FEBRUARY 1989

Oklahoma Water News

MONTHLY NEWSLETTER OF THE OKLAHOMA WATER RESOURCES BOARD

New EPA, State Rules Put Teeth In Underground Tank Program

New federal regulations concerning underground storage tanks have the OWRB and other state pollution agencies busily preparing far-reaching strategies aimed at curbing a sinister threat to Oklahoma's environment.

But setting up a comprehensive state regulatory program on new tanks should be child's play compared to actually plugging the leaks of hundreds—perhaps thousands—of faulty underground storage tanks already known to reside in state soils. EPA estimates that there are approximately 30,000 buried tanks in Oklahoma subject to regulation; perhaps 25 percent of them leaking petroleum, hazardous substances or various other toxic chemicals into the substrate and groundwater supplies.

Federal rules seek to prevent, find and correct tank leaks and spills, ensure that tank owners and operators can pay for costly leak mitigation and create regulatory programs in every state. In Oklahoma, five state agencies—the OWRB, Corporation Commission (OCC), Department of Health (OSDH), Department of Agriculture (OSDA) and Department of Pollution Control (DPC)—now share responsibilities in two programs designed to inspect existing and new tanks and investigate cases of leaking tanks. OCC—designated by the legislature as lead agency for Oklahoma's underground storage tank program—has already begun enforcement of the new federal regulations.

According to Karen Dihrberg, of the OWRB's Water Quality Division, a memorandum of understanding has been drafted by DPC to define each agency's role and authority in the program. DPC will also administer monies in Oklahoma from EPA's Leaking Underground Storage Tank Trust Fund set up to mitigate cleanup costs if no responsible party can be located.

According to terms of the memorandum, OCC will regularly inspect the underground storage of petroleum products and related hazardous substances; OSDH inspects all systems containing hazardous wastes and non-hazardous systems owned or operated by municipalities; and OSDA regulates some tank systems used for agricultural purposes. The Water Board has inspection authority over tank systems located at OWRB permitted facilities.

Similar guidelines prescribe which agency responds to individual cases of leaking underground tanks, Dihrberg said.

"When a release is reported, OCC performs the initial investigation. If the release has infiltrated groundwater or soils outside the facility's property, the case is referred to DPC, which in turn, refers the case to either the OWRB or OSDH, based on jurisdiction and manpower availability.

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Dihrberg (left) and Nancy Cain, of the OWRB's Compliance and Enforcement Section, check for the presence of explosive petroleum vapors in the soil near a leaking tank.

Leaking tanks, continued from page 1

"The Water Board is already working on more than 100 cases of leaking underground storage tanks. That's about the same number we've responded to in the last 10 years or so," she pointed out. As an employee of the Board's Compliance and Enforcement Section, Dihrberg responds to a variety of pollution complaints.

Most underground tanks contain gasoline or other petroleum products. Such chemicals not only threaten groundwater, but emit vapors which may be highly volatile and explosive.

Typically, leaks from underground storage tanks are caused by corrosion or through piping failure resulting from sub-surface stress or improper installation, Dihrberg explained. Easily corroded bare steel tanks were banned from use by EPA several years ago. The new rules require tanks and piping to have a corrosion-resistant coating or be otherwise protected from corrosion.

"Corrosion is common in Oklahoma because our clay soils can be especially corrosive to unprotected steel tanks," Dihrberg pointed out.

Corrosion is practically a science unto itself. In principle, a metal tank system and its surrounding soil act like a battery. Often, one section of the tank may become negatively charged while another section becomes positively charged. Moisture in the soil provides a connecting link causing the negatively charged part of the tank to deteriorate and weaken. As electric current passes through, holes begin to form in the metal.

Cathodic protection, another new requirement on many underground storage systems, reverses the electric current, Dihrberg explained.

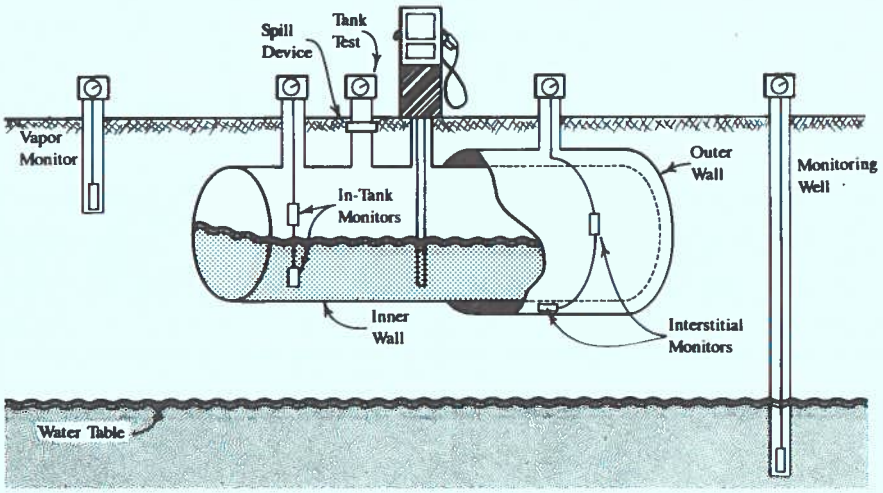
"Sacrificial anodes," segments of metal commonly used for cathodic protection, are more electrically active than the tank itself. When attached to the tank, the current is drawn to the anode rather than the tank, and thereby sacrificed to the soil's natural corrosive processes.

