

## **Disinfection/Filtration**

Any microorganism leaving the Wastewater Treatment Plant with a plan to cause havoc in the environment, doesn't have a chance. The final step in the wastewater treatment process prevents the possibility of that happening.

After filtration and disinfection, water is released back into the Willamette River, having met DEQ requirements outlined in the facility's National Pollutant Discharge Elimination System (NPDES) Permit.

The various ways to disinfect wastewater include gaseous chlorine, sodium hypochlorite, or Ultraviolet (UV) rays. The end result is to make sure no pathogenic micro-organisms leave the facility and go downstream. The Wastewater Treatment Plant uses UV rays to disinfect wastewater, thus preventing the spread of waterborne diseases.

“What is really great about having UV disinfection is that we are not dumping more chemicals into the river,” said Public Works Utilities Manager Monica Anderson. “So instead of using chemicals we use UV to disinfect and actually cause the organism to no longer have the ability to reproduce.”

Disinfection is an effective method of inactivating and destroying pathogenic organisms to prevent the spread of waterborne diseases to downstream users and the environment. In the Wastewater Treatment Plant's system there are two banks of UV lamps, 12 lamps in each bank. As water passes through the channel containing the lamps, the UV lights zap the organisms with ultraviolet energy, effectively destroying the cell's ability to reproduce

“The UV system is designed so the energy use is taken into consideration,” said Anderson. “It is not running full throttle all the time. It is contingent on flows and the clarity of the water. So if treated water is clearer at times the UV system automatically fluctuates based on what sensors are reading, thereby conserving energy.”

There are several advantages to using UV disinfection. It is a physical process rather than a chemical disinfectant, there is no residual effect that can be harmful to humans or aquatic life, it is user-friendly, has shorter contact time when compared with other disinfectants and equipment requires less space than other methods.

“Our biggest concern is that throughout the treatment process and before we discharge into the river we want to make sure we have taken care of business,” said Public Works Director Delora Kerber. “We want to remove all the bad bugs so we are not putting anything undesirable back into the river.”