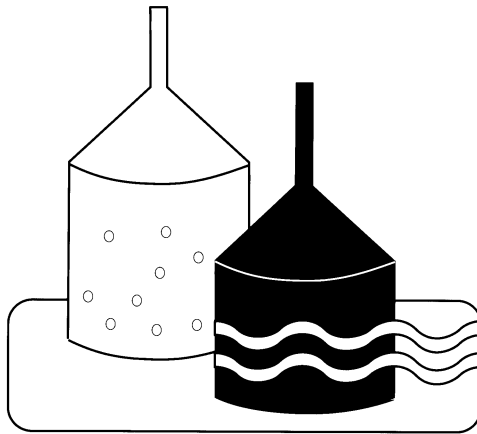


BREWERIES

Preventing Water **Pollution**



WATER POLLUTION PREVENTION TIPS FOR BREWERIES



Prepared by Oregon Department
of Environmental Quality,



Oregon Association
of Clean Water Agencies

and your local sewerage agency

What's the Problem?

In the 50s and 60s, we used to think of pollution prevention as keeping polluting substances out of the air and water. We built sewage treatment plants and put scrubbers on smokestacks.

Today, pollution prevention means much more. It means looking at every action to determine:

- how we can use fewer and less harmful substances;
- how we can create fewer waste products;
- how we can reuse or recycle substances; and
- what disposal alternatives are available to keep these substances out of the sewer systems, landfills and the air.

Many business activities have the potential to pollute air, water or soil. This booklet focuses on ways to prevent water pollution by conscious reduction, reuse or recycling of chemicals and hazardous substances. Information about other types of pollution prevention is available from the Department of Environmental Quality, your local recycler or garbage hauler and your county extension agent. Many industry groups also offer pollution prevention tips.

Why Is Water Pollution Prevention Important?

It's in everyone's best interest to reduce the amount of chemicals and hazardous substances that flow into the sewer system. It's good for the earth, it's good for our pocketbooks and it's good for our communities.

Sanitary Sewers. The fundamental reason we have to be careful about what goes into sanitary sewers is that *even the best sewage treatment facility has limitations*. Oregon's sewage treatment systems are designed primarily to handle sanitary sewage. Bacteria provide "treatment" by breaking down organic matter in the water. We need to remember that:

- Treatment facilities can't treat many chemicals, so the substances may pass untouched into the environment. This threatens fish, wildlife and vegetation, as well as people using polluted water sources for drinking or recreation.
- Some chemicals can destroy the bacteria in the treatment process — leaving the facility useless. This not only endangers the environment — it means a tremendous expense to community ratepayers.

What's the Problem?

- If the facility receives too much of one type of waste at a time, it will not be able to process the organic matter. Again, this creates environmental hazards, and the community may need to invest in greater treatment capacity.
- Chemicals in the sewage treatment system put system employees at risk. Exposure to chemicals can cause health problems, and some substances may cause explosions and fires.

Storm Sewers. In most Oregon communities, storm drains flow directly into rivers and streams, without passing through a treatment plant. Anything in the storm drain — from leaves to motor oil — can contribute to water pollution. In a few Oregon cities, storm drains feed into the sewage treatment plant. In these cases, pollutants in the storm water can threaten the plant's capacity.

How Can Pollution Prevention Help Businesses' Bottom Line?

Many businesses find that taking steps to prevent pollution actually saves money.

- Brewers and food processors may pay extra for high levels of organic waste. Keeping these out of the sewer system saves money.
- Cutting back on chemical use can reduce material costs as well as waste disposal fees.
- Reducing water use means less water down the drain — and lower sewer fees.
- Reducing chemical use can create a safer workplace, with fewer accidents and lower insurance costs.
- Ultimately, we will all pay if we need to build more treatment system capacity. We all save by keeping materials out of the sewer system.

Notes:

Good Housekeeping

✓ **Be conscious of chemical use.**

Even the least toxic chemicals can be harmful if used incorrectly. Chemicals can be dangerous to employees and customers, as well as to the environment. Don't be careless about any aspect of chemicals – from initial use to disposal.

✓ **Reduce chemical use whenever possible.**

Many businesses have found that they have saved money by adopting new procedures that require less chemical use.

Whenever possible – substitute. Many manufacturers are creating new products with less environmental impact. Avoid taking free product samples unless you are certain what's in them.

✓ **Use good housekeeping practices.**

- Sweep, vacuum and mop floors rather than hosing them down, and don't leave sweepings outside where rain can wash them into storm drains. Do not send wash water down storm drains.
- Clean up spills immediately.
- Sweep parking lots in the fall, before the rains come. Rubber from tires and other products from automobiles contribute to water pollution.

✓ **Store chemicals and liquids sensibly.**

- Store chemicals so they can be found and identified easily.