Dihrberg pointed out that many releases, such as spills and overfills, result from human error.

"Now, tanks must be protected with spill catchment basins and overfill alarms, to prevent accidental releases."

New tanks must have leak protection devices to automatically restrict flow or an alarm to signal a release, she added. Other rules require annual tests to determine soundness of the tank system or the use of monitoring devices for soil and groundwater. Separate regulations exist for tanks containing certain chemicals; they must have secondary containment —or a tank within a tank—and interstitial monitoring.

Existing tanks—many of which are decades old but with a life expectancy of only 20 years—will also be targeted in the new state inspection program. Within ten years, tanks installed before December 1988 must be protected against corrosion and, like new tanks, must have devices to prevent spills and overfills and to detect leaks.



Shown are many of the technical requirements now mandated by EPA to protect the environment from leaks or signal potential releases. Tank owners and operators must use one (or a combination) of these methods.

"Leak detection requirements are being phased in for existing tanks depending on their age," Dihrberg pointed out. "Older, more vulnerable tanks will have leak detection first."

Cleaning up hydrocarbon-polluted soil and groundwater may involve any number of methods, she said. Initially though, the free product is recovered by pumping hydrocarbons (lighter than water) off the top of the water table. If explosive vapors exist, ventilation or collection systems are set up to bring them down to safe levels. Often, contaminated soil and groundwater must be removed and treated; soil may be incinerated. Subsurface barriers are sometimes used to isolate contamination.

Removal of dissolved hydrocarbons in the groundwater may be difficult as well as expensive, Dihrberg said. This is usually achieved by pumping polluted water to the surface, then passing it through an air stripping tower which allows volatile hydrocarbons to be released into the atmosphere. Other methods include carbon adsorption and biological treatment—such as biodegradation.

According to Dihrberg, in situ biodegradation is rapidly gaining popularity because it is economical, effective and may be useful in large areas of contamination. The process, based upon land treatment of refinery waste, uses the naturally occurring microorganisms found in soil—such as bacteria, molds and yeasts, and certain cyanobacteria and green algae —to degrade, or breakdown, petroleum compounds present in soils and groundwaters. The organisms are either introduced to or enhanced in the polluted environment and, with the addition of oxygen and nutrients, accelerate the process of decomposing hydrocarbons to carbon dioxide and water. The method is presently being utilized at the Conoco refinery in Ponca City.

"Biodegradation is basically used as a polishing method, although our

hope is that it will be a key to cleaning up future sites of hydrocarbon contamination," Dihrberg said.

Development of a regulatory program for underground storage tanks was officially created in 1984 through amendments to the Resource Conservation and Recovery Act. However, installers, owners and operators of underground storage tanks have been left largely unsupervised, Dihrberg pointed out.

"In the past, there was no statewide registration program set up for underground storage tanks. As a result, there are many improperly installed or abandoned tanks that may be slowly leaking, yet we lack information on their whereabouts. Now when you install a tank, you must fill out a notification form with the OCC providing specific information about the tank and its installation. Also, the registration system licenses installers of these tanks."

Dihrberg said that although the expense of the new regulations could be a burden to owners and operators of underground tanks, the cost of cleaning up leaks can be much greater. The average cleanup cost is approximately $70,000, but if a tank's contents impact ground or surface water supplies, the figure could escalate to more than $1 million.

"Also, groundwater cleanups can take many years to accomplish depending upon the soil and aquifer types involved and the amount of material released. Some of our current cases have been active for six years.

"Small, privately owned gas stations will be hit hardest by the new financial responsibility rules," she added. "Fortunately, the state has proposed an indemnity fund to assist tank owners in case of spills or leaks and in cleaning up sites polluted by petroleum releases. This fund will replace much of the mandatory insurance beyond the means of many small operators."

State regulations, now awaiting approval by the legislature, are expected to become law later this summer. Until that time, the state will enforce federal rules for underground storage tanks.

mainstream

Dr. Joe Rarick Died January 14

Hundreds filled St. John's Episcopal Church in Norman on January 17 to pay tribute to the memory of Joseph F. Rarick.

Rarick, a longtime OU professor of law, developed the first course in water law offered at the university. He was considered the foremost authority on the legal requirements of Oklahoma Indian land titles. In 1982, the Oklahoma House of Representatives commended Rarick for 25 years of scholarship, teaching, research and writing in his field and hailed him as the "Father of Oklahoma Water Law."

Jim Barnett, OWRB executive director, said Rarick's wisdom as a 21-year member of the Oklahoma Water Law Advisory Committee shone as a beacon to the Water Resources Board, legislature and all who worked for improving the state's water law. Rarick was honored as a Water Pioneer at the 1987 Oklahoma Water Conference coordinated by the OWRB.

