



Pollution Prevention

Chemicals, Additives and Water Conservation Practices for Cooling Towers

On December 11, 1995, the California Department of Pesticide Regulation enacted a San Francisco Bay Area prohibition on the sale and use of tributyltin-containing cooling water additives. This action was taken to protect Bay water quality.

Tributyltin-Containing Additives Prohibited

Open recirculating cooling water systems are subject to metal corrosion, scale formation, and biological fouling, which has a direct effect on system operating efficiency, reliability, longevity, and the composition of the bleed off sent to drain. Commonly used chemical treatment products address these problems. However, those containing tributyltin are now prohibited by state law.

The State Department of Pesticide Regulation has notified manufacturers and major distributors of the Product sale and use Ban. Whether notification was received or not, manufacturers and distributors are legally liable for selling these products in the nine San Francisco Bay area counties (San Francisco, Santa Clara, San Mateo, Alameda, Contra Costa, Solano, Napa, Marin, and Sonoma). Cooling water system owners and operators are also legally liable for using banned product. Therefore, it is in your best interest to ask your cooling water systems chemical vendors for substitute products, if you have not done so already.

There are several tributyltin-containing products registered in California for use in recirculating cooling water systems including, but not limited to, the following:

Product Name	Manufacture Percent Active Ingredient
Dearcide 717 W.R. Grace & Co.	2.25
Formulation HS-69D, H&S Chemicals Division	2.25
Formulation HS-138D, H&S Chemicals Division	4.50
Garratt-Callahan Formula 34-A, Garratt-Callahan Co.	2.50
Nalco 2532 Microorganism Control Chemical, Nalco Chemical Company	2.50
Nalco 7328 Microorganism Control Chemical, Nalco Chemical Company	2.50
Nalco Visco 3951, Nalco Chemical Company	2.50
Sanatox 2219, San Joaquin Chemicals, Inc.	5.00
Skasol Microbiocide No. 8, Skasol Incorporated	.051
TEI-4 CH2O, Inc.	2.25
West C-106 Water & Energy Systems Technology, Inc.	5.00
West C-113 Water & Energy Systems Technology, Inc.	5.00

Note: Tributyltin-containing additives must be disposed of as hazardous waste. Ask your vendor if they plan a recall campaign. Businesses in Napa Valley may contact the Department of Environmental Health, Hazardous Waste Disposal Program for Businesses in Napa County @ 707-253-4471. You can also protect the Bay by reducing your use of additives containing other “toxic” metals and conserving water.

Metal Containing Additives

The use of additives containing copper, zinc, hexavalent chromium, tributyltin and other organometallic compounds contribute to environmental pollution. Federal law (40 CFR 749) 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 may not necessarily list all chemicals found in the product. Chemical analytical data for a product may be necessary to reveal such metals. 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.

Recommended Maintenance Practices to Minimize Metals Discharge and Conserve Water:

Maintain cooling tower to the manufacturer’s specifications by scheduling routine monitoring and maintenance activities. Include specific guidelines addressing chemical substitution options into any of your service contracts. Install influent and effluent totalizing flow meters to monitor performance of cooling towers. During repair or reconstruction of existing open recirculating tower systems, limit the use of copper-based materials.

Recommended Water Conservation Practices:

Use closed evaporative cooling towers (they use less water than open systems). 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 side stream 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. Consider using recycled or reclaimed water as a source for makeup water. Include specific guidelines addressing water conservation options into any of your service contracts.

Other Discharge Regulations:

Local ordinance prohibits discharge of any sewage, industrial or other polluted waters into any storm drain or natural outlet or channel without a valid National Pollutant discharge Elimination system (NPDES) permit (this applies to non-contaminated cooling tower water as well). Facilities to prevent accidental discharge [to the storm or sanitary sewer systems] of prohibited materials (like cooling tower chemicals) shall be provided and maintained.