



On-site Hypochlorite or Mixed Oxidant Solution (MOS)?

Not all water treatment needs are alike, so MIOX offers two chlorine-based chemistries for effective water and wastewater disinfection.

On-Site Hypo (Sodium Hypochlorite)

Engineered for reliability and to produce the absolute lowest cost sodium hypochlorite on the market, MIOX on-site hypochlorite generators comply with all EPA requirements. Generating disinfectant on site, on demand is a safe, eco-friendly alternative to other methods, like gas chlorine or delivered bulk chlorine.

On-Site MOS (Mixed Oxidant Solution)

For more advanced treatment needs, MIOX offers systems optimized for challenging applications where basic chlorine, chloramine or proprietary biocides have not met the customer's needs. This chlorine-based solution contains other oxidants that have all the disinfection power of hypochlorite with additional treatment benefits including biofilm removal, disinfection byproduct (DBP) reduction, improved taste and odor, and improved water clarification. With these mixed oxidant solutions, customers maintain more consistent control and residuals with lower doses. And studies show that mixed oxidant solution has a more effective kill of even difficult-to-inactivate microorganisms including *Cryptosporidium*, *Giardia*, and bacterial spores compared to chlorination.

		On-Site Hypo	On-Site MOS
Safety	Eliminates hazardous disinfection chemicals -- only salt, water, and power required	✓	✓
	Eliminates storage and handling of chlorine gas or bulk hypo – reduces liability exposure	✓	✓
	No Risk Management Plan (RMP) required	✓	✓
	No HAZMAT training, SCBA gear, or DOT shipping requirements	✓	✓
	Uniform Fire Code for chlorine gas scrubber doesn't apply	✓	✓
	No equipment corrosion - dilute concentration	✓	✓
DBP Formation	Safer water – fewer DBPs and harmful microorganisms		✓
	TTHMs and/or HAA5 reduced		✓
	Does not form chlorite	✓	✓
	Produces minimal levels of chlorate (not regulated) and perchlorate	✓	✓
Chlorine Residual	Oxidant demand is decreased -- i.e., a lower dose will achieve the same or higher residual, reducing operating costs		✓
	Chlorine residual lasts much further in distribution (> 25 miles) and has a much longer detention time (15 days in remote tank rather than 5 days)		✓
	Chlorine booster stations or ammonia (chloramines) can often be eliminated, reducing operating costs		✓
Efficacy	2-3 times more effective than chlorine at the same FAC dose and application pH		✓
	More rapid disinfection, including <i>Cryptosporidium</i>		✓
	Lower dose required		✓
	Reduced or eliminated <i>Legionella</i> counts		✓



		On-Site Hypo	On-Site MOS
Pretreatment	Can cause a microfloculation effect, decreasing coagulant demand by up to 40%		✓
	Use in pretreatment typically removes organic precursors, reducing final DBP levels by up to 50%		✓
	Can reduce fluoride doses and sludge handling requirements		✓
	Improves filter runs		✓
	Lowers final turbidity		✓
Taste/Odor	Practically eliminates taste and odor complaints. Chlorine taste usually not apparent, even at residuals > 5 ppm		✓
	Effective against taste problems caused by algae blooms; seems to remove geosmin and MIB		✓
	Rapidly oxidizes hydrogen sulfide (H ₂ S)		✓
	Minimizes formation of di- and tri-chloramines		✓
Oxidation	More rapidly oxidizes iron and manganese, enabling removal by flocculation and filtration		✓
	May eliminate use of KMnO ₄		✓
	Achieves breakpoint at lower chlorine to ammonia dose ratios (i.e., practical experience shows breakpoint achieved at half the dose required with bleach)		✓
Maintenance	Self-cleaning cell only offered by MIOX	✓	✓
	Fully automated unit requires minimal attention	✓	✓
	1-2 hours weekly maintenance	✓	✓
	Excellent customer service record recognized in the industry	✓	✓
	Cell replaced roughly every 5 years –takes appx. 15 minutes	✓	✓
	Oxidant used as produced so there is no deterioration	✓	✓
	No mixing or diluting solution to desired strength	✓	✓
	No ionic membranes, gas exchange venturis, or complex changing /cleaning process	✓	✓
No safety equipment necessary	✓	✓	
Costs	Higher capital cost offset by lower operating costs, resulting in lower lifecycle cost	✓	✓
	Reduced oxidant demand typically means operating costs will be 30% less than estimated, offsetting slightly higher salt and power conversion efficiencies		✓
	Use of bulk brine silo reduces labor costs	✓	✓
	No liability costs or expenses for safety training or equipment	✓	✓
	Positive effect on other plant processes can save thousands of dollars monthly in operations		✓

