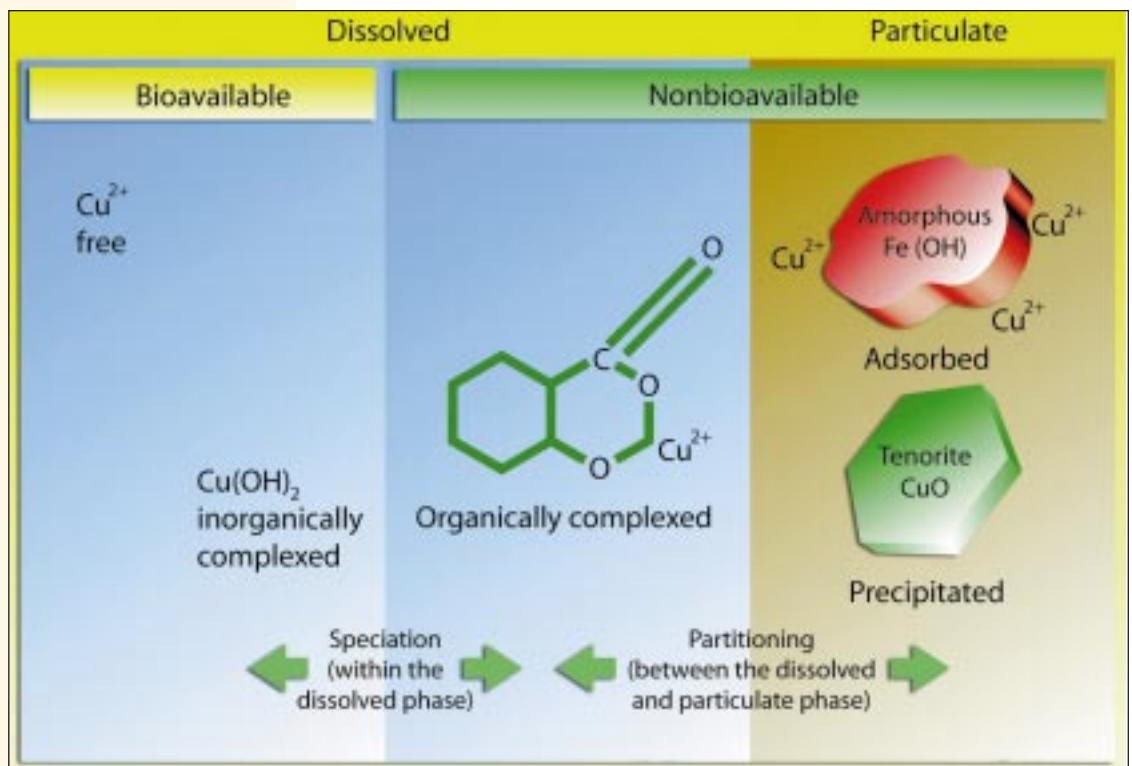


NPDES Metals Compliance

When the City of Colorado Springs, Colo., was threatened with a citation for exceeding NPDES-permitted silver limits at its wastewater treatment plant, Brown and Caldwell proved to regulators that the high concentrations were both transitory and non-threatening.

Metal Forms and Toxicity



Brown and Caldwell's research helped convince regulators to change the limit for silver discharged into Fountain Creek. The research showed that only a small fraction of silver is bioavailable and therefore toxic to aquatic life. Thus, the limit based on total concentrations was overly protective. The schematic above illustrates the bioavailable and nonbioavailable forms of metals.

BROWN AND
CALDWELL

BACKGROUND

The City of Colorado Springs was notified by the state that its Las Vegas Street Wastewater Treatment Plant would be cited for exceeding its National Pollutant Discharge Elimination System (NPDES) permit limit for silver discharged to Fountain Creek. The citation included fines of more than \$100,000. The city obtained a 30-day extension from regulators and contacted Brown and Caldwell.

The facility has two plants with common headworks and primary clarifiers – a suspended-growth activated sludge (AS) plant and a trickling filter/solids contact (TF/SC) plant. At the time of notifications, the AS plant was being equipped with nitrification/denitrification capabilities.

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SOLUTION

Working with city staff, Brown and Caldwell quickly targeted and implemented measures to bring the plant into compliance. Measures included:

- Designing and executing an intensive seven-day plant monitoring program to determine why the plant had exceeded its silver limit of 1.2 parts per billion.
- Collecting samples to evaluate the silver removal efficiency of the AS and TF/SC processes. Analyses included total recoverable silver, dissolved silver, and total suspended solids. These data were used to determine the amount of silver that should have been present in the effluent under normal (non-renovation) operating conditions.
- Using the EPA-endorsed model TOXCHEM to predict how silver is affected by and responds to changes in influent concentrations and process operating conditions.
- Preparing a presentation of monitoring data and modeling results that convinced regulators the violation was temporary (due to changes in treatment processes caused by construction at the plant). Regulators granted an NPDES permit limit bypass exemption and waived the violation fines.
- Showing that silver discharges to the creek were not affecting aquatic life, because only a fraction of the silver was bioavailable, and convincing regulators to increase the silver limit by a factor of more than three.