

Table 1: Technology Overview – Summary Technical Details

Important note: The data given in this Annex cannot simply be compared with the data for technologies which are specifically designed to treat POPs! This typical and state of the art Hazardous Waste Incineration (HWI) Plant with the combination of rotary kiln and secondary combustion chamber, followed by a boiler and sophisticated effective flue gas cleaning installations is able to dispose of continuously all kinds of hazardous waste: solid, liquid, gaseous, pasteous and materials in drums. The part of pesticides, packed in drums, is normally less than 1 %. Together with other POPs waste like PCB it can be sometimes up to 5 % and are often negligible compared to the total waste treated.

For the incineration process there is no difference by treating POPs or other kinds of hazardous wastes, which also can content higher concentrations of sulfur, chlorine, bromine, fluorine or heavy metals. Starting with checking the inventory, analyzing and the correct packaging regarding the weight of the single drums, filled with POPs in different concentrations, together with the daily incineration menu of the incinerator emission peaks are avoided. Thus you cannot see any difference in the continuous emission monitoring during POPs incineration. One reason is the big buffer capacity in the flue gas treatment installations.

Technology Provider	Technology	Scale +	Comp. treated	Related comp treated	Validation project experience **	Applicability Ranking ++	Additional Remarks	Others
Akzo Nobel, Netherlands	Static kiln (for liquids) with HCl-recovery.	F	PCBs liquid	Liquid Cl-waste/solvents: Methylene-chloride PCB-oils (liquid) Perchloorethylene Trichloorethylene		DA	Since 1974. Liquid organic high Cl-containing waste is processed. In this process chlorine is recuperated as product HCl, which is used in a wide variety of applications High processing temperature (>1450 C) guarantees destruction of all PCB's	
AVG Abfall-Verwertungsgesellschaft mbH, Germany	High Temperature incineration plant	F	Pesticides and PCBs			DA	Since 1971 with 2 units	
Currenta GmbH & Co. OHG	4 high Temperature incineration plants		PCBs				4 plants are running in: -Dormagen since 1994 -Leverkusen since 1967 -Uerdingen since 1985 -Brunsbüttel since 1980	
Ekokem, Finland	High temperature incineration in a rotary kiln	F	Pesticides and PCBs			DA	Since 1987 3 units High temp. line 1 since 1984, line 2 since 1991, medium temperature line since 1999	

HIM, Germany	Rotary kiln and secondary combustion chamber, followed by a boiler and flue gas cleaning installations	F	Pesticides and PCBs			DA		
SAVA, Germany	High temperature incineration in a rotary kiln with efficient flue gas cleaning system	F	Pesticides and PCBs			DA	Runs since 1997	
Tredi, Saint Vulbas, France	One rotary kiln and one static kiln (for liquid)	F	Pesticides and PCBs			DA		
Veolia, United Kingdom	High temperature incineration in a rotary kiln, secondary combustion chamber, followed by efficient flue gas cleaning system and effluent treatment.	F	Pesticides and PCBs			DA		
+Key: F - 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			

Table 2: Overview Project Experience per Technology Supplier

Note: There are hardly any data available of direct monitoring of POPs destruction. Mostly 1 or 2 times per year are only the legally obligatory data available and these are independent of POPs treatment

Technology Provider	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
			Parameter	HWI 1	HWI 2	
AVG Abfall-Verwertungsgesellschaft mbH	As above	Obsolete pesticides between 400 t to 3,000 t per year, PCB between 100 to 1,000 t per year	Residues in general: 33% of incinerated waste is fly ash, slag and gypsum DE=100% (supplied by AVG, UNEP 2004))			Overall Capacity 130,000t
Currenta GmbH & Co. OHG	PCBs specifically at Dormagen plant					Total capacity: Capacity Dormagen:75000t/y Capacity Leverkusen: 80000.t/y Capacity Uerdingen:25000t/y Capacity Brunsbüttel: 27000.t/y, but here only liquid PCB is accepted < 100.00 ppm. Dormagen plant is specifically suitable for PCB treatment due to high flexibility
HIM, Hessische Industrie Müll, Germany (near Frankfurt)	April/May 2005 pesticides in drums are delivered from the Ministry of Environment of Venezuela to the incineration plant and disposed of immediately without any problem.	Approx. 400 tons	Parameter	HWI 1	HWI 2	Total capacity of plant 120,000 t /y
				[mg/m ³ N.dry, 11 Vol% O ₂]	[mg/m ³ N.dry, 11 Vol% O ₂]	
				Yearly average	Yearly average	
			Dust	0.24	0.59	
			CO	20.36	23.97	
			SO ₂	1.19	1.45	
			HCl	0.82	0.2	
			Hg	0.0013	0.0003	
TOC	0.82	0.5				
NO _x	128.26	130.34				
HIM, Hessische Industrie Müll, (near Frankfurt)Germany	PCB incineration		Destruction efficiency for PCB has been checked during PCB campaign. The result has been >			

