

Livestock Flood Environment with Estrogen

Based on information obtained from estrogen sampling at eight dairy and 11 swine waste storage facilities, researchers concluded that farm animals in the U.S. flood the environment with estrogen hormone compounds, according to a press release on the *Environmental Science and Technology Online* Web site. Previous studies have found that these compounds feminize male fish.

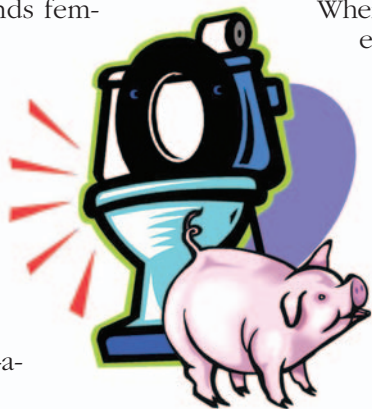
The study's authors estimate that the nation's 10 million cows and 43 million swine excrete a daily estrogen mix of 10 to 30 kilograms (kg) of 17- β -estradiol and 20 to 80 kg of estrone; 17- α -estradiol was found mainly on dairy farms. "Our best estimate is that the amount of estrogen coming out of pigs and cows is over an order of magnitude higher than what the human

population puts out," says study author Raj Raman, associate professor of biosystems engineering and environmental science at the University of Tennessee.

In addition to feminizing male fish, scientists are not completely certain what estrogen pollution does. Estrogenic compounds have different levels of activity.

When estrogens are first excreted, they are actually conjugated with other molecules, rendering them biologically inactive. However, the microorganisms in sewage systems can break this bond and reactivate the hormones.

Whether this occurs in the muck piles and lagoons found on farms is an open question.



Human and animal waste also enters the environment differently. Animal excrement is applied across large fields, normally diluting any harmful effects. However, human waste is usually treated at wastewater facilities and then discharged as effluent, creating a point source for pollution. It is not known whether waste treatment removes all estrogenic compounds.

Most of the estrogen in human waste comes from ethinyl estrogen, the synthetic hormone used in birth control pills. The ethinyl group blocks metabolic breakdown and hinders environmental degradation, allowing the hormone to hang around in streams for up to a couple of weeks.

For more information about estrogen in the environment, visit the *Environmental Science and Technology Online* Web site at pubs.acs.org/subscribe/journals/esthag-w/2004/jun/science/pt_livestock.html.

Drugs in Drinking Water Making Headlines

Phoenix's Environmental Quality Commission is concerned about drugs in the valley's water supply. So much so that the commissioners are considering a "Don't flush it" campaign. They decided to study the problem after learning that traces of steroids, drugs, caffeine, disinfectants, and other chemicals have been found in Arizona rivers and may be making it into drinking water, *The Arizona Republic* reported.

Commissioners want to look at how the city could affect residents' behavior by teaching people to throw medications in the garbage instead of in the toilet.

The problem of pharmaceuticals in the water supply emerged about 10 years ago, noted Michael Gritzuk, Phoenix water services director.

In 2002, hydrologists with the U.S. Geologic Survey released the first nationwide government study

about medicine, hormones, and other organic waste in streams around the U.S., including the Santa Cruz, Salt, and Gila rivers in Arizona. They found low levels of 82 chemicals. The most common were steroids, but other

chemicals included cholesterol lowering drugs, nonprescription drugs, insect repellent, detergent chemicals, and disinfectants.

Chemicals also find their way into water when people or animals that have taken medications excrete them, in addition to people who flush medications down the toilet, Hartmann said. Scientists aren't clear what effects all those chemicals may have in water. Some studies link hormones in the water to deformed reproductive organs in fish. Another concern is that antibiotics in the water may lead to bacteria becoming resistant to those medications.

For more information about drugs in public water supplies, view the *On Tap* article "They're in the Water They Make Fish Change Sex: Endocrine Disruptors—What are they doing to you?" at www.nesc.wvu.edu/ndwc/articles/OT/WI03/WI03Index.htm.



OIG Study Says States Progressing with SWAP

According to a May 2004 study released by the U.S. Environmental Protection Agency's (EPA) Office of Inspector General (OIG), states are making progress in assessing existing and potential threats to public drinking water sources, despite a number of reported concerns and delays.

The Safe Drinking Water Act Amendments of 1996 required states to develop a Source Water Assessment Program (SWAP) aimed at providing public water systems with information they could use to protect drinking water sources. The original deadline for SWAP completion was May 2003.

