

INDUSTRIAL SUPERCRITICAL WATER OXIDATION



- Safe, proven, environmentally sound
- High efficiency at low cost
- Emissions much lower than incineration
- Transportable, skid-based system

Safe, effective destruction of energetics, organic compounds, chemical waste, pesticides, petrochemical waste, and fungicides

iSCWO HAS SUCCESSFULLY TREATED A WIDE RANGE OF CHEMICALS

Complex Feeds		
Activated carbon (spent)	E. coli	Pesticide manufacturing wastewater
Adhesives	Endotoxin (pyrogen)	Pharmaceutical waste
Aqueous Cleaning Solution	Explosives/energetics/propellants (hydrolyzed RDX, TNT, Tetryl, NG, NC)	Photographic developer paste
AFFF	Fermentation byproducts	Photographic developer solutions
Antifreeze	Fuel oil	Polychlorotrifluoroethylene (PCTFE)
Aroclor 1242	GB chemical agent (neat, hydrolyzed)	Pig manure
Aroclor 1254	Gray water	Propellants (hydrolyzed)
Aroclor 1260	Greases (mixed)	Protein
Bacillus stearothermophilus (heat resistant spores)	Human waste	Pulp/paper mill sludge
Brake fluid	Hydraulic fluid	Sawdust
Bran cereal	Industrial biosludge	Sewage sludge (black water)
Caprolactam wastewater	Ion exchange resins (styrenedivinyl benzene)	Soil contaminated with organics
Casein	Kerosene	Soybean plants
Chlorinated plastics (shredded)	Lube oil (molybdenum disulfide oil)	Sulfolobus acidocaldarius
Class 1.1 solid propellant	Malaria antigen	Timber/wood waste
Class 1.3 AP-depleted solid propellant	Motor oil	Transformer oil
Coal	Mustard chemical agent (neat, hydrolyzed)	Trimsol cutting oil
Coal waste	Navy shore-based wastes	VX chemical agent (neat, hydrolyzed)
Corn flakes	Olive oil	Waste oils (chlorinated and non-chlorinated)
Corn oil	Organic salts (complex mixtures)	Wheat straw
Corn starch	Paint, paint sludges	Wood fibers
CS (Tear Gas)	Paper	Yeast
Diesel fuel	Paraffin oil	

Inorganic Substances		
Aluminum hydroxide	Fluorides	Potassium chloride
Aluminum metal	Hydrochloric acid	Potassium hydroxide
Aluminum oxide sodium	Hydrofluoric acid	Potassium sulfate
Ammonia	Iron chloride	Silica
Ammonium chloride	Iron oxide	Sodium bicarbonate
Ammonium nitrate (ANSOL)	Lead chloride	Sodium carbonate
Ammonium nitrite	Lead sulfate	Sodium chloride
Ammonium perchlorate	Lithium hydroxide	Sodium fluoride
Ammonium sulfate	Lithium sulfate	Sodium hydroxide
Ammonium sulfite	Magnesium nitrate	Sodium nitrate
Boric acid	Magnesium oxide	Sodium nitrite
Bromides	Magnesium phosphate	Sodium phosphate
Calcium carbonate	Magnesium sulfate	Sodium sulfate
Calcium chloride	Mercuric chloride	Sodium sulfite
Calcium oxide	Molybdenum disulfide lube oil	Sulfur, elemental
Calcium phosphate	Nitric acid	Sulfuric acid
Calcium sulfate	Phosphoric acid	Titanium dioxide
Cerium chloride	Potassium bicarbonate	Zinc chloride
Copper chloride	Potassium carbonate	Zinc sulfate

