



Best Management Practices *for* Cooling Towers

Water Quality Concerns Related to Cooling Towers

Cooling tower wastewater has the potential to carry pollutants to the sanitary sewer, including dissolved or suspended minerals, heavy metals (iron, copper) corrosion inhibitors, oil, salt, and algaecides. These pollutants can disrupt the wastewater treatment process, or pass through the treatment process and end up in local waterways.

Enforcement of Cooling Tower BMPs

Section 4.04.110 (Subsection G3) of the Napa Sanitation District Code states that cooling water is prohibited from being discharged to the sanitary sewer system unless special permission has been granted by the General Manager. Discharge may be allowed to the sewer system at the discretion of the General Manager after obtaining a permit from the District. Applicable fees shall apply. Call the Napa Sanitation District Regulatory Compliance Division at (707) 258-6000 for more information.

The Napa Sanitation District Code states in Section 4.04.090 that the District may develop BMPs that serve as an enforceable control mechanism for prohibited wastes. Any discharge to the wastewater treatment plant cannot contain concentrations of pollutants of concern that are greater than the local limits¹ in the Napa Sanitation District Code. The BMPs listed here are required actions that will be assessed when an NSD inspector visits your facility.

Inspections by Napa Sanitation District

Napa Sanitation District may inspect any Industrial or Commercial User's facility to ensure compliance with District Code and to prevent sewer problems. The District has the right at any time to collect a sample of water being discharged from the facility to check for compliance with the local limits found in District Code.

Questions?

If you have any questions, please contact the Napa Sanitation District Regulatory Compliance Division by calling 707-258-6000. These BMPs and the Napa Sanitation District Code are also available on our website at www.napasan.com.

¹ Local limits are technically based, defensible numerical limits imposed on industrial users by the District. The local limits are set for pollutants that can interfere with the treatment process or pass through the treatment process without being removed. Local limits can be found in the District Code online at www.NapaSan.com.

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Information About Cooling Towers

Open recirculating cooling water systems are subject to metal corrosion, scale formation, and biological fouling. These problems can have a direct effect on system operating efficiency, reliability, longevity, and the composition of the bleed-off sent to drain. Commonly used chemical treatment products that contain **copper, zinc and chromium** can address these problems. However, all of these metals pass through the wastewater treatment plant without being removed, and pose a threat to aquatic life and human health.

As of December 1995, products containing tributyltin are prohibited by state law from use in all Bay Area counties, including Napa. Federal law also prohibits the use of hexavalent chromium-based water treatment chemicals in comfort cooling towers and the distribution of such chemicals in commerce for use in comfort cooling towers.

Though an additive's label may not always reveal the presence of a metal such as copper, it may be present as a stabilizer such as in isothiazolin biocide. Even Material Safety Data Sheets (MSDS) may not necessarily list all chemicals found in the product, so chemical analytical data for a product may be necessary to reveal such metals.

Protect yourself: cooling water system owners and operators are legally liable for using any banned product. Ask your vendors to consult with their chemical suppliers to assure that they do not distribute additives containing tributyltin, copper, or hexavalent chromium. Your vendor may also be able to supply or recommend substitutes.

The water that circulates through the system contains sodium and chloride, and when the water is condensed, the sodium and chloride concentrations increase. Any discharge to the sanitary sewer system above the local limit of 90 mg/L sodium and 225 mg/L chloride is not allowed.

The Best Management Practices (BMPs) listed below can help minimize the discharge of pollutants to the wastewater system. They can also help conserve water, reduce impacts to the wastewater treatment plant and save you money.

The following Best Management Practices are **REQUIRED**:

These BMPs will be enforced through regular inspections by NSD Inspectors.

Practices

- Per section 4.04.110 of the Napa Sanitation District Code, a permit must be obtained in order to discharge cooling water to the sanitary sewer system. Applicable fees shall apply. Call the Regulatory Compliance Division at (707) 258-6000 for more information.
- City of Napa and Napa County prohibit discharge of any sewage, industrial or other polluted waters into any storm drain or natural outlet or channel without a valid National Pollution Discharge Elimination System (NPDES) permit. This applies to non-contaminated cooling tower water as well.

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The following Best Management Practices are **REQUIRED**:

- You shall prevent accidental discharge of prohibited materials such as cooling tower chemicals to the storm or sanitary sewer systems.
- Any discharge to the sanitary sewer system cannot contain concentrations of pollutants of concern that are greater than the local limit. The local limits for chemicals commonly associated with cooling tower use and cleaning are listed below. View the full list of local limits for pollutants of concern in the “Title 4-Sewer Use” section of the Napa Sanitation District Code at www.napasan.com.

Constituent	Local Limit Concentration In milligrams/Liter (mg/L)
Chloride	225
Chromium (VI)	0.538
Chromium (Total)	1.13
Copper	0.388
Sodium	90
TDS	836
Zinc	0.762
pH	6.0-9.0

- Maintain your cooling tower to the manufacturer’s specifications by scheduling routine monitoring and maintenance activities.
- Include specific guidelines addressing chemical substitution options (to avoid tributyltin, copper or hexavalent chromium) in your service contracts.
- When cooling towers are cleaned (scraped, wire brushed or high pressure washed), the sludge or solids shall be collected and disposed of properly as a solid waste. This waste shall not be discharged to the sanitary sewer system.

The following Best Management Practices are **RECOMMENDED**:

- Consider installing an onsite pre-treatment system for your cooling tower water.
- Consider using treated cooling tower water on-site for landscape irrigation purposes.
- Install influent and effluent totalizing flow meters to monitor performance of cooling towers.
- Use closed evaporative cooling towers (they use less water than open systems).
- During repair or reconstruction of existing open recirculating tower systems, limit the use of copper-based materials.

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The following Best Management Practices are RECOMMENDED:

- Improve the bleed-off release method by combining a preset level indicating a TDS reading at the high end of the manufacturer-specified range, with a shorter bleed-off duration.
- Consider installing sidestream filtration if supply water is turbid or where the cooling water passages are small and susceptible to clogging.
- Consider adjusting pH by feeding sulfuric acid to the recirculating water to control scale build up; calcium sulfate is more soluble than calcium carbonate. If pH adjustment is performed, be sure to validate that the pH is still within the compliant range between 6 and 9.
- Include specific guidelines addressing water conservation options into any of your service contracts.