



Best Management Practices *for* Boiler Blowdown

Water Quality Concerns Related to Boiler Blowdown

Boiler blowdown 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 Boiler Blowdown BMPs

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.

In addition to protecting the environment, the BMPs listed here can help reduce water, chemical and energy use, and save you money. By following these BMPs, you will be able to pass inspections by NSD inspectors.

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 Boiler Blowdown

Even with the best pretreatment programs, boiler feedwater often contains some degree of impurities, such as suspended and dissolved solids. These impurities can remain and accumulate inside the boiler as operation continues. The increasing concentration of dissolved solids can lead to carryover of boiler water into the steam, causing damage to piping and other equipment. The increasing concentration of suspended solids can form sludge, which reduces boiler efficiency and heat transfer capability.

To avoid these problems, water must be periodically discharged or “blown down” from the boiler to control concentrations of suspended and dissolved solids in the boiler. This blowdown water can contain dissolved or suspended minerals, heavy metals (iron, copper) corrosion inhibitors, chloride, and oil. Reducing the potential impact of these pollutants can be accomplished by reducing both the volume and hazardous make-up of blowdown water by implementing the practices listed below.

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 the NSD Regulatory Compliance Division.

Practices

- City of Napa and Napa County prohibit the 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.
- You must prevent accidental discharge of prohibited materials, such as chemicals found in boiler blowdown, 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 boiler blowdown are listed at the top of the following page. 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.

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The following Best Management Practices are REQUIRED:

All discharges to the Napa Sanitation District's collection system must meet the Constituent Local Limit Concentrations listed in the table below.

Constituent	Local Limit Concentration In milligrams/Liter (mg/L)
Chloride	225
Chromium (VI)	0.538
Chromium (Total)	1.13
Copper	0.388
Iron	5
Sodium	90
TDS	836
Zinc	0.762
pH	6.0-9.0

The following Best Management Practices are RECOMMENDED:

Minimize the volume of blowdown water by optimizing the frequency of boiler cleaning. One or a combination of the following practices are worth considering:

- ⇒ Conduct frequent chemical analyses to define normal cycle chemistry. This will facilitate identifying when chemistry is abnormal and, therefore, when cleaning should take place.
 - ⇒ Consider using such techniques as ultrasonic imaging, thermocouples, removable test strips and fiberoptic inspections to determine the locations and/or type of deposits.
 - ⇒ Consider sampling the boiler tubes annually to track scale build-up.
- Control the composition of boiler feed water through an elevated oxygen treatment process, as opposed to using additives such as hydrazine and morpholine. This treatment process results in a more unified, finer-grained magnetite layer that requires less frequent cleaning.
 - Inspect for and replace seals on the steam cycle appurtenances. This will potentially reduce the amount of oxygen that enters the system and, in turn, the frequency of boiler cleanings.
 - Establish a boiler cleaning frequency according to the build-up of scale rather than following a predetermined schedule. This may reduce unnecessary cleanings.
 - Use in-line cleaning, which entails cleaning the boiler with a sodium polyacrylate injection while it continues to operate. This practice takes less time, uses less hazardous chemicals and yields a waste stream that is easier to handle. However, the associated risk is potential contamination of the steam turbine, and fewer deposits can be removed with this practice.