SCWO – Annex to POPs Technology Specification and Data Sheet
Provisional version

Table 1: Technology overview technology – Summary-Technical Details

Technology Provider	Technology	Scale +	Pest Comp. treated	Related comp treated	Validation project experience **	Applica-bility Ranking ++	Additional Remarks
General Atomics	SCWO	P, FS		Chemical Agents		DA	0.7 gpm test unit at General Atomics for agent/energetics hydrolysates
General Atomics	SCWO	P, FS		Chemical Agent Simulants Salts and Solids Shipboard Wastes Other Hazwastes		DA	1.0 gpm pilot unit for DoD/DARPA
General Atomics	SCWO	P, FS		Solid Rocket Propellant		FS	0.5 gpm pilot unit at Air Force
General Atomics	SCWO	P, FS		Shipboard Wastes		DA	2.0 gpm Demo Unit for Navy/DARPA
General Atomics	SCWO	P, FS		Hydrolysate from VX Agent		DA	0.5 gpm pilot unit for Army ATA
General Atomics	SCWO	FS		Hydrogen Production from Waste		DA	1.0 gpm pilot unit for DOD/DOE
General Atomics	SCWO	FS		Organic Wastes		DA	0.35 gpm pilot unit for DOE
General Atomics	SCWO	FS		Contaminated Trimsol Halogenated wastes Solvents, Biological Wastes PCB Contaminated Sludges		DA	0.35 gpm pilot unit for DOE
General Atomics	SCWO	P		Organic Wastes		DA	0.03 gpm pilot unit
General Atomics	SCWO	FS		Agent, Explosives, Dunnage Hydrolysates		DA	0.7 gpm pilot unit

+Key: FS - Full-scale or near full-scale applications completed	++Key: Applicability ranking for pesticides
P - Pilot/Demonstration scale completed; no F-applications	DA – Direct applicable
B - Bench/Laboratory scale completed; no P or F-applications	FS 1 – Full scale within reasonable period possible 0-2 years
T - Theoretical applicable, no B,P, F applications	FS 2 – Full scale within considerable period possible 2-5 years
* Vendor claims performance of demonstration, but no data provided	**Validation on the basis of info provided in Table 2 and 3

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Date: 09.06 2008

Table 1: Technology overview technology – Summary-Technical Details

Technology Provider	Technology	Scale +	Pest Comp. treated	Related Comp. treated	Validation project experience **	Applica-bility Ranking ++	Additional Remarks
General Atomics	SCWO	P, FS		Treatment of the caustic neutralization products of CADs and PADs	FS 1, DA		1500-lb/hr iSCWO unit
Kurita/Komatsu	SCWO	FS	BHC, Chlordane		FS		10 m³/day demonstration at Kurita 3.96 kg Chlordane emulsion 1.6 kg BHC power reagent 60 l BHC
Kurita/Komatsu	SCWO						
Kurita/Komatsu	SCWO						
Organo Corp	SCWO	P, FS	PCB oil, Solid waste contaminated with PCBs BHC, chlordane				250 kg/day PCB treatment 50 kg/day Solid waste PCB contaminated
Kurita/Komatsu	SCWO						Check at Komatsu/Kurita for data
Foster Wheeler	SCWO	P		GB/Comp B/Aluminimum Hydrolysate			Feed rate 227 kg/hr
Foster Wheeler	SCWO	P		VX/Comp B/Aluminimum Hydrolysate			Feed rate 159 kg/hr
Foster Wheeler	SCWO	P		H/Tetryto/Aluminimum Hydrolysate			Feed rate 95 kg/hr

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Table 2- Part 1:
Overview project experience per technology suppliers in Japan

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Location/project	Contaminants	Amount treated in tons	Results incl DRE, Pre-treat, Post treat, Emissions, energy consumption, costs*	Client References Name, address, contact person, phone, Email , fax
Organo test based on MODAR technology	BHC, Chlordane	0.75 l/h POPs emulsion flow		
	Solid waste contaminated with PCBs	50 kg/day		
	PCB oil	1000 hrs operation time ca. 213 kg in 2003		

*In case of more details per project Table 3 should be used

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Table 2 – Part 2:
Overview project experience per technology suppliers in US

