



The Iowa Policy Project

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December 2009

EXECUTIVE SUMMARY

Swimming in Uncertainty

Addressing Organic Wastewater Contaminants in Iowa's Water

By William Wombacher

Recent news articles proclaiming headlines such as “Test Finds Traces of Drugs in Rock Island Water,” have made the public aware of a problem scientists have known for years — that pharmaceuticals are in our rivers, lakes and drinking water. Pharmaceuticals, however, are only a small part of a much larger class of contaminants that tend to resist traditional wastewater treatment called Organic Wastewater Contaminants (OWCs). Common OWCs include synthetic fragrances, anti-bacterial agents and components of sunscreens and insect repellants. These compounds enter rivers and lakes as a result of discharges from wastewater treatment facilities. Current law does not require their removal and consequently they pass through wastewater plants untreated. Many are detectable in drinking water because the same bodies of water are often used for both receiving wastewater discharges and as a source for drinking water.

OWCs are a problem because while some may have been approved for use *on* humans, most have not been tested for their effect *within* the human body. OWCs can have varied and wide-ranging effects on humans, including cancer. Additionally, studies have confirmed that many can harm plants and animals. Some OWCs also have the ability to accumulate in the tissue of humans and animals over time. Synthetic fragrances, for example, have been detected in human tissue, blood and breast milk. There is also concern about the potential for these compounds to interact with each other and magnify their negative impacts. While there is general scientific consensus that the presence of OWCs in our water is a problem, it is extremely difficult for scientists to precisely pinpoint their effect on humans and the environment. This uncertainty creates considerable debate regarding whether OWCs should be regulated and whether we should actually be concerned about their presence.

Scientists at the University of Iowa have been researching this problem for years. One recent study analyzed the presence of synthetic fragrances in the Iowa River and in the drinking water leaving the University of Iowa Drinking Water Treatment Plant. The study found low concentrations of two commonly detected synthetic fragrance compounds, AHTN and HHCB, in both the Iowa River and treated drinking water (see table below). Synthetic fragrances are bio-indicators, meaning that their presence likely indicates the presence of many other OWCs, for which the study did not specifically test.

Between 11 And 39 Percent of Two Common Synthetic Fragrances Remain in University of Iowa's Treated Drinking Water

	Average Concentration (ng/L)			
	Winter Samples		Summer Samples	
	AHTN	HHCB	AHTN	HHCB
Source Water	3.02	8.03	2.48	5.66
Drinking Water	0.62	2.39	0.26	1.86
% Removal	79.3%	70.2%	89.3%	67.1%

The Current State of U.S. Toxics Law

Federal toxic and hazardous waste law in the United States is based on a patchwork of statutes designed to regulate hazardous compounds at different points in their life cycle. While these statutes can be effective, most require a high level of certainty before restrictive regulations can be passed. Coupled with a requirement of a cost-benefit analysis to justify restrictions, regulating OWCs is currently unlikely.

Both the Federal Insecticide, Fungicide and Rodenticide Act and the Toxic Substances Control Act require a cost-benefit analysis to show the benefits of restrictive regulations outweigh the costs before restrictions can be issued. Because little to no hazard information is available for OWCs it is nearly impossible to satisfy this burden. The Resource Conservation and Recovery Act completely exempts domestic wastewater, the single largest source of OWCs. Further, the Clean Water Act (CWA) has toxic waste provisions that have not been updated since the statute was passed in 1978. While the CWA permits states to pass restrictions on the discharge of OWCs, none have done so, and given the level of uncertainty regarding their effects, it seems unlikely that such regulations would make it through the state legislative process.

Current U.S. toxic law coupled with the present state of scientific knowledge about OWCs makes effective regulation nearly impossible. Without more research or a change in environmental policies, this emerging and very real problem will continue. Hope is not lost, however, because alternative toxic regimes used in California and the European Union show promise. These statutes address many of shortcomings of the current federal toxics regime and should be models for new regulations capable of addressing OWCs and other future toxics problems.

Alternative Approaches to Toxics Regulation

Proposition 65

The Safe Drinking Water and Toxic Enforcement Act (Prop 65) was passed in California in 1986. It creates a regularly updated list of hundreds of compounds found to be carcinogenic or harmful to reproductive health and *bans* their discharge into any water that will ultimately be used as a drinking-water source. Additionally, the statute requires that businesses provide notice to the public prior to exposing them to a listed chemical. The only way a company may avoid these notices and discharge requirements is to show that exposure of the compound at 1,000 times the expected level poses no significant lifetime risk.

Prop 65 also contains a citizen suit provision, which allows anyone to bring a lawsuit to enforce the statute, so long as it is in the public interest, reducing enforcement pressure on government agencies. In the more than 30 years since this statute was passed, scores of consumer products have been reformulated to remove dangerous chemicals. Such an approach could be effective for OWCs because when consumer products are reformulated, dangerous waste streams are eliminated. Further, banning the discharge of chemicals into drinking water sources without proof of safety ensures the protection of our water and places the burden of proving safety on those who wish to profit from the sale of the chemical.

Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

REACH was passed in the European Union in 2007 and represents another innovative approach to the regulation of toxic chemicals. REACH explicitly incorporates the notion of the “precautionary principle,” which holds that decisions should reflect a preference for avoiding unnecessary risk instead

of avoiding economic expenditures. REACH is a licensing statute, which places safety and testing requirements on a chemical prior to its sale. Unlike similar provisions under U.S. law, REACH requires a battery of substantial safety testing before a compound can be sold. Based on this information the European Chemicals Agency decides, in part by using a cost-benefit analysis, whether restrictions are necessary because of an unacceptable risk to human health or the environment. While a cost-benefit analysis made the regulation of OWCs extremely difficult under U.S. laws, the initial information-gathering requirements under REACH make it less problematic.

REACH also requires that high-risk chemicals be specifically authorized prior to sale. Authorization is only given where there is proof that existing risk has been adequately controlled or where benefits outweigh the costs *and* there are no suitable alternatives. Thus, even if a high-risk chemical can satisfy the cost-benefit analysis, it may still be restricted if safer alternatives exist. Finally, REACH applies to chemicals being imported into the EU, which requires U.S. manufacturers to meet these new standards. This creates momentum in the United States for the passage of new toxic regulations.

Elements Necessary for Successful OWC Regulation

Given the shortcomings of current U.S. toxics laws, the uncertain impacts of OWCs on our bodies and environment, and existing alternative approaches to toxic regulation, the following elements are essential to a new toxics regime capable of addressing OWCs and other emerging toxic problems.

- **Significant Information Gathering Requirements Prior to Market Access:** With 1,000 new chemicals being introduced to the U.S. market each year, the only way we can stay on top of the effects of these compounds is to require substantial research prior to their manufacture.
- **Proof that a Compound is Safe for Humans and the Environment Prior to Market Access:** This incorporates the precautionary principle, which aids in regulating in the face of uncertainty. Instead of requiring a showing of certain harm to trigger regulation, the emphasis should be placed on requiring a showing of reasonable safety to allow market access. In this way, the costs of uncertainty will be borne by those wishing to profit from the sale of a compound.
- **Research Beyond Initial Registration:** As testing methods improve and research is expanded, there may be a need for reevaluation of currently registered chemicals. It is important that manufacturers are not completely relieved of their safety obligations after an initial bout of studies.
- **Citizen Suit Provisions:** This will allow private citizens to aid in enforcement and do so in accordance with their own agenda.
- **Public Notice Requirements:** One of the main reasons Prop 65 is so successful is that companies fear the impact a warning label will have on their products' sales.
- **Retroactive Application:** Since thousands of chemicals have already fallen through the cracks of the current regulatory approach, the new regime must require that chemical substances previously granted market access be reevaluated under the new requirements. Allowing chemicals to be grandfathered would simply perpetuate the lack of information and uncertainty that must be remedied for a new regime to succeed.
- **Nationwide Testing, Evaluation and Monitoring:** A comprehensive nationwide study of the presence of OWCs in the environment and drinking water is necessary to aid scientists and policy makers to better understand the scope of this problem. While the United States Geological Survey has and is doing substantial research in this area, more resources are needed to undertake this massive task. In addition to a baseline study, there is need for ongoing testing to monitor changes and reevaluate risks.

Conclusion

The majority of U.S. toxic statutes were passed in the 1970s at the very beginning of the environmental movement and, in the context of OWCs, have seen little substantive change. The knowledge and experience of policy makers and scientists at that time with regard to environmental issues pales in comparison to what they know today. Additionally, the economic and environmental climate today is significantly different. The methods embodied in our country's first crack at toxic regulation are inadequate for the current problems.

OWCs highlight this point. Currently, the rivers, lakes and drinking water of our country contain low levels of hundreds of compounds about which we know very little. In decades, when we finally have a better grasp of this problem, we may come to the realization that this no problem at all, or with a preponderance of ill effects to humans and our environment we may be forced to accept the exact opposite conclusion. However, as our laws currently stand, we can do very little to curb this problem. We do not have enough information to regulate and we do not have enough scientists or funding to research the 1,000 new chemicals that are introduced every year. Without a substantial change in the way we approach toxic regulations this problem will be self-perpetuating.

Now is also a good time to address this problem, given that many U.S. companies will have to meet REACH standards to do business in the EU. While there is no easy solution, several toxic approaches are currently in force whose strengths, weaknesses, successes and failures can guide a revolution in the way the U.S. address toxics. More than 30 years have passed since many of our statutes were passed. Since then our problems have changed. So, too, must our approach to regulation.

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The Iowa Policy Project

Formed in 2001, the Iowa Policy Project (IPP) is a nonprofit, nonpartisan research organization that analyzes state issues on environment and energy policy, as well as budgetary and economic opportunity issues. See our 2006 report documenting the occurrence and persistence of emerging contaminants in an Iowa stream. Access this report at: <http://www.iowapolicyproject.org/2006docs/060419-USGS-FullReport.pdf>.

The Iowa Policy Project promotes public policy that fosters economic opportunity while safeguarding the health and well-being of Iowa's people and the environment. By providing a foundation of fact-based, objective research and engaging the public in an informed discussion of policy alternatives, IPP advances effective, accountable and fair government.