	campaign		99.99992 %.	
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	PCBs contaminated metallic equipment All kinds of PCB materials. 100% PCB oils, mineral oils, waste oils and aqueous washing liquids contaminated by PCB	obsolete pesticides 4,100 t Related wastes PCB's, paints, solvents pharmaceutical waste 1999- 2004 23,000 t/y	residues in general: 200 kg/t slag 75 kg/t filter dust Disposed quantity is < 5% of total waste treated. It is not possible to figure out these amounts for PCB treatment DE's >99.99% in general (supplied by SAVA, UNEP 2004))	30,000 UN approved drums with solids and 1,200 tons of liquids units per year (PCB questionnaire, UNEP, 2004)
Tredi, Saint Vulbas, France	As above		Residues in general: Ash and dust: Few ppm kg /t waste treated DE=99.999999% incineration (supplied by Tredi, UNEP 2004)	Capacity 10,000 t/y PCB waste 100% PCB oils 6,000 t/y permitted (UNEP, 2004)

Table 3: Client References Overview project experience per technology suppliers

Note: These data do not claim to be complete for all incineration plants. Only some examples received from the companies have been included in the list

Technology provider	Country, Employer References	Contact	Comp. treated	Period treatment	Treatment data	Description/notes
AVG Abfall-Verwertungs-Gesellschaft mbH, Germany (Hamburg)	Eastern European, African and South American countries	Direkt acquisition / Subcontracting	~ 6,000 t	2000 - 2007		
Currenta GmbH & Co. OHG	Fa. Envio in Dortmund, Germany		500 t/y among others PCB, solid and liquid waste	annually		
Currenta GmbH & Co. OHG	Aprochim, France		PCB-oil and PCB contaminated wood, 750 t/y	annually		
Currenta GmbH & Co. OHG	Private enterprises from recycling Branch like Maurer und Wissing, S & E		Liquid and solid waste POPS			
Currenta GmbH & Co. OHG	Invidual remediation projects like Cinar					
Ekokem, Finland	Ethiopia	UN FAO, Rome	1500 tons of obsolete pesticides	2001 – 2003		
HIM Hessische Industrie Müll, Germany (near Frankfurt)	Venezuela	Direct acquisition	400 tons of pesticides	2006		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Lithuania Employer: Environmental Project Management Agency, The Ministry of Environment of Lithuanian Republic	The Ministry of Environment of Lithuanian Republic Ms. Dalia Papijeviene Juozapaviciaus St. 9/610 LT-09311 Vilnius, Lithuania Customer: UAB, "Toksika", Jocionu Str 13, LT-02300 Vilnius Mr. Virginijus Daubaras Ph: +37052505302, Fax: +37052040125 Email: v.daubaras@toksika.lt	Repacking, Transportation, Trans Frontier Shipment and Disposal of 2,000 t of Obsolete Pesticides and 10,000 t contaminated soil from 12 Stores in Lithuania	2008-2009		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	United Arab Emirates Employer: ARGO Argo Productivity People GmbH D-89073 Ulm	United Arab Emirates Employer: ARGO Argo Productivity People GmbH Kornhausgasse 11 D-89073 Ulm	Repackaging, Transport and Disposal of 20 t Lab Chemicals from Hospitals in Abu Dhabi, Emirates.	2007-2008		