- Follow manufacturers' directions for all product storage.
- Consider requirements for temperature, air circulation, length of time and other storage factors.
- Make sure products are sealed properly and stored safely.
- Buy smaller quantities, more frequently. Avoid purchasing products that won't be used.
- Provide secondary containment for all liquids. Place original containers inside a pan, jar or bottle capable of capturing all the contents in case of a leak. Place large containers on spill control pallets.

✓ **Spill prevention and control.**

- Use chemicals only in designated areas where spills can be contained.
- Avoid moving chemicals long distances from storage to use.
- When cleaning up spills, remove liquids with rags and sweep the floor with a dry absorbent; pour mop water into an oil/water separator before sending it down the drain. Keep absorbent materials on hand to handle different types of substances.

✓ **Train employees.**

All employees – whether or not they work with chemicals – should receive training about the products in use, storage requirements, spill procedures and potential hazards.

Why a Booklet for Breweries?

Breweries, like other food processors, generate high volumes of waste. At various stages of the process, brewing requires grains, yeasts and other solids that the brewer ultimately dispose of. Water used for heat exchange and washing also becomes a waste product.

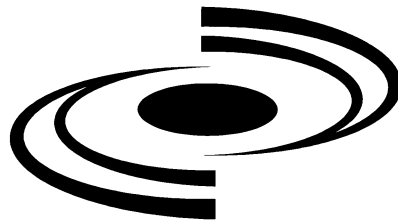
Brewers, as well as other businesses and residents in a community, can benefit significantly if breweries reduce the amount of waste they send to their sewage treatment plants.

- Because the wastewater from breweries contains such high levels of organic material, most treatment plant operators charge breweries additional sewer fees. Where surcharges are applied, reducing the volume of discharges will immediately reduce monthly charges.
- Large discharges from breweries can overload treatment facilities. If brewers send less waste to the plant — and distribute the load over time, rather than in periodic large volumes — treatment facilities can operate more efficiently and delay the need to invest in greater capacity.

In addition to the volume of discharge, brewers should be aware of wastewater temperatures. Water that is too hot can interfere with collection system efficiency, causing odor problems. Extremes in pH levels, often found in brewery discharges, also can disrupt the collection system.

Brewery owners and managers generally are environmentally-concerned individuals who actively work to be good members of their communities. Many brewers say that they could benefit from better information about the impact of their businesses on community treatment facilities and ways to reduce demand on the sewer system.

The following pages offer tips for brewers on ways to save money and reduce impact on the environment throughout the brewing and clean-up process.



Steps to Pollution Prevention

Once people begin to consider their impact on municipal sewage treatment facilities and water quality, it is not difficult to change procedures and reduce that impact. The following are some ways breweries can keep wastes out of the sewer system, protect existing treatment capacity and reduce water pollution.

1. Brewing by-products can help local farmers obtain inexpensive fertilizer and animal feed. Material can be diverted at various points in the process to keep organic matter out of the sewers and provide a secondary benefit.

To coordinate with local farmers, contact your county agricultural extension agent. Some cattle and hog farmers report success using grains and hops as feed.

SOURCE	COMPOST or FERTILIZER	ANIMAL FEED
Spent grains and hops		x
Trub from the brew kettle	x	
Dead yeast from the fermentation tank can be added to grain or trub and disposed of accordingly.	x	x
Beer/yeast mixture from the fermentation tank can be added to grain or trub and disposed of accordingly.	x	x
Yeast and solids from the filtration system can be mixed with grain or trub and disposed of accordingly	x	x
Spilled beer from the keging line or the brew pub can be added to grain or trub and disposed of accordingly. Brew pub bars already are equipped with special drains for beer. This drain can be diverted away from the sewer for an easy collection system.	x	x
Beer left inside kegs can also be added to drain or trub and recycled accordingly.	x	x

Steps to Pollution Prevention

- 2. Hot water from the heat exchanger.** After cold water absorbs heat from the wort passing through the heat exchanger, breweries are left with gallons of hot water. Instead of discharging this hot water to the sewers, water can be directed back to the hot liquor tank for use in brewing the next batch.
- 3. Useable yeast from the fermentation tank** can be recovered and used for fermentation in the next batch.
- 4. Wash water.** Treat wash water used to clean kegs before discharging it to the sewer system. A well-designed cleaning station can reduce the volume of water necessary in the cleaning process. This also applies to water used for keg rinsing.
- 5. Water heaters.** Reduce heat loss by fully insulating the water heater. Hot liquor tanks are normally well insulated, but check insulation regularly to make sure you are not losing heat unnecessarily.
- 6. Communication.** Meet with the operator of your local sewage treatment facility. Find out ways to even out the load during the day, the week and the year to reduce peak loading and keep the treatment facility operating more evenly and efficiently.



