



OKLAHOMA

water news

MONTHLY NEWSLETTER OF THE OKLAHOMA
WATER RESOURCES BOARD

Gerald E. Borelli, Chairman

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Surfactants Potential Threat to Ground Water, Says OWRB

In November 1980, the Oklahoma Water Resources Board learned that several firms were distributing surfactants, or liquid organic cleaners for the purpose of drying up pits and lagoons containing wastewater.

Surfactants, originally sold as household cleaners, are now being marketed to irrigators, oil companies, oil well service companies and wastewater treatment plants due to their property of allowing water to penetrate the soil faster and speeding the drying of lagoons and reserve pits. Use of the product was further enhanced by its cost — up to 50 percent less than trucking the liquid waste to a certified waste disposal site.

Basically, the surfactants reduce the surface tension of water, thereby increasing the evaporation rate and accelerating the percolation of water into the soil. One marketer of the substance claims "it makes water wetter."

By speeding this normal percolation process, during which the soil and its bacteria break down or tie up the pollutants in the contaminated water, the lagoon water penetrates the soil at a minimum of one inch a day, depending on the type of soil.

"One of the main problems with this is the potential for contaminating ground water," says Dr. Nancy Cain of OWRB's Water Quality Division. "If the lagoon is too close to the ground water, the surfactant breaks the surface tension of the ground water and causes it to rise through the soil to mix with the contaminated water from the lagoons. It's not only the surfactants that alarm us, but the materials coming from the oil wells or wastewater lagoons."

Although surfactants are now prohibited from such use, they already have been used in more than 600 oil well reserve pits in Oklahoma.

OWRB's policy regarding the controversial substance is made clear by General Counsel Tom Lay. "The Board as a matter of policy does not condone, support or recommend this treatment practice for reserve pits or any other form of waste treatment. The use of spray surfactants in the chemical treatment of waste in a reserve

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Drought Drops Water Levels in Polluted Picher Mine Area

If there is a brighter side to the drought that has lashed farmers and stockmen and shrunk water supplies throughout the state, it has appeared to residents of Ottawa County in northeastern Oklahoma. The level of acid mine water stored in some 435 abandoned lead and zinc mines has dropped 37 feet below land surface since March 1980, according to Ron Jarman, OWRB Water Quality Division chief and Tar Creek Task Force co-chairman.

Jarman pointed out that this drop corresponds to the lowered water table in the Post-Boone ground water formation caused by a prolonged period of unusually dry weather. The contaminated water which had earlier filled the huge caverns and spilled onto the surface was a result of heavy winter rains in 1979-80. It was seepage from the recharged Post-Boone aquifer that had filled the mines, shafts and drill holes to overflowing.

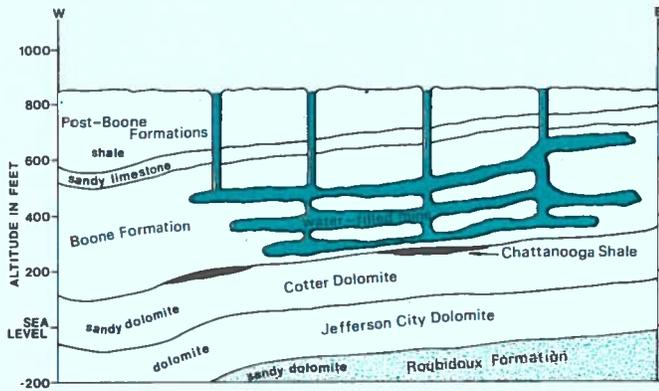
Along with the decline in water levels has come a stratification of the trapped water — attributed to the settling of toxic oxidized compounds in the bottommost

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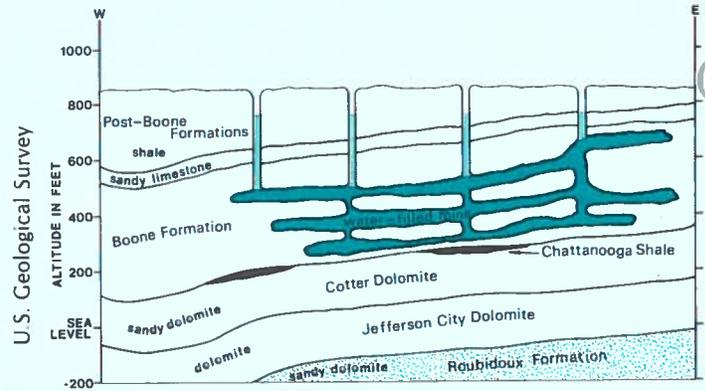


STAFF PHOTO BY CARY GLOVER

Representatives of seven state agencies attended the recent Surfactant Review Committee meeting of the Pollution Control Coordinating Board. Back row, Nancy Cain, OWRB; Tim Baker, OCC, and Joe Marak, OSDA. Front row from left, Ralph Campbell, ODPC; Ben Pollard, OCC; Ron Suttles, ODWC; Ron Jarman, OWRB and Dwain Farley, OSDH.



Representative cross section of geological formations showed heavily contaminated water (dark blue) filling the mines and shafts and spilling onto the surface early last Spring.