		Ph: +49 731 140125 0 Fax: +49 731 140125 66 Ph: +49 163 3436285 mailto: siewerta@argo-productivity.com http: www.argo-rproductivity.com				
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Albania Employer: Royal Netherlands Embassy, Tirana Supervisor: Rambøll, Denmark	Ms. Marleen Monster Second Secretary Netherlands Embassy Tirana Ph. +355 4 240 828/6, Email: tir@minbuza.nl Supervisor: Rambøll, Denmark, Mr. Uffe Petersen Ph.: +45/24419480 E-mail: ramboll@ramboll.dk Beneficiary: Ministry of Environment, Forestry and Water Administration, Tirana, Albania, Mr. Abeshi; Phone: +355/4270623 Fax: +355/4270623 E-mail: p_abeshi@abissnet.com.al See also IHPA Letter No. 11 International HCH and Pesticides Association http://www.ihta.info/newsletter.php	Repackaging, Removal and Disposal of 315 t of Pesticides and other Chemical Materials from Waste Storage Facility Bishti i Pallës (Albania) plus of 6 t POPs (DDT and Lindane) from 6 Stores in Health Sector, Albania	2006		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Romania Employer: PHARE, Contract and Finance Unit, Bucharest Supervisor: Rambøll, Denmark	Beneficiary: Ministry of Agriculture, PHARE, Contract and Finance Unit, Bucharest Ph: +40/21 326 87 05 Supervisor: Rambøll, Denmark Ph.: +45/24419480 Forests and Rural Development PHARE Programme Implementation Unit / PIU Ph: +40/3025.400 Fax: +40/3054.890 E-mail: pjuaqr@maa.ro	PHASE II: Repacking, Transportation, Trans Frontier Shipment and Disposal of 781 t of Obsolete Pesticides from 97 Stores in Romania	2005-2006		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Togo, Africa Employer: Shell Chemicals Limited, London	Tony McCrae Shell Centre, London Ph: +44 2079 344631 Email: t.mccrae@shell.com	Repacking, Transportation, Trans Frontier Shipment and Disposal of 32 t of	2006		

			Obsolete Pesticides from Togo, Africa.			
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Romania Employer: PHARE, Contract and Finance Unit, Bucharest Supervisor: Rambøll, Denmark	PHARE, Contract and Finance Unit, Bucharest Ph. +40/21 326 87 05 Supervisor: Rambøll, Denmark Ph.: +45/24419480 Beneficiary: Ministry of Agriculture, Forests and Rural Development PHARE Programme Implementation Unit / PIU Ph: +40/3025.400 Fax: +40/3054.890 E-mail: piuagr@maa.ro	PHASE I: Repacking, Transportation, Trans Frontier Shipment and Disposal of 1,735 t of Obsolete Pesticides from 101 Stores in Romania	2005		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Senegal, Mauretania and Cape Verde	Dutch Embassy, Dakar, Senegal Mr. Franke Toonstra, ph: +221-8490360 NIRAS, Denmark, Mr. Preben Knudsen, Ph: +45 96306421	Repacking, Transportation, Trans Frontier Shipment and Disposal of 768 t of Obsolete Pesticides and Related Waste from 46 Stores in Senegal, Mauritania and Cape Verde	2003-2004		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Serretario de Ambiente y Desarrollo Sostenible, Buenos Aires, Argentina		200 tons of Lindane contaminated soil	2003		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	EU PHARE, Management Unit, Albania	Grigor Gjerci, ph:+355 4223818 COWI: Ph: +45 29254494	Disposal of 360 t of Obsolete Pesticides from 32 Different Stores (Classification, Repackaging, Trans-Frontier Shipment, Incineration) in Albania	2002		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Hydrogeotechnika, Poland	Jaroslav Surma, former manager at Hydrogeotechnika, Ph:+49 1702346853	Disposal of 1,300 t of Obsolete Pesticides from 25 Stores in Kielce, Poland (Classification, Repackaging, Trans-Frontier Shipment, Incineration)	2001 – 2002		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	S.T.E. (Subsidiary of RWE), Italy	Ph: +390108311591	200 of obsolete pesticides from Galiate	2000		

SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	S.T.E. (Subsidiary of RWE), Italy	Ph: +390108311591	130 t of DDT sludge	2000		
SAVA Sonderabfallverbrennungsanlagen GmbH, Germany	Albania, German Ministry of Environment, Bonn, Germany	Dr. Trossard, Ph: +49/228/3052593	Disposal of 460 t of Obsolete Pesticides from 22 Different Stores (Classification, Repackaging, Trans- Frontier Shipment, Incineration).	1994-1995		
Trédi, Séché Environnement, France	Austria Private Sector		Handling, packing + transport of 1200 t of PCB contaminated transformers and condensers	2006 In progress		
Trédi, Séché Environnement, France	Bosnia Private Sector		Handling, packing + transport of 95 t PCB contaminated transformers and condensers	2005 in progress		
Trédi, Séché Environnement, France	Czechoslovakia Utility		Handling, packing and transport of 1500 t PCB contaminated transformers and condensers	1987-2004		
Trédi, Séché Environnement, France	Greece Utility		Handling, packing and transport of 400 t PCB contaminated transformers and condensers	1987-2007 in progress		
Trédi, Séché Environnement, France	Hungary Private Sector		Handling, packing and transport of 500 t of chlorinated liquids and 78 t of lab chemicals	2005 in progress		
Trédi, Séché Environnement, France	Italy Utility		Handling, packing and transport of 4500 t of PCB contaminated transformers and condensers	1987-2005 in progress		

Trédi, Séché Environnement, France	Luxembourg Utility		Handling, packing and transport of 1500 t of PCB contaminated transformers and condensers	1987-2005 in progress		
Trédi, Séché Environnement, France	Moldova Public Sector		Handling, packing and transport of 1100 t PCB and 1000 t of POPs	2006 in progress		
Trédi, Séché Environnement, France	Poland Utility		Handling, packing and transport of 400 t PCB contaminated transformers and condensers	1987-2005 in progress		
Trédi, Séché Environnement, France	Poland Provincial Govt		Handling, packing + transport of 1200 t of buried POPs	2001		
Trédi, Séché Environnement, France	Portugal Utility		Handling, packing and transport of 900 t PCB contaminated transformers +condensers	1987-2007 in progress		
Trédi, Séché Environnement, France	Romania Private Sector		Handling, packing and transport of 3000 t POPs + 45 t lab chemicals	2004/5-2007 in progress		
Trédi, Séché Environnement, France	Slovakia Private		Handling, packing and transport of 250 t PCB contaminated transformers and condensers	1987-2007 in progress		
Trédi, Séché Environnement, France	Slovenia Utility		Handling, packing and transport of 400 t PCB contaminated transformers and condensers	1987-2007 in progress		
Trédi, Séché Environnement, France	Spain Private Sector		Handling, packing and transport of 2500 t of Pesticides	1987-2007 in progress		
Trédi, Séché Environnement, France	Spain Utility		Handling, packing and transport of 8000 t PCB contaminated transformers and condensers	1987-2007 in progress		

Trédi, Séché Environnement, France	Switzerland Utility		Handling, packing and transport of 1000 t PCB contaminated transformers and condensers	1987-2007 in progress		
Trédi, Séché Environnement, France	Yugoslavia Utility		Handling, packing and transport of 250 t PCB contaminated transformers and condensers	1987-2000		
Trédi, Séché Environnement, France	Kuwait Public Sector		Handling, collection, packing, transport and disposal of 175 t of pesticides and chemical products	2005 in progress		
Trédi, Séché Environnement, France	Lebanon Public Sector		Handling, collection, packing, transport + disposal of 60 t obsolete pharmaceuticals	2001		
Trédi, Séché Environnement, France	Oman Public Sector		Handling, collection, packing, transport and disposal of 97 pesticides and chemical products	2005 in progress		
Trédi, Séché Environnement, France	Qatar Public Sector		Handling, collection, packing, transport + disposal of 125 pesticides + chemical products	2005 in progress		
Trédi, Séché Environnement, France	Saudi Arabia Public Sector		Handling, packing, transport and disposal of 300 t PCB contaminated electrical equipment	2002		
Trédi, Séché Environnement, France	Australia Private sector		Handling, packing, transport and disposal of 2300 t PCB contaminated electrical equipment	1998 - 2002		
Trédi, Séché Environnement, France	New Caledonia Mining industry		Handling, packing, transport + disposal of 400 t PCB contaminated electrical equipment in 3 projects	2002- 2005		