As of September 2003, however, OIG reported that only 40 percent of states—or 69 percent of community water systems—had completed their source water assessments and made them available to the public. States noted that a number of reasons for non-compliance transpired, including limited human resources, data issues, public participation, and desire for a quality product.

The OIG study also listed homeland security as a growing concern for states attempting to fulfill their SWAP obligations. According to the report, states are meeting resistance from EPA about making potentially sensitive

information readily available to the public, such as maps of drinking water wells and contamination sources.

OIG recommended that EPA create guidance for states, clarifying what information is appropriate to release to the public and how it should be released. EPA has agreed to provide this information.

To learn more about the OIG's findings and recommendations concerning SWAP, download a full copy of the report, States Making Progress on Source Water Assessments, But Effectiveness Still to Be Determined, available on the EPA Web site at www.epa.gov/oigearth/reports/2004/20040527-2004-P-00019.pdf.

RDUS Loans: Poverty Rate Unchanged; Others Down

The Rural Development Utilities Service (RDUS) recently announced interest rates for water and wastewater loans. RDUS interest rates are issued quarterly at three different levels: the poverty line rate, the intermediate rate, and the market rate. Each has specific qualification criteria.

The rates, which apply to all loans issued from October 1 through December 31, 2004, are:

- poverty line:* 4.5 percent (unchanged from the previous quarter);
- intermediate:* 4.5 percent (down 0.25 percent from the previous quarter); and
- market:* 4.625 percent (down 0.375 percent from the previous quarter).

RDUS loans are administered through state Rural Development offices, which can provide specific information concerning RDUS loan requirements and applications procedures.

For the phone number of your state Rural Development office, contact the National Environmental Services Center at (800) 624-8301 or (304) 293-4191. The list is also available on the Rural Development Web site at www.rurdev.usda.gov/recd_map.html.

Plan Aims to Save Great Lakes Water



Source: www.photos.com

Although still up for public comment, a plan to make it nearly impossible to divert large amounts of water from the Great Lakes to other regions of the country is making waves, according to an *Associated Press* news release. Provisions of this interstate compact and international agreement are aimed at protecting and improving the water system.

The proposed Great Lakes Charter Annex would allow new or increased withdrawals from any of the five Great Lakes only if water were immediately returned and the condition of the lakes were improved. The measure would leave the door open for Great Lakes water to be shipped to areas within the region that are

outside the basin but prevent it from heading to other parts of the country, such as the Southwest.

"That's intentional," said Noah Hall, senior manager of Great Lakes Water Resource Program of the National Wildlife Federation. "We basically want to do everything that's possible to stop diversion that is going to hurt water levels."

The compact would require the eight Great Lakes governors, in consultation with the premiers of the Canadian provinces of Ontario and Quebec, to unanimously approve any new diversion that would remove from the basin an average of one million gallons a day over a 120-day period.

Clean, Adequate Water Supply Requires Research

The U.S. needs to make a new commitment about water resources research to confront the increasingly severe water problems that all parts of the country face, says a new report from the National Academies' National Research Council. In particular, the country needs a new mechanism to coordinate water research currently fragmented among nearly 20 federal agencies.

"Water crises are not confined to western states," says committee chair Henry J. Vaux, professor emeritus and associate vice president emeritus, department of agricultural and resource economics, University of California, Berkeley.

Vaux cites the recent conflict between Maryland and Virginia over Potomac River water rights as an example. Certainly, semi-arid, western states still need new water supplies for fast-growing populations, a problem that drought complicates. And regulation of water levels and flows in the Klamath and Missouri rivers have sparked considerable debate as well.

"Decision-makers at all levels of government are going to have to make difficult choices in the

coming decades about how to allot limited water supplies, and they need sound science to back them up," Vaux adds.

Given the competition for water among farmers, environmental advocates, recreational users, and other interests—as well as emerging challenges such as climate change and the threat of waterborne diseases—the committee concluded that an additional \$70 million in federal funding should go annually to water research, with the aim of improving institutional decision making.

The committee notes that overall federal funding for water research has been stagnant in real terms for the past 30 years, and that the portion dedicated to research on water use and related social science topics has declined considerably.

Federal agencies and the states have tended to focus on short-term research likely to yield more immediate results. But it is long-term, basic research that will provide a solid foundation for applied science a decade from now, the committee says, urging the federal government to commit one-third to one-half of its water research portfolio to long-term studies.

In recent years, there have been substantial declines in the measurement of stream flow, groundwater levels, water quality, and water use, the committee found; in some areas measurements have been completely eliminated.

