

# ElectroBrom Replacement of Chlorine Dioxide Sintered Metal Parts Plant Cooling Tower

## History

A large sintered metal parts plant in northwest Pennsylvania has historically suffered oil contamination of the 2000 ton capacity plant cooling tower system due to leakage from shell and tube heat exchangers used to cool hydraulic forming presses. In an effort to control microbiological growth resulting from this oil contamination, a PCT Envirocide™ chlorine dioxide generator system was installed in 1996.

While the chlorine dioxide was successful in controlling the microbiological problem, it created new problems due to the hazards of safely handling and using chlorite and chlorine dioxide solutions. In one accident, a plant employee was hospitalized for a week due to respiratory problems resulting from inhalation of chlorine dioxide fumes.



Following our development of the ElectroBrom™ technology in 2003, we recommended that the chlorine dioxide system be replaced with a Model EB-4 ElectroBrom unit as a health and safety upgrade. Plant management agreed and a Model EB-4 was installed and started up on August 18, 2003.

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## Results

Biological control, with the EB-4 replacing the chlorine dioxide, has been judged to be visually the same, or better. This observational data has been verified by routine ATP test data from monthly service calls. A mean ATP of 362 rlu, std. dev. of 238, was obtained when operating with chlorine dioxide. The data when operating with the ElectroBrom unit shows a mean of 298 rlu, std. dev. of 114.

The following corrosion coupon results, mean of 19 sets of coupons, were obtained during operation with chlorine dioxide:

mild steel	1.24 mil/yr
copper	0.01 mil/yr
brass	0.06 mil/yr

A typical set of coupons analyzed since conversion to the ElectroBrom Biocide System have the following results:

mild steel (ave. of two)	0.94 mil/yr
copper	0.01 mil/yr

This corrosion coupon data shows that the excellent corrosion control at this plant when operating with chlorine dioxide has been maintained after conversion to the ElectroBrom unit.

The plant is very pleased that the ElectroBrom unit has controlled biological growth while eliminating a safety problem. The precursor salt solution used, PCT 3024, is DOT/OSHA non-hazardous, while the produced bromine solution is also OSHA non-hazardous. PCT 3024 is registered with the USEPA as a biocide precursor, registration #58616-6.

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