Current cross section shows most heavily polluted water settled in bottommost areas (dark blue), with water quality improving higher in the shafts (graded blue), and water levels down 37 feet.

Drought, continued from page 1

15 feet of the mine water. "Water quality improves appreciably in the upper portions, the better water lying closer to the surface," said Tom Maiello, OWRB water quality specialist overseeing the water board's portion of the Tar Creek study. "However, this is not to say that the uppermost water is good," emphasized Maiello. "The recent decline in mine water levels can be expected to last only as long as the drought," he said. "With significant rainfall, ground water levels would again rise. This upward flow would disturb the highly polluted water at the bottom, mix it with better water higher in the shafts, and perhaps spill to the surface again."

Surfactants, continued from page 1

pit creates, by virtue of the surfactant reaction and absorption properties, a potential ground water contamination threat," he said. This stand has been reiterated in the regulations of the Oklahoma Corporation Commission and the State Health Department. Certification of the product is not required by the State Department of Agriculture because it is not a pesticide, but should the surfactant be mixed with a registered pesticide and applied for hire or compensation, certification and permitting would be necessary.

The real problems with surfactants will first be experienced by the farmers. Many may not realize what is happening to their land when surfactants are used. Complaints from farmers, noted Cain, first alerted OWRB, and the farmers are the ones who potentially will pay the highest price in terms of damage to their land and ground water, often the source of rural drinking water.

An interim committee of the Pollution Control Coordinating Board has been formed to examine the use of surfactants, alternatives and potential hazards. Agencies which comprise the committee are the OWRB, Department of Pollution Control, State Department of Agriculture, State Health Department, Corporation Commission, Conservation Commission, Department of Wildlife Conservation and Industrial Development Department.

The lead and zinc mines abandoned when mining operations ceased in 1970 were estimated last year to contain 100,000 acre-feet of water contaminated with zinc, sulphates, iron, manganese and several trace metals. This is equivalent to 32.6 trillion gallons, or roughly the normal water supply storage in Lake Thunderbird. The mine tunnels and shafts honeycomb an area of approximately 50 square miles, plunging beneath the surface to depths of 480 feet.

With fish and water sampling scheduled for completion in May, the Tar Creek Task Force began the second phase of its search for solutions early last month by soliciting bids for a contractor to assemble all available data, evaluate the present and projected environmental impacts, propose remedial efforts and provide specific recommendations for corrective actions.

FEBRUARY CROP AND WEATHER SUMMARY

The month's temperatures varied widely, from below average at the beginning of February, to above normal at mid-month. Average temperatures were four degrees below normal in the southwest to eight degrees below normal in the northeast during the first week. The second week brought temperatures from eight degrees below normal in the west to 11 degrees below normal in the east.

A warming trend swept the state during the third week of February, with temperatures climbing nine degrees above normal in the south central to 14 degrees above average in the northeast.

Precipitation in the form of freezing rain, sleet and snow in the second week averaged from 0.01 inch in the Panhandle to 1.55 inches in the southeast.

Wheat, other small grains, pastures and ranges are in desperate need of rain. The continuous dry, windy conditions have increased the chances of fires.

Livestock is in good condition, with feed supplies adequate. The mild weather has been favorable for calving, lambing and farrowing.

Oklahoma Crop and Livestock Reporting Service

Important Water Measures Proposed to 38th Legislature

Senate Bills 165 and 175, authored by Sen. Gilmer Capps currently under study by the Senate Natural Resources Committee, would consolidate water quality activities in the Oklahoma Water Resources Board. Major responsibilities presently are divided between the State Health Department and OWRB, creating "grey" areas of responsibility and fostering duplication of effort. Such unification could improve efficiency, provide greater responsiveness to the public need and net the state significant economies in money and manpower.

Senate Bill 201, pending in the Senate Natural Resources Committee, would amend the current law which requires a majority of ground water users in a given basin to vote to require a water user to install a meter to monitor water use in controversial situations. It would give OWRB the authority to require metering in cases where complaints concerning excessive or wasteful water use are lodged by neighboring ground water permit holders.

The large number of complaints, arising largely as a result of drought conditions, makes it imperative that OWRB has the means to facilitate the solution of controversies. Because ground water users in a given basin may be numerous and widely scattered, the present law's requirement of a majority vote encourages an enforcement procedure which is unwieldy and unnecessarily time-consuming.

House Concurrent Resolution 1004 before the Senate Natural Resources Committee would provide the state with an official document, the Oklahoma Comprehensive Water Plan, which sets forth goals, objectives, guidelines and recommendations regarding water resources planning, development and management. It insures that all future water needs will be met; all federal water planning and construction activities will remain consistent with Oklahoma's needs and desires; provides a guide for federal, state and regional planners; and activates the statutes providing for payments to counties in lieu of taxes for areas inundated by reservoir projects.

House Bill 1139 before the Senate Natural Resources Committee authorizes OWRB to carry out the policies, goals, objectives and recommendations contained in the state water plan.