The committee also recommends that a new entity is needed to coordinate water research at the national level. Either an existing interagency body, a neutral organization authorized by Congress, or a public-private group led by the Office of Management and Budget (OMB) could serve as the coordinating mechanism, the committee said.

Copies of Confronting the Nation's Water Problems: The Role of Research will be available later this summer from the National Academies Press by calling (202) 334-3313 or (800) 624-6242. It also will be available on the Internet at www.nap.edu.



Source: www.clipart.com

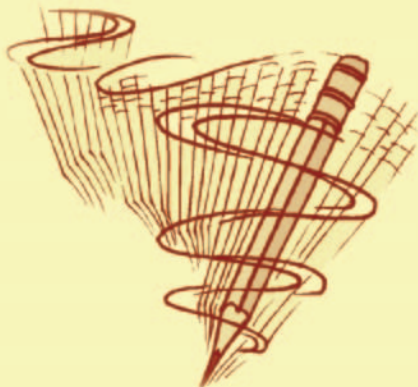
his people, saying that the Six Day War in 1967 was ignited not by border disputes with Syria, but by that nation's attempt to divert water from the Jordan River, noted the article.

For more information, visit *Sierra magazine's* Web site at www.sierraclub.org/sierra/200407/10l.asp#price.

CORRECTIONS

Correction to Organizations Guide from the Summer 2004 issue of *On Tap*:

South Central RCAP
Community Resource Group, Inc.
P.O. Box 1543
Fayetteville, AR 72702
(479) 443-2700
www.crg.org



The Price of Blue Gold

Water can be controversial in the U.S. But in some of the world's thirstier places, the discussion is not just about dams and pollution. It's about life itself, according to an article in *Sierra* magazine.

In Israel, for example, water is so precious that Prime Minister Ariel Sharon has announced he is willing to give weapons to Turkey to get an ample supply. Under an agreement signed in March 2004, Israel will import 50 million cubic meters of water per year for 20 years from Turkey's Manavgat River. Israeli tankers capable of transporting the massive amounts are being built. The weapons Turkey will get in exchange will be worth about \$50 million.

Sharon has described water as "a stark issue of life and death" for

Sodium in Drinking Water: Is your water too salty?

Let's face it, Americans love salt. We spill it over french fries, sprinkle it over popcorn, and shake it over every other mouth-watering morsel coming from the kitchen. But did you know that it's in our drinking water, too?

Sodium, or salt, occurs in drinking water naturally. However, it also can find its way into water from road salt, water treatment chemicals, and ion-exchange water softeners. Sodium intake from the tap normally isn't a problem for the majority of Americans. But for those facing heart disease, hypertension, kidney disease, circulatory illness, or a sodium-restricted diet, there are some legitimate concerns.

According to the Kansas State University (KSU) Agricultural Experiment Station and Cooperative Extension Service, nearly 15 million people in the U.S. have a daily diet characterized by moderate to severe restrictions for sodium intake because of health-related concerns. Excess dietary sodium has been linked to an increased risk for a heart attack, stroke, or damage to other body organs. Controlling the amount of sodium intake from drinking water is just one precautionary step in reducing the risk of being struck by one of these illnesses.

The American Heart Association and the National Academy of Sciences recommend sodium levels between 500 and 2,400 milligrams (mg) per day. The average American consumes nearly twice this amount daily.

Two Steps to Reduce Salt

KSU recommends the following two steps to control sodium intake from drinking water:

Sodium Levels in Public Water

While the U.S. Environmental Protection Agency (EPA) reports that sodium levels in most public water supplies are unlikely to con-

tribute significantly to adverse health effects, checking the local water supplier's most recent consumer confidence report is the best way for those concerned about their sodium intake to know exactly how much is in their water. EPA has a draft guideline for sodium in drinking water of 20 milligrams per liter (mg/L).

Conducting a water test is the best option for private water consumers to determine the amount of sodium in their water.

Sodium Softens Water

Home water softeners are hailed for removing minerals that cause hardness, such as calcium and magnesium. They also get high marks for making soap lather better, getting clothes cleaner, and erasing unsightly rings around the bathtub. But most of them also add a significant amount of sodium to the water. According to KSU, a person who drinks two liters of softened, extremely hard water each day will consume about 480 mg more sodium than if unsoftened water is consumed.

Drinking unsoftened tap water, low-sodium bottled water, or using water treatments, such as reverse osmosis and distillation to remove sodium from tap water, are all reasonable alternatives to drinking softened water.

To learn more about sodium in drinking water and its associated health concerns, read the Kansas State University Agricultural



Experiment Station and Cooperative Extension Service publication, "Sodium in Drinking Water," available online at www.oznet.ksu.edu/library/H2OQL2/MF1094.PDF.

