

Written Testimony to the House Health Care Committee on HB 3273

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Founded in 1968, the Oregon Environmental Council (OEC) is a nonprofit, nonpartisan, membership-based organization. We advance innovative, collaborative and equitable solutions to Oregon's environmental challenges for today and future generations.

Oregon Environmental Council supports HB 3273, which would create a take-back program for pharmaceuticals. Most Americans rarely consider where the contents of our medicine cabinet will end up. Besides the risks of these prescription leftovers leading to drug abuse and accidental poisoning, they also impact human and aquatic health when they enter our waterways. Contraceptives, painkillers, antibiotics, anti-cancer drugs, blood-pressure medications, and antidepressants have begun showing up in lakes and rivers, groundwater, and drinking water. And while pharmaceutical industries, hospitals and other medical facilities are obvious sources, households also contribute a significant share. Because sewage-treatment plants are not designed to handle pharmaceuticals, many drugs—including unused drugs that are washed down sinks or flushed down toilets and incompletely metabolized drugs that are flushed down toilets in human waste or washed down laboratory drains in animal excrement—pass right through water-treatment plants into the drinking-water supply.

Dangerous Impacts On Human Health

While the risks posed to humans from chronic exposure to very low concentrations of drugs are still unknown, scientists have expressed particular concern over the presence of chemotherapy drugs—which are designed to kill human cells—in our drinking water. Chemicals that can disrupt hormone production in our bodies are also showing up in our drinking water. Another worry is the release of antibiotics into waterways. The fear is that the contamination of our waterways with antibiotics may result in disease-causing bacteria to become immune to treatment and that drug-resistant diseases will develop.

In 2006, researchers in Italy designed a cocktail of 13 drugs—including several antibiotics, the popular pain reliever ibuprofen, and a highly toxic cancer medicine—to mimic the mixtures found in several Italian rivers and examined the effects of this cocktail on human cells.³ Individual component concentrations ranged from 10 to 1000 nanograms per liter. The study found that the cocktail of contaminants inhibited the growth of human embryonic kidney cells. After 48 hours of exposure, cell proliferation was reduced by 10-30% compared to the control values. Additional studies such as this are needed to identify the potential health impacts of low-dose, complex mixtures of drugs in our water.

The Oregon Drug Take Back Stakeholders Group has recommended that Oregon institute a product stewardship program for the safe and convenient disposal of unwanted and unused drugs. More about the recommendations can be found here: [Product Stewardship program proposed by the Oregon Drug Take Back Task Force](#).

Concerns for Aquatic Reproductive Health

Researchers agree that aquatic species face the greatest risk from exposure to low levels of pharmaceuticals, such as synthetic hormones, which can act as endocrine disruptors at environmental levels. Scientists have linked certain pharmaceuticals with disturbing ecosystem changes. A 1994 study of fish was one of the first studies to demonstrate that the feminization of fish (male carp and trout producing vitellogenin, an egg protein usually found only in females) was associated with exposure to sewage effluent now known to contain ethinyl estradiol, the active ingredient in birth control pills.¹

In analyzing the effects of pharmaceutical dumping on fish and other animals, scientists have documented that exposure to low levels of drugs in the water can result in the chemical castration of male fish; delayed reproduction in female fish; disrupted development of fish's circulatory systems, eyes, and bladders; and cause damage to fish's kidneys and livers. Some scientists believe that medications in our waterways will lead to cumulative adverse impacts on aquatic ecosystems—including declining reproduction and survival rates—that can accumulate over time to ultimately yield truly profound changes.²

Since it is well documented that pharmaceuticals disposed of improperly can harm both human health and aquatic life, Oregon Environmental Council urges passage of HB 3273.

Additional Resources

[Hemminger, P. \(2005\). Damming the Flow of Drugs into Drinking Water. *Environmental Health Perspectives*, 113\(10\):A678–A681.](#)

Thrall, L. (2006, March 1). [Can drugs found in water harm humans? *Science News*.](#)

¹Purdom, C.E., Hardiman, P.A., Bye, V.V.J., Eno, N.C., Tyler, C.R. & Sumpter, J.P. (1994). Estrogenic Effects of Effluents from Sewage Treatment Works. *Chemistry and Ecology*, 8(4):275–285.

²Daughton, C.G. & Ternes, T.A. (1999). Pharmaceuticals and Personal Care Products in the Environment: Agents of Subtle Change? *Environmental Health Perspectives*, 107(Suppl 6): 907-938.

³Pomati, F., Castiglioni, S., Zuccato, E., Fanelli, R., Vigetti, D., Rossetti, C., & Calamari, D. (2006). Effects of a Complex Mixture of Therapeutic Drugs at Environmental Levels on Human Embryonic Cells. *Environ. Sci. Technol.*, 40 (7): 2442 -2447.