



Water Conservation Tips

2015 New Year Resolutions

How does the water health of your company look for 2015? Will you be able to operate as effectively if future water sources are limited or if future water costs increase drastically? Water supply challenges are becoming a reality in some areas of our state.

Has your company done a thorough audit of water usage and identified areas for conservation? With the start of a new year, now is a great time to do so. By using water efficiently, the costs associated with its use can be minimized. This will help maximize your company's health as well as the security of our future water supply.

MnTAP help is just a phone call away. We offer free technical site visits by veteran staff with over 150 years combined program and industry experience. In addition, the MnTAP intern program for summer 2015 offers a valuable, cost-effective opportunity to have a full-time, dedicated, onsite engineering intern, advised by experienced MnTAP staff, to tackle your company's water efficiency issues this summer. Contact Mick Jost at jostx003@umn.edu or 612-624-4694 to talk about your ideas, and to arrange for a free, confidential site assessment to scope out a water conservation project possibility.

Contact MnTAP for More Information



Let us know if you are interested in getting involved in this water conservation project, at no cost to your business. We welcome your questions and ideas for future newsletter topics, so please send them our way! For questions or further information, contact Mick Jost, MnTAP Program Coordinator and project lead, at jostx003@umn.edu or 612.624.4694.

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MnTAP is a non-regulatory program in the School of Public Health at the University of Minnesota and is funded by the Minnesota Pollution Control Agency.

About MnTAP

A program of the University of Minnesota, MnTAP offers a variety of technical assistance services to help Minnesota businesses implement industry-tailored solutions that maximize resource efficiency, prevent pollution, increase energy efficiency, and reduce costs. Our information resources are available online at mntap.umn.edu. Please call MnTAP at 612.624.1300 or 800.247.0015 for personal assistance.

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UNIVERSITY OF MINNESOTA

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Did You Know...

Cooling systems are found in a wide variety of industries. Common cooling systems include once-through/single pass cooling, cooling towers, evaporative cooling and equipment cooling. Each has operating parameters that need to be monitored and routinely adjusted to ensure water is not wasted.

Equipment that may utilize once-through (single pass) cooling includes ice machines, degreasers, vacuum pumps, air compressors, condensers, CAT scanners, hydraulic equipment, welding machines, x-ray equipment, and some air conditioners. Once-through systems offer the greatest water savings since they are the most water intensive and have permitted-use limitations. Once-through (single pass) systems in Minnesota using 5 million gallons or more annually are prohibited in most situations. Cooling towers use 50 to 90% less water than once-through systems because of recirculation but there is still water loss in the form of evaporation, drift, bleed-off/blow down and other effects that may be minimized. No matter the system, ensure that the cooling system is not providing more cooling than necessary to conserve both water and energy. Here are tips on how to reduce water use on different cooling systems:

1. Once-through (single pass) cooling systems:

- If replacement is not an option, operate these systems only when necessary by installing automatic control devices such as auto shut-off valves.
- Compare exit temperatures of like equipment. Different exit temperatures may mean one system is using more water than another.
- Ensure operation is within minimum flow parameter requirements for cool load.
- Replace it with air or oil cooled systems.
- Close the loop and recirculate the water.

2. Cooling towers

- Operate the system within manufacturer limits, including load, water tower pressure, and air flow rates.
- Carefully monitor the water quality for contaminants and amount of water used to ensure operation is in specified limits and to minimize unnecessary bleed-off and other losses. Metering the bleed-off and make-up lines will help with this task.
- Reduce bleed-off and operate at higher cycles of concentration. This will require monitoring the water quality and physical or chemical treatment of the recycled water to prevent scaling and fouling.
- Upgrade the bleed-off system to have an automatic conductivity controlled system. If this is already in place, have a regular maintenance program set up to regularly clean and calibrate the system. Faulty readings can lead to excessive water usage.
- Optimize water treatment. This may involve looking at different/ additional chemicals or other methods such as the addition of sulfuric acid or using in-line or side-stream (off-tower) filtration.
- Avoid running the cooling tower when not needed. Auto shutoff controls may make this easier.
- Install drift eliminators or arrestors to minimize drift loss. If these are already in place, check that they are of the correct design, installed correctly, and maintained properly. Modern drift eliminators can result in a drift loss less than 0.002%.
- Install anti-splash louvers, splash mats or windbreaks to minimize splash loss.
- Shade system from sunlight to help reduce biological growth on evaporative surfaces
- Use variable speed fans to adjust settings based on loads to control water evaporation.
- Prevent overflow through appropriate water level operation, correct plumbing, and valves in good working condition. Identify ways to reduce the cooling load.
- Keep evaporative surfaces clean.
- Use a supplemental water source such as harvested rainwater or air handler condensate.
- Perform regular maintenance and fix leaks.

3. Evaporative cooler optimization

- Replace a non-circulating system with an air cooled or recirculating system.
- If bleed-off is more than a few gallons/hour for each 1000 ft³/min of air flow, check system for leaks, equipment malfunction or necessity of pad replacement.
- Saturate the evaporation pads before turning the fan on by running the water pump.
- Perform routine maintenance and annual tune-up: cleaner pads mean higher efficiency.
- Turn cooler off when not in use.

4. Equipment cooling systems optimization

- Replace non-circulating system with air cooled or recirculating system.
- Reuse cooling water for applicable processes or uses.

While consumption of water is necessary for many business operations, opportunities are available to conserve while still being productive. It is important that the value water provides is optimized rather than squandered.