

of 168 organic contaminants exceeded health benchmarks, and in less than one percent of sampled wells. Bacteria, including total coliform bacteria and *E. coli*, were found in as many as one third of a subset of 400 wells. These bacteria are typically not harmful but can be an indicator of fecal contamination.

The occurrence of selected contaminants varies across the country, often related to geology, geochemical conditions, and land use. For example, nitrate levels were high in the Central Valley of California and other areas with intensively farmed land, while radon was found in crystalline-rock aquifers in areas such as central Colorado.

Contaminants found in private wells usually occurred in mixtures with other contaminants, a concern because the toxicity of mixtures can be greater than that of any single compound. Mixtures of contaminants at relatively low concentrations were found in the majority of wells, but mixtures with multiple contaminants above health benchmarks were uncommon (about four percent).

See DeSimone, L.A., 2009. *Quality of water from domestic wells in principal aquifers of the United States, 1991–2004*, USGS Sci. Invest. Report 2008–5227, pubs.usgs.gov/sir/2008/5227.

Erin Brockovich Was Right

Federal scientists have concluded that hexavalent chromium (chromium 6), made famous as a water contaminant by Erin Brockovich, is carcinogenic when swallowed, according to *Environmental Health News*, reporting on results of a study published online last December in *Environmental Health Perspectives*.

Chromium 6 has been known to cause lung cancer when inhaled, but its carcinogenicity in drinking water was not previously known. Some scientists had thought gastric acids in the stomach could turn hexavalent chromium into chromium 3, an important nutrient. But in a two-year study by the National Toxicology Program, mice and rats that drank water containing different doses of hexavalent chromium developed malignant tumors in their small intestines and mouths.

California and the U.S. EPA are currently re-evaluating existing health guidelines for hexavalent chromium based in large part on this study, said *Environmental Health News*. However, scientists who conducted the study told the news service that setting a human drinking water standard based on extrapolation from animal studies is difficult and controversial.

Visit www.environmentalhealthnews.org. See Stout, M.D., R.A. Herbert, G.E. Kissling, and others, in press. *Hexavalent chromium is carcinogenic to F344/N rats and B6C3F1 mice following chronic oral exposure*, *Environ. Health Perspect.*, www.ehponline.org/members/2008/0800208/0800208.pdf.

PPCP Persistence Found to be Low

Concentrations of pharmaceutical drugs and endocrine-disrupting compounds (EDCs) in public drinking water are likely too low to impact human health, according to the authors of a recent Water Research Foundation (formerly AwwaRF) report. The study examined the presence in water of trace levels of EDCs and drugs and explored potential links between those levels and human health.

The research team selected 62 representative chemicals for further evaluation based on likelihood of occurrence, production volume, toxicity, and analytical capability. Three hundred water samples were collected from 19 sites nationwide and analyzed for a selected suite of compounds using extremely sensitive analytical methods with low-part-per-trillion detection limits. The team conducted risk evaluations of exposure through drinking water for all target pharmaceuticals, 10 suspected EDCs, and three hormones.

Only three of the 62 compounds analyzed—atrazine (herbicide), meprobamate (antianxiety), and phenytoin (antiepileptic)—were consistently found in water samples. Trace concentrations of 24 compounds were detectable in at least 20 percent of untreated water samples, and trace concentrations of 11 compounds were found in at least 20 percent of treated drinking water samples. These included five prescription drug compounds, atrazine, DEET, a pesticide, and two flame retardants. Atrazine was detected at the highest concentration, but far below the federal regulatory limit.

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