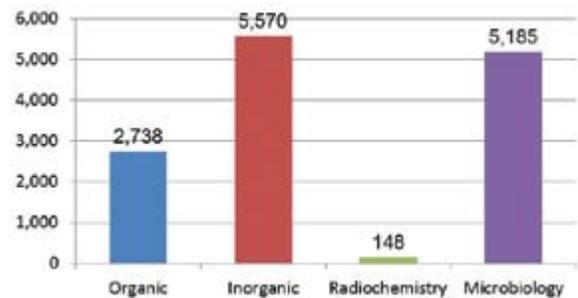
BER and BWM Contaminated Site Samples
2010-2012



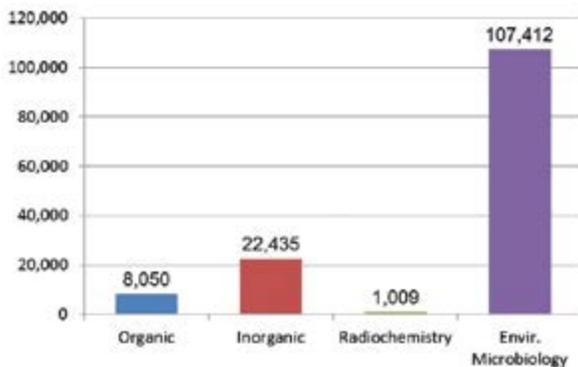
Wolf Creek Background Radiochemistry Samples



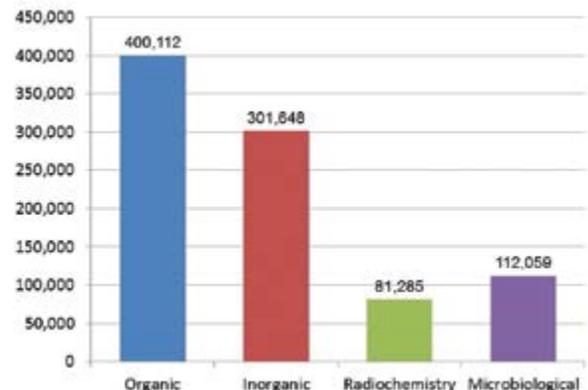
Surface Water Monitoring Samples Analyzed
2010-2012



Public Water Supply Samples Analyzed
2010-2012



Total Number of Parameters Analyzed
2010-2012



Laboratory Information Management System

The Kansas Health and Environment Laboratories is currently in phase II of a major project to replace the current Informix Laboratory Information Management System (LIMS) with the Chemware HORIZON® web-enabled LIMS. The new LIMS automates many laboratory processes including secure and timely sample submission and result reporting. The Chemware solution sets the expectation for an increase in efficiency and timeliness of results reporting, improvements in data quality, increase in laboratory testing capacity, and better utilization of scientists from managing paperwork to the protection of public health.

Currently, phase II of the project focuses on completion of instrument automation, custom reports, and interfaces to laboratory partner systems such as the Safe Drinking Water Information System and the Ambient Water Monitoring Program System. These seamless interfaces help ensure data timeliness and accuracy when making environmental decisions. Internal section testing began May 2013 and transitioned to production in Dec. 2013.

Blue Green Algae Testing at KHEL

In June 2013, KHEL began validating follow up testing for Blue Green Algae Toxin testing to confirm the Enzyme-linked immunosorbent assay (ELISA) results that BEFS currently uses. This validation study will be used to determine whether there is toxin in the sample and the specific toxin amounts of microtoxin-LR, RR, YR and LA submitted to KHEL. The testing will look at the potential amounts of toxin in the sample submitted, but won't be used to determine compliance or for reporting results to owners or operators.



Contact Us!

Division of Environment

<http://www.kdheks.gov/environment>

Director's Office (785) 296-1535

Bureau of Air

<http://www.kdheks.gov/bar>

General Information (785) 296-6024

Construction & Operating Permits 296-1570

Air Compliance and Enforcement 296-6422

Monitoring and Planning 296-1692

Bureau of Water

<http://www.kdheks.gov/water>

General Information (785) 296-5500

Geology 296-5524

Industrial Programs 296-5547

Livestock Management 296-6432

Municipal Program 296-5525

Public Water Supply 296-5514

Technical Services 296-5506

Watershed Management 296-4195

Watershed Planning 296-6170

Bureau of Waste Management

<http://www.kdheks.gov/waste>

General Information (785) 296-1600

Compliance, Assistance & Enforcement 296-1604

Hazardous Waste Permitting 296-1609

Regulations & Data 296-0724

Solid Waste Permitting 296-1601

Waste Reduction/Local Assistance 291-3746

Kansas: Don't Spoil It! (800) 282-9790

(Public Information Campaign)

Bureau of Environmental Remediation

<http://www.kdheks.gov/ber>

General Information (785) 296-1660

Assessment & Restoration 291-3252

Remedial Section 296-1673

Storage Tank Section 296-1678

Surface Mining Section (620) 231-8540

Health and Environment Laboratory

<http://www.kdheks.gov/labs>

General Information (785) 296-1657

Environmental Chemistry 296-1647

Microbiology 296-0971

Radiation Chemistry 296-1630

Bureau of Environmental Field Services

<http://www.kdheks.gov/befs>

General Information (785) 296-6603

Public Advocate (800) 357-6087

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Phone: (785) 827-9639

Northeast District Office

http://www.kdheks.gov/befs/dist_offices/ne.htm

800 West 24th Street, Lawrence, KS 66046

Phone: (785) 842-4600

Northwest District Office

http://www.kdheks.gov/befs/dist_offices/nw.htm

2301 East 13th Street, Hays, KS 67601

Phone: (785) 625-5663

South Central District Office

http://www.kdheks.gov/befs/dist_offices/sc.htm

130 S. Market, 6th Floor, Wichita, KS 67202

Phone: (316) 337-6020

Southeast District Office

http://www.kdheks.gov/befs/dist_offices/se.htm

1500 West 7th, Chanute, KS 66720

Phone: (620) 431-2390

Southwest District Office

http://www.kdheks.gov/befs/dist_offices/sw.htm

302 West McArtor Rd., Dodge City, KS 67801

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