Trédi, Séché Environnement, France	New Zealand Utility		Handling, packing, transport and disposal of 2000 t PCB contaminated electrical equipment + pesticides	1987 - 2003		
Trédi, Séché Environnement, France	South Korea Private Sector		Handling, packing, transport and disposal of 700 t PCB contaminated electrical equipment	2005-2006 in progress		
Trédi, Séché Environnement, France	Tahiti Private sector		Handling, packing, transport and disposal of 500 t PCB contaminated electrical equipment	1998 - 2005		
Trédi, Séché Environnement, France	Taiwan Utility		Handling/packing/ transport and disposal of 4000 t PCB contaminated electrical equipment	1987 - 2005		
Trédi, Séché Environnement, France	Argentina Utility		Handling, packing, transport and disposal of 1 700 tons of PCB contaminated electrical equipment	1998 - 2005 in progress		
Trédi, Séché Environnement, France	Argentina Public sector		Handling, collection, packing, transport + disposal of 250 t contaminated soil with obsolete pesticides (POPs)	2003		
Trédi, Séché Environnement, France	Central America Health Organization PAHO		Handling, collection, packing, transport and disposal of 200 t contaminated soil with obsolete pesticides (POPs)	2006 in progress		
Trédi, Séché Environnement, France	Bahamas Public sector		Handling, packing, transport and disposal of 100 t PCB contaminated electrical equipment	2004		

Trédi, Séché Environnement, France	Chili Private sector		Handling, packing, transport + disposal of 200 t PCB	2006-2007 in progress		
Trédi, Séché Environnement, France	Colombia Royal Netherlands Embassy		Handling, packing, transport + disposal of 200 t POPs	2005		
Trédi, Séché Environnement, France	Colombia Utility		Handling, packing, transport and disposal of 700 t PCB contaminated electrical equipment	2001		
Trédi, Séché Environnement, France	Colombia Private sector		Handling, packing, transport + disposal of 200 t of PCB	2006 in progress		
Trédi, Séché Environnement, France	Costa Rica Public sector		Handling, packing, transport + disposal of 45 t PCB contaminated electrical equipment	2004 - 2005 in progress		
Trédi, Séché Environnement, France	El Salvador Public sector		Handling, packing, transport and disposal of 30 t Pesticides and POPs	2006 in progress		
Trédi, Séché Environnement, France	El Salvador Public sector		Handling, packing, transport and disposal of 60 t PCB contaminated electrical equipment	2002 - 2005 in progress		
Trédi, Séché Environnement, France	Guadeloupe Public sector		Handling, packing, transport and disposal of 100 t PCB contaminated electrical equipment	2003		
Trédi, Séché Environnement, France	Guatemala Public sector		Handling, packing, transport and disposal of 98 t PCB contaminated electrical equipment	2002 - 2005 in progress		
Trédi, Séché Environnement, France	Jamaica Metallurgic and private industry		Handling, packing, transport and disposal of 700 t PCB contaminated electrical equipment	2001 - 2002		
Trédi, Séché Environnement, France	Jamaica Public sector		Handling, packing, transport and disposal of 800 t PCB contaminated electrical equipment	1999 - 2000		
Trédi, Séché Environnement, France	Martinique Public sector		Handling, packing,	2003		

			transport and disposal of 100 t PCB contaminated electrical equipment			
Trédi, Séché Environnement, France	Mexico Oil industry		Handling, packing, transport and disposal of 500 t PCB contaminated electrical equipment	2004 - 2007 in progress		
Trédi, Séché Environnement, France	Mexico Utility		Handling, packing, transport and disposal of 700 t PCB contaminated electrical equipment	2003 - 2004		
Trédi, Séché Environnement, France	Mexico Oil industry		Handling, packing, transport and disposal of 500 t PCB contaminated electrical equipment	2002 - 2007 in progress		
Trédi, Séché Environnement, France	Mexico Utility		Handling, collection, packing, transport and disposal of 1000 t with PCB contaminated soil	2006		
Trédi, Séché Environnement, France	Mexico Automotive industry		Handling, collection, packing, transport and disposal of 300 t with PCB contaminated soil + 1600 t with PCB contaminated soil	2002 + 2005		
Trédi, Séché Environnement, France	Panama Private sector		Handling, packing, transport and disposal of 80 t PCB contaminated electrical equipment	2001		
Trédi, Séché Environnement, France	Peru Private sector		Handling, packing, transport + disposal of 100 t of PCB	2006 in progress		
Trédi, Séché Environnement, France	Algeria Utility		Handling, packing transport and disposal of 1200 t PCB contaminated electrical equipment	2000-2007 in progress		
Trédi, Séché Environnement, France	Cameroon Oil industry and other private industries		Handling, collection, packing, transport and disposal of 150 t POPs + 40 t chemical products	2005 -2006		