House Bill 1169 on general order before the House would create the means by which OWRB could issue provisional temporary permits for the use of stream water. It is intended to assist stream water users in obtaining water without delay in emergency situations. It would make it possible for individuals or municipalities whose surface water supply is expended by drought, or oil companies which have an immediate need for water in drilling operations to obtain a permit for short-term water use.

ACTIVE CONSERVATION STORAGE IN SELECTED OKLAHOMA LAKES AND RESERVOIRS AS OF FEBRUARY 13, 1981

PLANNING REGION LAKE/RESERVOIR	CONSERVATION STORAGE (AF)	PERCENT OF CAPACITY
SOUTHEAST		
Atoka	58,943	47.7
Broken Bow	879,171	95.8
Pine Creek	77,700	100.0
Hugo	157,600	100.0
CENTRAL		
Thunderbird	83,285	78.6
Hefner	64,269	85.2
Overholser	15,169	100.0
Draper	73,780	73.8
SOUTH CENTRAL		
Arbuckle	52,931	84.6
Texoma	2,323,785	88.1
Waurika	114,500	55.1 ¹
SOUTHWEST		
Altus	26,766	20.7
Fort Cobb	62,986	81.2
Foss	140,510	57.9 ²
Tom Steed	65,316	73.4
EAST CENTRAL		
Eufaula	1,785,131	76.6
Tenkiller	535,934	83.9
Wister	27,100	100.0
NORTHEAST		
Eucha	23,800	30.0
Grand	1,117,800	75.5
Oologah	454,470	84.2
Hulah	17,467	63.8
Fort Gibson	365,200	100.0
Heyburn	4,298	65.1
Birch	15,800	82.3
Hudson	200,300	100.0
Spavinaw	26,000	85.0
NORTH CENTRAL		
Kaw	388,566	90.7
Keystone	549,247	89.2
NORTHWEST		
Canton	70,200	60.5
Optima	4,300	— ¹
Fort Supply	13,900	100.0
Great Salt Plains	29,385	93.5
STATE TOTALS	11,989,119	81.9³

1. In initial filling stage.
2. Temporarily lowered for maintenance.
3. Lake Optima storage excluded from state total.

Data courtesy U.S. Army Corps of Engineers, Water and Power Resources Service, Oklahoma City Water Resources Dept.,
City of Tulsa, Water Superintendent's office

House Bill 1217, passed by the House on February 18 and introduced in the Senate by Sen. Don Kilpatrick, would restructure the Department of Pollution Control Coordinating Board.

The bill would forbid the Department of Pollution Control to use federal funds for administrative purposes instead of the accomplishment of specific programs. The effect of the measure would be more federal grant dollars directed to the projects for which they were intended.



OWRB Opens Tulsa Office March 1

The Oklahoma Water Resources Board opened a branch office in Tulsa located on the street level of the State Agencies Building, 440 South Houston.

Richard Cochran of the Planning and Development Division is the office manager. The office will allow OWRB to better coordinate activities with the Tulsa District Corps of Engineers and other state agencies. It will also facilitate OWRB Water Quality Division personnel working more closely with industries in eastern Oklahoma and overseeing studies in Ottawa County's Tar Creek area.

Phone number for the new office is (918) 581-2924.

State Flood Insurance Eligibility Delayed

Although the 1980 legislature passed the Oklahoma Floodplain Management Act enabling OWRB to adopt floodplain management criteria for property owned or operated by the state, disagreement between the Oklahoma law and the Federal Emergency Management Agency's regulations has delayed the state's application in FEMA's regional office.

Disagreement stemmed from Oklahoma's exemption of "usual farm buildings for agricultural purposes" from restrictions concerning development in identified floodplains and FEMA's regulations which discourage any new construction in such areas.

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Failure of FEMA to officially act on Oklahoma's application may also preclude several state communities' participation. The National Flood Insurance Program intended to make available low-cost flood insurance exchange for a community's assurance that it will implement floodplain management and flood hazard mitigation measures that are acceptable to FEMA.

Secondary Recovery of Water Under Study

The High Plains Underground Water Conservation District in Texas is seeking to confirm the availability of additional ground water resources in dewatered areas of the Ogallala Formation which could equal the quantity of water already pumped from storage by gravity. The water estimated in storage is "capillary water" held by surface tension around the clay, sand and gravel deposits of the formation already exhausted of its "free water" reserves.

If availability is confirmed, recovery of the capillary water may be accomplished by drilling small-diameter wells into the formation to below a clay lens, sealing the well, then injecting compressed air into the underlying wet sand. This will theoretically release the capillary water and allow it to move by gravity down to the existing water table for capture by existing wells.

ORWA Annual Meeting March 17-18

The 11th annual meeting of the Oklahoma Rural Water Association will be held in Oklahoma City at the Ramada Inn Central on March 17-18. Registration will begin at 8 a.m. on the 17th, with workshops beginning at 10 a.m. First-day activities will close with a 7 p.m. banquet and entertainment. The general session on March 18 will include presentations by OWRB, Farmers Home Administration, EPA and National Rural Water Association, followed by luncheon and business meeting. Adjournment is scheduled for mid-afternoon.

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