Also read: U.S. Environmental Protection Agency. 2004. "Sodium in Drinking Water" www.epa.gov/safe/water/ccl/sodium.html, and Muskoka-Parry Sound Health Unit "Sodium in Drinking Water" www.mpsbu.on.ca/WaterQuality/sodiumin.htm.

CORRECTIONS

In the Spring 2004 issue of *On Tap*, in the article "Regionalization Forced, Voluntary, and Somewhere in Between," the pull quote: "There needs to be a very good reason to regionalize. We should not be regionalizing simply because it is a good idea. There needs to be an obvious and over-riding reason or need to consolidate," was incorrectly attributed to Jenny Bielanski, drinking water utilities team leader, of the Office of Ground Water and Drinking Water at the U.S. Environmental Protection Agency. This quote should have been attributed to Gary Larimore, executive director of the Kentucky Rural Water Association.

Also, in the article "Distribution System Operator Certification: Is your state's program up to speed?" *On Tap* incorrectly printed that there is a deadline for implementing guidelines. The correct information is that there is no deadline.

We apologize for any inconvenience our readers may have been caused by these oversights.

Letters to the Editor

Write to us! e-mail: mkemp@mail.wvu.edu or kathy.jesperson@mail.wvu.edu or mail to: **National Environmental Services Center • West Virginia University**
P.O. Box 6064 • Morgantown WV 26506-6064

Dear Editor,

I recently read the letter in *On Tap* from Tesfaye Bekalu about Ethiopia. I read it with great interest as my late husband Douglas DeWalt and I traveled to Ethiopia in 1974 to assist with water exploration and drilling through a group effort with the Oxfam, Catholic Secretariat from Ireland and the Presbyterian efforts from the U.S. We worked out of Addis Ababa and as far out as Combulcia, Bati, and the Danakil Desert. One of my husband's projects was to drill a fairly deep well at Bati that produced 60 to 70 gallons of water per minute. (I could be off on this number, but it was a good well.) After we left Ethiopia, we heard that one of the big refugee camps for the Somalis and Eastern Ethiopians was at Bati. I am curious if there is any way to find out if that well is still producing. We loved our stay in Ethiopia. We made many good friends and worked with the water board for several years after leaving and moving to Nairobi, Kenya, where we were based with Ingersoll-Rand Company for the next 10 years.

I agree about the loss of Larry Rader. I wish we could have known him. I feel the same about my husband's death. He took such a wealth of knowledge with him also. I am grateful that he kept a daily journal that is priceless.

I enjoy your magazine and get it in conjunction with my work as administrative assistant to Indian Health Service engineers. Again, thank you.

Louaina (Lou) DeWalt

Indian Health Service
9A S. Brown Street
Rhineland, WI 54501-3456

Tesfaye Bekalu responds:

I know Bati, Kombolcha, Dessie, and most of the places around. As a rural water supply project officer, I had been working there for the last eight years before my move to Addis Ababa. I also got a chance to know Jerry Garvey and engineer Brehane, who were working in that area probably when you were around.

As you may recall during that time, there was much involvement in the water sector by the donor community

around the Wollo province because of the drought. Present day Bati is quite different from what it used to be. There are about four or five wells serving it now. Bati started to expand because it became a food distribution area, and there were two big camps for drought-affected people (not refugees from Somali).

Editor's Note: The editors and staff of On Tap are pleased that these two found each other through our magazine. We will keep readers informed if Mr. Bekalu finds out the status of the well about which Ms. DeWalt wrote.

JOBS AT NESC

Executive Director

National Environmental Services Center

West Virginia University

West Virginia University seeks expressions of interest and names of nominees in anticipation of a search to be undertaken for the position of Executive Director of the National Environmental Services Center [NESC]. The Executive Director will oversee programs such as the National Small Flows Clearinghouse, the National Environmental Training Center for Small Communities, and the National Drinking Water Clearinghouse.

The NESC is a division of the National Research Center for Coal and Energy [NRCCE] at West Virginia University, an organization dedicated to advancing innovations for energy and the environment. This position reports to the NRCCE Director.

An official announcement and call for applications, when available, will be posted at:
http://www.nrcce.wvu/employment_opportunities

For more information about this anticipated job opening, contact Lynnette Loud, Assistant to the Director, National Research Center for Coal and Energy at (304) 293-2867 extension 5407.

West Virginia University is an Equal Opportunity Employer. Minorities, persons with disabilities, females, and other protected class members are encouraged to apply.