Trédi, Séché Environnement, France	Congo Oil industry		Handling, packing transport and disposal of 300 t PCB contaminated electrical equipment	2004		
Trédi, Séché Environnement, France	Gabon Oil industry and other private industries		Handling, collection, packing, transport and disposal of 200 t PCB + 80 t chemical products	2005		
Trédi, Séché Environnement, France	Ivory Coast Petro-chemical Industry		Handling, collection, packing, transport and disposal of 60 t chemical products	2006 in progress		
Trédi, Séché Environnement, France	Ivory Coast Public Sector		Emergency site decontamination operations including: handling, collection, packing, transport + disposal of 6000 t hazardous wastes	2006 in progress		
Trédi, Séché Environnement, France	Mali FAO		Handling, collection, packing, transport + disposal of 200 t obsolete pesticides (POPs)	2006 in progress		
Trédi, Séché Environnement, France	Morocco Utility		Handling, packing, transport + disposal of 100 t PCB contaminated electrical equipment	2006 in progress		
Trédi, Séché Environnement, France	Morocco Utility		Handling, packing, transport and disposal of 300 t PCB contaminated electrical equipment	2001		
Trédi, Séché Environnement, France	Mozambique Public sector		Handling, collection, packing, transport + disposal of 400 t obsolete pesticides (POPs)	2001		
Trédi, Séché Environnement, France	Reunion Island Private Industries		Handling, collection, packing, transport and disposal of 100 t PCB + 30 t chemical products	2005 in progress		



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Trédi, Séché Environnement, France	Senegal Public sector		Handling, packing transport and disposal of 45 t PCB contaminated electrical equipment	2005		
Trédi, Séché Environnement, France	Senegal, Mauritania and Cape Verde Agriculture and Chemical industries		Handling, collection, packing, transport + disposal of 900 t obsolete pesticides in 48 sites	2003		

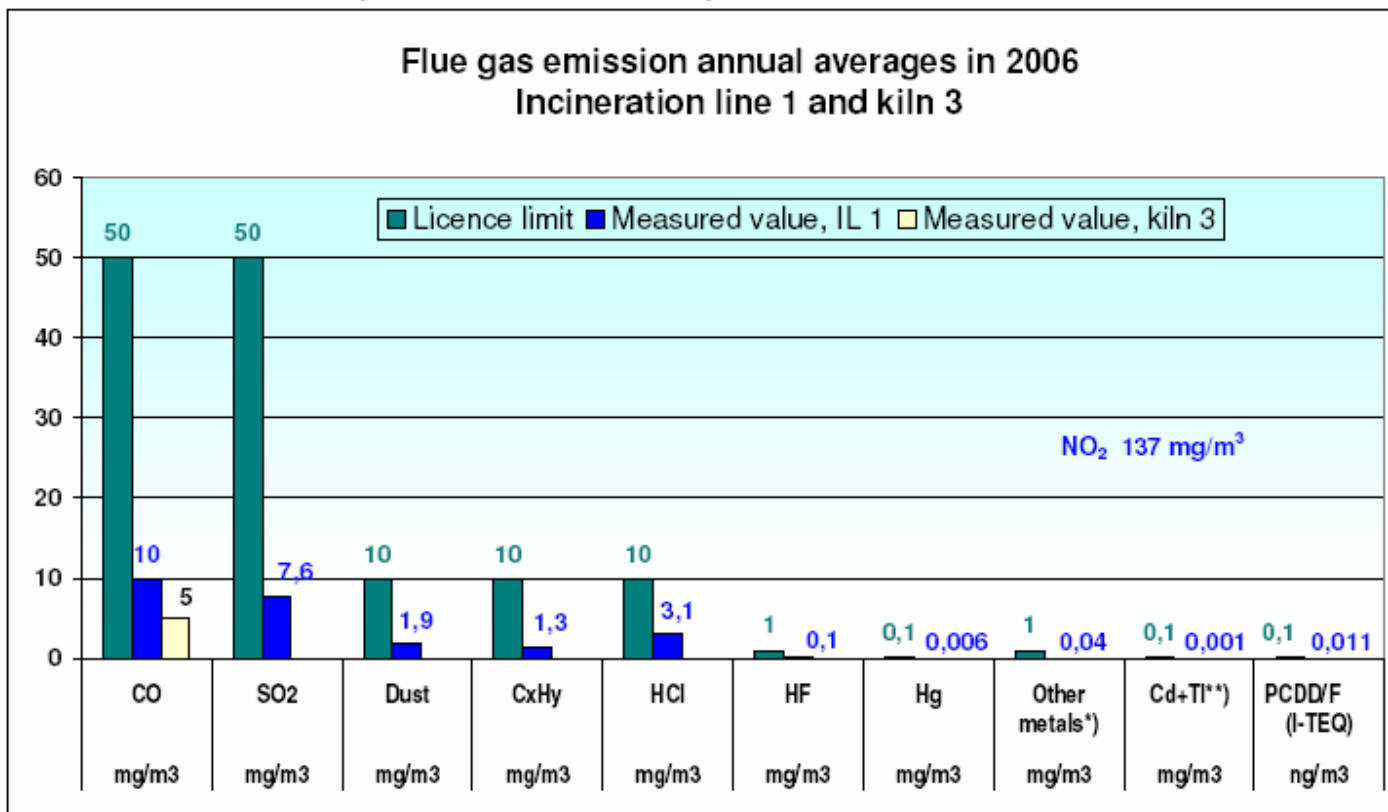
Table 4: Utilities Required for Hazardous Waste Treatment