Organic Chemicals

Acetate acid	Dichloroethylene	2-nitrophenol
Acetone	Dichlorophenol	4-nitrophenol
Acetylsalicylic acid (aspirin)	Diethanolamine	Nitrotoluene
Adumbran	Dimethylformamide	Octachlorostyrene
4[(2-Amino-3, 5-dibromophenyl)-methylamino] cyclohexanol	Dimethyl methyl phosphonate (DMMP)	Octadecanoic acid magnesium salt
Ammonium acetate	Dimethyl sulfoxide	Paracetamol
Ammonium formate	4,6-denitro-o-cresol	Pentachlorobenzene
Ammonium oxalate	2,4-Dinitrophenol	Pentachlorobenzonitrile
Benzene	Dinitrotoluene	Pentachlorophenol
Biphenyl	Dioxane	Pentachloropyridine
Butanol	Dioxin	Phenol
Calcium acetate	Dipyridamole	Polychlorinated biphenyls (PCB)
Carbon tetrachloride	Diisopropyl ethanolamine	Polychlorotrifluoroethylene
Carboxylic acids	Diisopropyl ethylamine	Sodium acetate
Carboxymethyl cellulose	Ethanol	Sodium formate
Cellulose	Ethyl acetate	Sodium hexanoate
Cerium acetate	Ethylene chlorohydrin	Sodium isethionate
Chlorinated dibenzo-p-dioxins	Ethylenediamine tetraacetic acid	Sodium propionate
6-chloro-2,3,4,5-tetrahydro-3-methyl-1H-3-benzazepine hydrochloride	Ethylene glycol	Sucrose
2-chlorobenzalmalononitrile (CS)	Fluorescein	Surfactant
Chlorobenzene	Freon 22	Tetrachlorobenzene
Chloroform	Glycerol	Tetrachloroethylene
2-Chlorophenol	Hexachlorobenzene	Tegrpropylene H
o-Chlorotoluene	Hexachlorocyclohexane	Thiodiglycol
Cobalt acetate	Hexachlorocyclopentadiene	Toluene
m-Cresol	Iron acetate	Tributyl phosphate
Cresolate	Isooctane	Trichlorobenzene
Cyanide	Isopropanol	1,1,1-Trichloroethane
Cyclohexane	Lead acetate	1,1,2-Trichloroethane
DDT	Mercaptans	Trichloroethylene
Decachlorobiphenyl	Mercaptoethanol	Trichlorophenol
Dextrose	Methanol*	Trifluoroacetic acid
Dibenzofurans	Methyl acetate	1,3,7-Trimethylxanthine
3,5-dibromo-N0cyclohexyl-N-methyltoluene-, 2-diamine	Methyl cellosolve	Unsymmetrical dimethyl hydrazine
Dibutyl phosphate	Methylene chloride	Urea
Dichloroacetic acid	Methyl ethyl ketone	o-Xylene
Dichloroanisole	Methylphosphonic acid (MPA)	Zinc acetate
Dichlorobenzene	Monoethanolamine	
4,4-Dichlorobiphenyl	Nitrobenzene	

WASTE DESTRUCTION TECHNOLOGY

General Atomics Electromagnetic Systems (GA-EMS) Industrial Supercritical Water Oxidation (iSCWO) technology has been successfully used to treat a broad range of hazardous and non-hazardous waste, with a 99.99% destruction removal efficiency. iSCWO provides a safe, environmentally sound solution to replace alternative technologies that have high emission rates, post treatment requirements, and substantial installation and operation costs.

In addition to offering a fixed site solution, GA-EMS offers the only flexible, transportable iSCWO system available today to facilitate “generate and destroy” on-site capabilities. The system consists of two compact equipment skids housed inside two shipping containers to create a convenient, cost effective, mobile platform for waste destruction when and where it’s needed.



Transportable iSCWO system

GA-EMS’ iSCWO system uses compressed air rather than more expensive pure oxygen (O_2) in the treatment process. The iSCWO process makes most organic materials, oxidation reactants, and oxidation products miscible in water, allowing complete oxidation reactions to take place at a high rate. The result is the creation of CO_2 , water and salts, all of which can be released into the environment or reused for other industrial purposes without any post treatment. NO_{x1} , SO_x , and particulate concentrations created are also at or below detection limits.

