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**Special points of interest:**

- **Water Management Plans for Healthcare**
- **Managing Controlled Substance Waste**

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# Hospital Waste

## Water Management Plans: Now Required for Hospitals

Does your facility have a Water Management Plan (WMP)? If your hospital suffers a legionellosis outbreak that sickens or kills a patient the first thing that the Centers for Disease Control (CDC) will ask for is your WMP. WMPs are also now required by the Centers for Medicare and Medicaid Services (CMS) and Joint Commission requires attention to water quality at healthcare facilities.

A legionella outbreak is a disastrous event for any hospital. Approximately 5,000 cases of legionellosis—including both LD (the more severe, often-fatal form) and Pontiac Fever (the milder form) were reported to the CDC in 2014. Approximately 9% of all legionellosis cases are fatal—usually to patients with compromised immune systems.

Outbreaks are usually associated with environmental reservoirs in large or complex water systems, including those found in healthcare facilities such as hospitals or long-term care facilities. Transmission from these water systems to humans requires aerosol generation as can occur from shower heads, drinking water fountains, hot tubs, decorative fountains, surgical heating and cooling machines and consumption of ice from ice machines.

CMS expects Medicare-certified healthcare facilities to have water management policies and procedures to reduce the risk of

growth and spread of *Legionella* and other opportunistic pathogens in building water systems.

A Water Management Plan is critical to monitoring water quality. It should begin with a risk assessment of where in your facility pathogens could breed. Following that you should implement a Water Management Plan, and finally, specify testing protocols and begin regular testing.

Harmful pathogens will always exist in your water system—the key is to manage those populations. You cannot eradicate them. If you do, they will simply return from external (from your facility) sources. Biofilms are your enemy—they harbor amoeba, which are required for legionella to parasitize. But so are “dead legs” in your water system. These can be water pipes that have been cut and capped, but also showers in units which non-ambulatory patients seldom use. How often are each of the showers in your facility flushed?

If you need a risk assessment or a Water Management Plan for your facility, P. W. Grosser Consulting can assist you with that. We provide water management plans for healthcare facilities. If you have a WMP, we can service your existing plan with regular testing and monitoring.

## Substitutes for Hazardous Pathology Chemicals

Are you responsible for completing your facility's Pollution Prevention (P2) Plan? If your facility is a *Regulated Generator* of dangerous waste, you and your colleagues have been invited by the Washington Department of Ecology to prepare and maintain a P2 Plan.

If your facility has an in-house pathology lab, then it's also likely that both spent formalin and xylene waste are part of your P2 Plan's focus on processes to reduce hazardous waste.

There are commercially available substitutes for both formalin and xylene, although some of these substitutes work better for some processes than others. You can add these chemicals to your plan as opportunities to evaluate.

Formalin substitutes include:

- Bouin—comparable to formalin for morphology
- Hollande—best for morphology and histochemistry
- Greenfix—ethanedial and alcohol
- UPM—ethanol, methanol, isopropanol and formaldehyde
- CyMol—ethanol, methanol and isopropanol

Xylene substitutes include:

- Hemo-De—d-limonene
- Histo-Clear—d-limonene
- AmeriClear—d-limonene

As a P2 Planner, your job is to identify opportunities to reduce the volume of hazardous waste generated by substituting less hazardous products, reducing volumes, treating waste, recycling or reusing waste, etc.

It is important to note that there is no down-side to examining potential opportunities. Your colleagues may reject opportunities for a variety of reasons including higher cost, lower quality, hazards to employees, difficult disposal, no space to accommodate the alternative, or just about any other reason.

Formalin is a fixing agent used for morphology, histochemistry, immunohistochemistry, and flow cytometry. Some of these substitute products work better for some processes than others, but they are all potential substitutes that you can list in your P2 Plan. Ideally, your lab colleagues will work with you and explore the possibility of using one of these less-hazardous products.

## Managing Controlled Substance Waste

Has your facility yet identified a means to capture all unwanted controlled substances, render them unrecoverable, and then incinerate the capture media and waste?