Location / project	Contaminants	Amount treated in tons	Results incl DRE, Pre-treat, Post treat, Emissions, energy consumption, costs*	Client References Name, address, contact person, phone, Email , fax
DoD/DARPA	Chemical Agents	< 100 processing hours	>99.9999% destruction of agent in agent hydrolysates; effluent TOC content typically <1 ppm	Kevin Downey, Kevin.Downey@gat.com, Ph: +1 (858) 455-4578
DoD/DARPA	Chemical Agent Simulants Salts and Solids Shipboard Wastes Other Hazwaste	> 500 processing hours	>99.9999% destruction of agent in agent hydrolysates; effluent TOC content typically <1 ppm	
Air Force	Solid Rocket Propellant	> 40 processing hours		
Air Force	Solid Rocket Propellant	> 150 processing hours		
Navy/DARPA	Shipboard Wastes	> 850 processing hours	"Proven ability to destroy all organics tested to date.	
Army ATA	Hydrolysate from VX Agent	> 300 processing hours	"Proven ability to destroy all organics tested to date.	
DOE	Hydrogen Production from Waste	< 100 processing hours		
DOE	Organic Wastes	900 processing hours		
Various	Contaminated Trimsol Halogenated wastes Solvents, Biological Wastes PCB Contaminated Sludges	2200 processing hours		
Private	Organic Wastes	40 processing hours		
Army ACWA	Agent, Explosives, Dunnage Hydrolysate	>5788 processing hours	The detailed data are listed on the next page for the multiple 500-hr tests.	
Army EST	Agent Hydrolysate Simulants	> 600 processing hours	Non-detect for MPA and EMPA; TOC in liquid effluent ≤2.4 ppm; NOx and Sox below detection limits	
Private (Japan)	Sludges, Pharmaceutical Wastes	> 1000 processing hours		

*In case of more details per project Table 3 should be used

Table 3: Overview detailed project information per project in US and Japan– Project name (from Table 2):

Location project	Pre-treat mg/kg	Post-treat mg/kg	DRE's	Emissions 1. Air (HCL, Diox/furans etc) 2. Water, 3. Waste (slags)	Energy Cons-umption	Costs(Capital , operating costs)	Others, remarks
Army ACWA,	fitted with a slurry-grinding feed preparation module for propellant size-reduction	>500 processing hours	Feed Material / Test Duration hrs / TOC ppm / CO ppm / NOx ppm / SOx ppm HD hydrolysate or simulant: 500 / <1.3 / <10 / <1 / <1 Tetrytol hydrolysate /dunnage: 537 / <1 / <10 / <1 / <1 Propellant hydrolysate /cyclotol hydrolysate /dunnage: 523 / <1.9 / <10 / <1 / <1 GB hydrolysate or simulant: 543 / <2.6 / <10 / 5.2 / 0.2 VX hydrolysate or simulant: 513 / <1.4 / <10 / 0.5 / 0.3 Total: 2616				
Japan, Organo tests	BHC 0,00646 %		DREs(Gas) >99.99996% DREs(Effluent) >99.99975% DE >99.99971%	**Dioxin Analysis** Exhaust gas: ng-TEQ/m3 N: 0.0018 Effluents: ng-TEQ/L: 0.04			
Japan, Organo tests	Chlordane 0,00067 %		DREs(Gas) >99.99984 DREs(Effluent) >99.99862 DE >99.99846	0.00015 / 0.0075			
Japan, Kurita/Komatsu tests	BHC 3,3 %	Liquid Effluent: < 1.6 ng/L Gas Effluent:	DE > 99.999999 % DRE > 99.9999998 %	**Dioxin Analysis** Material: 5100 pg-TEQ/g			

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		< 4 ng/m³N						
				Liquid	0.0012 pg-TEQ/L			
				Effluent:				
				Gas	0.0036			
				Effluent:	ng-TEQ/m³N			
				Working Atmosphere:	0.65 pg-TEQ/m³N			
Japan, Kurita/Komatsu tests	Chlordane 8,25%	Liquid Effluent: < 0.8 ng/L Gas Effluent: < 2 ng/m³N	DE > 99.999999 % DRE > 99.9999993 %	Dioxin Analysis				
				Material:	0.64 pg-TEQ/g			
				Liquid Effluent:	0.00008 pg-TEQ/L			
				Gas Effluent:	0.0063 ng-TEQ/³mN			
				Working Atmosphere:	0.68 pg-TEQ/m³N			
Japan, Kurita/Komatsu tests	BHC 12000 mg/l	Liquid Effluent: < 0.0004 mg/L Gas Effluent: < 0.00056 mg/m³N	DE > 99.999942 % DRE > 99.9999639 %	Dioxin Analysis				
				Material:	48000 pg-TEQ/L			
				Liquid Effluent:	0.00074 pg-TEQ/L			
				Gas Effluent:	0.000014 pg-TEQ/m³N			

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