(Data are general representative for the year 2003, but not specifically for high strength pesticides waste)

Utility	Units	Quantity required per tonne of waste input	Quantity required per year (110,000 t Full-scale plant)
Electricity	kWh	170	18,700,000
Electricity produced and supplied to public net	MWh		1,700
(50%) NaOH	Kg	40	4,400,000
CO2 production	Kg	820	90,000,000
Oil	Kg	4	440,000
Active Carbon /Calcium Hydroxide mix	Kg	1.4	150,000
Cooling and scrubbing Water (own supply well)	m ³	1.7	187,000
Slag production	kg	215	23,600,000
Filter dust and spray dryer residue	kg	46	5,100,000
Processing Rate	kg/min		
	Tonnes/month		9,170
	Tonnes/yr		110,000

- Oil consumption: Only used for start-up of the installation after standstill, otherwise the installation runs autarque only with the waste
- NaOH is only used to neutralise acid gas in the wet scrubber, strongly depending on Halogen and Sulfur content of the waste
- Aktive Carbon /Calcium mix is occurring in the last step of the fluegas cleaning, for traces of Dioxine and Mercury)

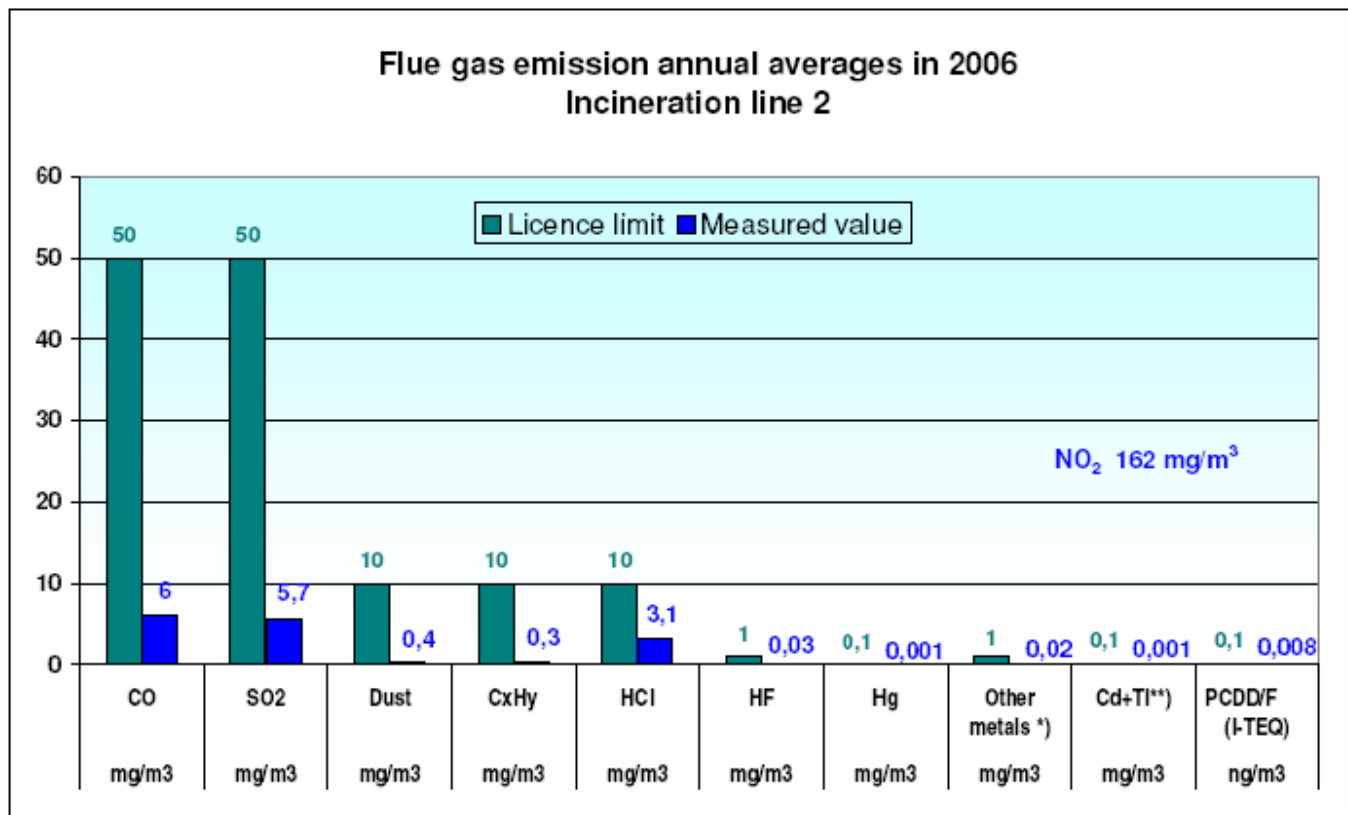
Table 5: Overview flue gas emission annual averages in 2006 for incineration line 1, 3 and 2, Finland



The concentrations have been converted to correspond to flue gas oxygen concentration 11 %.

^{*)} Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V, Sn

^{**)} Detection limit of measurement



The concentrations have been converted to correspond to flue gas oxygen concentration 11 %.

*) Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V, Sn

**) Detection limit of measurement

Table 6: Official Summary of Resulting Emissions (from AS EPLER & LORENZ and measurements executed by Ekologicke Centrum spol. S.r.o., Czech Republic)

Measuring place:		AS EPLER&LORENZ, Ravila 75A, TARTU, ESTONIA, Dangerous waste incineration plant			
Component	V_{spNs}(O₂)	Weight concentration K (0°C, 101.325 kPa, dry, 11%O₂)		Weight flow - E_s	Emission factor -F_o
	[cu.m/hr]	[mg/cu.m]	[mg/cu.m]	[kg/hr]	[kg/t]
Datum:	27.9.2006				
		mean	max.		
TZL	1737	0.5	0.6	0.0009	0.0037
CO	1737	4	10	0.0072	0.0307
SO ₂	1737	29	54	0.0504	0.2136
NO _x	1737	187	224	0.3240	1.3730
TOC	1737	3.1	4.7	0.0054	0.0228
HCl	1737	1.5	4.4	0.0025	0.0107
HF	1737	0.66	0.92	0.0012	0.0049
Hg	1737	0.047	0.052	0.0001	0.0003
Σ TI+Cd	1737	0.005	0.0066	0.00001	0.0000
Σ Pb+Cu+Mn+ As+Co+Cr+Ni+ Sb+V	1737	0.056	0.0832	0.0001	0.0004
	[cu.m/hr]	[ng/cu.m]	[ng/cu.m]	[mg/hr]	[mg/t]
TEQ	1737	0.005	x	0.00001	0.00004

Note:

 Emission values are stated for reference conditions, i.e. norm. condition of dry flue gas and 11 % of O₂

 V_{spNs}(O₂) = mean volumetric flow in reference conditions

K = weight component concentration in reference conditions.

mean = mean value of concentration during the period of measuring

 E_s = weight flow of the component (derived from the average weight concentration)

 F_o = emission factor, i.e. emission related to a ton of incinerated waste

* = sum only of toxic congeners