Discussing Discharge

New Water Research Foundation project will scrutinize hospital discharge practices

Interview compiled by Sara Samovalov

Robert Renner is CEO of the Water Research Foundation. Prior to joining the foundation in 2005, Renner was the executive director of the International Society of Automation and served as deputy executive director of the American Water Works Assn. He has more than 20 years of experience as a consultant optimizing water treatment plant performance. Renner can be reached at info@waterrf.org or 303.347.6100.

Many of the contaminants that hospitals release in their wastewater can be resistant to standard wastewater treatment. In response to this issue, the Water Research Foundation (WRF) launched Project #4616, which will investigate current hospital discharge practices and offer insight into how to reduce the amount of contaminants of emerging concern entering the water system. W&WD Associate Editor Sara Samovalov spoke with Robert Renner, CEO of the Water Research Foundation, about the project.

Sara Samovalov: **What are some examples of contaminants of emerging concern that hospitals and other health care facilities discharge?**
Robert Renner: Research has shown hospital wastewater to be a source of chemicals such as X-ray contrast media, antibiotics and other pharmaceuticals. Use of some chemicals like chemotherapy drugs, radiological drugs and iodinated X-ray contrast media are unique to health care facilities, while other pharmaceuticals are simply more concentrated at hospitals due to high frequency of use.

Samovalov: **What consequences do these contaminants have when discharged?**
Renner: Contaminants can enter hospital wastewater by excretion through the bodies of patients or by disposal, the latter of which can result in concentration spikes. Many of these chemicals are resistant to typical wastewater treatment and can therefore enter receiving bodies that serve as source waters for drinking water.

Samovalov: **Do modern health care practices encourage discharging these contaminants? If so, how?**
Renner: Historically, many pharmaceuticals were flushed as a means of disposal in health care facilities in order to keep them out of the wrong hands, but the U.S. Environmental Protection Agency's (EPA) recently proposed Management Standards for Hazardous Waste Pharmaceuticals Rule will help prevent some of this.

Samovalov: **Tell me more about EPA's proposed Management Standards for Hazardous Waste Pharmaceuticals Rule.**
Renner: The rule proposes regulations for managing hazardous waste pharmaceuticals at health care facilities, pharmacies and reverse distributors. It aims to reduce the amount of pharmaceuticals entering the sewer system and reaching wastewater treatment plants and, consequently, making the water bodies that serve as sources for drinking water safer. The proposal is projected to prevent the flushing of more than 6,400 tons of hazardous waste pharmaceuticals annually by banning health care facilities from flushing them down the toilet and sink. This will greatly decrease the contribution of health care facilities to contaminants in water. However, it does not address all pharmaceuticals or contaminants of emerging concern, as many are not considered hazardous waste, nor does it address the higher levels of excretion of pharmaceuticals observed at healthcare facilities.

Samovalov: **What is WRF already doing to remedy the issue of discharging contaminants? What will it do in the future?**
Renner: WRF has funded over 70 projects on emerging contaminants in water, including their occurrence, source, removal from water through wastewater treatment, source water protection measures and drinking water treatment. About a dozen of these projects are ongoing.

Samovalov: **How long will WRF be researching this issue?**
Renner: Project #4616 is anticipated to take 1.5 years to complete, after which the findings will be released.

Samovalov: **What are some alternatives to discharging contaminants?**
Renner: Some alternatives to discharging contaminants include pharmaceutical take-back programs and more advanced treatment of hospital wastewater. This project hopes to identify additional alternatives and best management practices. W&WD

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Cause for Concern

WRF's Project #4616 has proposed to reduce the number of contaminants of emerging concern that hospitals discharge into the water system. But what, exactly, is a contaminant of emerging concern?

WRF has funded research projects on a variety of contaminants of emerging concern, including:

- Hexavalent chromium, a contaminant used in dyes, paints, inks and plastics;
- Volatile organic compounds, 23 of which are regulated in drinking water;
- Cyanotoxins, produced by cyanobacteria (blue-green algae);
- Endocrine disrupting compounds, including flame retardants and pesticides; and
- Pharmaceuticals and personal care products, including ingredients in prescription drugs, over-the-counter medications and cosmetic products.

These contaminants might be labeled causes for concern based on public opinion, media attention, increased prevalence or possible health effects.