Ecology—in its October 2016 webinar on pharmaceutical waste—banned the sewerage of controlled substance waste with the adoption of its *Interim Pharmaceutical Waste Policy*. Spokesmen did, however, allude to a grace period to allow healthcare facilities time to investigate and select a system that would:

- Capture the unwanted controlled substance;
- Render it unrecoverable; and
- Allow the capturing media and unwanted drug to be hauled offsite for incineration.

Some facilities undergoing recent Ecology dangerous waste compliance inspections have been told to implement controlled substance waste capture systems. The grace period appears to be over.

There are several commercial sequestration systems available including:

- CsRx (Stericycle)
- Cactus Smart Sink
- Rx Destroyer



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Each of these systems, when coupled with incineration, complies with Ecology's 2016 Interim Pharmaceutical Waste Policy and DEA disposal requirements for unwanted controlled substances.

Ecology has long favored a ban on sewerage controlled substance waste, but the U.S. DEA had a greater concern about diversion and abuse of discarded controlled substances. EPA and DEA are expected to release their final Hazardous Pharmaceutical Waste policy in January 2018 that will contain a provision banning the disposal of unwanted controlled substance waste in municipal sewers.

Ecology's 2016 webinar was merely presaging the federal ban on sewerage unwanted controlled substances. Ecology is expected to take about nine months to review, adopt and possibly amend the final federal rule. By September 2018, the sewerage of unwanted controlled substances will be the law of the land.

In addition to installing canister units around your facility you must train caregivers in their use and, possibly, contract with a vendor to incinerate the canisters when full.

As with any other pharmaceutical waste container, containers must be labeled with the date they enter service on your floors and must be hauled offsite within 180 days.

## Tracking Healthcare Waste Management Costs

Long ago waste was considered a necessary cost of doing business and few bothered to even track waste management costs. Waste managers today who don't track those costs do so at their own peril. Some companies have even adopted strategies that send no waste to landfills at all.

In this day of lean times a blind eye to waste management costs could be costing your facility jobs, good press and better patient care. Employees and patients are increasingly demanding that healthcare facilities be better stewards of our environment.

At the very least healthcare waste managers should maintain a spreadsheet of waste stream volumes and management costs. Typical categories might include:

- Solid waste
- Pharmaceutical waste
- Biohazardous/medical waste
- Dangerous waste managed offsite by vendor
- Dangerous waste discharged to sewer after onsite treatment

- Universal waste
- Cardboard recycling
- Non-confidential paper recycling
- E-waste recycling
- Plastics and metal recycling
- Yard waste/composting
- Confidential paper shredding

Vendors provide most of the information that you need to track. For other waste streams you'll have to investigate how much is being generated and then assign a cost to them.

With accurate data you can improve your management of waste. If costs decline you have

something to tell your colleagues. If costs increase then you need to find out why.

Ideally, you should track waste streams monthly, but they should be tracked at least quarterly. If your facility has a Pollution Prevention (P2) Plan you can document your waste tracking and management efforts in that plan.



*You can't  
manage what  
you don't  
measure*



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## What Happens to Waste When Flushed Down the Sewer?

**W**ell, it is usually carried away (although mercury, for example, stays right in the drain's P-trap). But sometimes that's all that happens. That is, the waste may not be degraded; it simply ends up somewhere else.

Wastewater treatment relies principally upon two things: filtration/sedimentation and digestion. Solids can settle out, if they are heavier than water. Digestion can be

accomplished out by both aerobic and anaerobic bacteria. Bacteria may readily digest material that they see regularly, but unusual chemicals are often not digested. They merely end up in other surface water.

What chemicals are not readily digested during wastewater treatment? While acid-forming and methane-forming bacteria in anaerobic digesters can break down many organic chemicals, not all are susceptible. In particular, wastewater treatment is

generally ineffective at digesting:

- Oils;
- Pharmaceuticals and personal care products;
- Volatile organics (xylene, formaldehyde); and
- Pesticides and sterilants

These materials readily pass through wastewater treatment and are discharged into our rivers, ponds, lakes and Puget Sound.