Rarick received his bachelor's degree with highest honors and juris doctorate degree from the University of Illinois, then a master of laws degree and a doctor of the science of law degree from Columbia.

He had been the 1983 recipient of the Alfred P. Murrah Professorship at OU; was named a David Ross Boyd Professor of Law in 1967; and received the OU Calvert Fund Award.

Enter EPA Awards Program

The U.S. Environmental Protection Agency invites communities to enter their wastewater treatment facilities in the 1989 National Operations and Maintenance Awards Program. It is designed to recognize community systems which maintain high standards and consistently comply with EPA regulations. Deadline for entries is March 20, 1989.

According to Greg DuMonthier who oversees the competition in Oklahoma, awards will be presented in eight categories: Advanced and Secondary treatment facilities that discharge more than 10 MGD, 1-10 MGD and less than 1 MGD. He said large and small non-discharging facilities are also eligible for the awards program.

For more information or to request an application, please contact Greg DuMonthier at the Water Utilities Training Center, Rose State College, 6420 S.E. 15th Street, Midwest City, OK 73110 or call him at (405) 733-7364.

Salt Fork Report Ready

J. A. Wood, OWRB Stream Water Division chief, announced the completion of the "Hydrologic Investigation of the Salt Fork of the Arkansas River." Wood said copies of the report are available by calling OWRB Librarian Susan Lutz at (405) 271-2553 or writing the Oklahoma Water Resources Board, P.O. Box 53585, Oklahoma City, OK 73152.

The hydrologic study, prepared in cooperation with the U.S. Army Corps of Engineers, describes the source, extent and dependability of water for appropriation in the Salt Fork of the Arkansas River and the Chikaskia River (Stream Systems 2-10, and 2-11, respectively). The study also provides basic data on basin irrigation requirements, monthly municipal and industrial consumption, precipitation, evaporation and stream flow.

According to Wood, it is information useful in planning, designing and developing additional water supplies in the basin.

Kamas Named Commissioner

Lewis Kamas of Freedom, member of the Oklahoma House of Representatives from 1967 to 1977, recently was named Oklahoma Commissioner to the Canadian River Compact by Gov. Henry Bellmon.

Kamas is the sole commissioner representing Oklahoma on the compact with Texas and New Mexico apportioning waters of the Canadian River. Staff of the OWRB will provide administrative support to the new commissioner.

Kamas will attend his first meeting

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of the Canadian River Compact Commission on March 6 in Texline, Texas. The Water Resources Board will be represented at the meeting by James R. Barnett, executive director; Dean Couch, general counsel; and J. A. Wood, Stream Water Division chief.

Prior to the meeting, staff will brief Kamas on matters pending before the commission, including the Ute Reservoir water rights dispute in which Texas and Oklahoma are litigants in the case brought before the U.S. Supreme Court against New Mexico. In January 1988, Jerome C. Muys, Washington, D.C., attorney with expertise in western water matters, was appointed Special Master by the court to work with the states toward resolution of the Ute controversy.

ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS AS OF JANUARY 24, 1989

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
SOUTHEAST		
Atoka	77,149	62.5
Broken Bow	917,108	99.9
Pine Creek	77,189	99.3[3]
Hugo	156,225	99.1[3]
McGee Creek	104,223	94.9
CENTRAL		
Thunderbird	105,925	100.0
Hefner	70,290	93.3
Overholser	15,935	100.0
Draper	88,458	88.5
Arcadia	22,087	80.6[1]
SOUTH CENTRAL		
Arbuckle	53,833	86.0
Texoma	2,329,954	88.3
Waurika	193,844	95.4
SOUTHWEST		
Altus	99,995	75.2
Fort Cobb	78,423	100.0
Foss	133,717	54.8[2]
Tom Steed	79,307	89.1
EAST CENTRAL		
Eufaula	2,271,575	97.5
Tenkiller	621,081	99.0
Wister	58,954	93.2[3]
Sardis	301,295	99.6
NORTHEAST		
Eucha	69,500	87.3
Grand	1,303,300	87.4
Oologah	544,240	100.0
Hulah	30,594	100.0
Fort Gibson	364,639	99.8
Heyburn	6,600	100.0
Birch	19,167	99.8
Hudson	200,300	100.0
Spavinaw	30,000	100.0
Copan	43,400	100.0
Skiatook	229,256	71.8
NORTH CENTRAL		
Kaw	428,600	100.0[3]
Keystone	599,551	97.3
NORTHWEST		
Canton	80,059	82.1
Fort Supply	13,900	100.0
Great Salt Plains	31,400	100.0
STATE TOTALS	**11,851,073**	**92.5**

1. In initial filling stage
2. Conservation storage lowered for project modification
3. Seasonal pool operation

Data courtesy of U.S. Army Corps of Engineers, Bureau of Reclamation, Oklahoma City Water Resources Department, and City of Tulsa Water Superintendent's Office.

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MARY E. WHITLOW, Editor **BRIAN VANCE, Writer** **BARRY FOGERTY, Photographer** **BRAD NESOM, Layout Artist**

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