

Table 1: Technology overview - Summary - Technical Details

| Waste Treatment Facility | Technology | Test Date/s | | Scale + | Pesticide Component Treated | Other Compound Treated | Validation Project Experience | Applicability Ranking | Additional Remarks | Others |
|----------------------------|--------------------|-------------------------|--|---------|--|------------------------|-------------------------------|-----------------------|--|--------|
| Nufarm Limited | PLASCON Plasma Arc | 01/03/1992 | | F | 2,4-D waste products and Chlorophenols byproducts from herbicide manufacture. | | | DA | March 1992 the world first commercial plasma arc waste destruction unit commenced operation on-line at Nufarm Limited located in Melbourne | |
| SRL Plasma Pty. Ltd. | PLASCON Plasma Arc | 28/01/1997 - 11/06/1997 | | F | | Halons CFCs | | DA | Commissioning and treatability trials conducted under Victorian Environmental Protection Agency's Research, Development and Demonstration Approval No: RD 28055 for the destruction of ozone depleting substances. In excess of 70 tonnes of Halon 1211 destroyed during this period. DE ranged from 99.9999% to 99.9981%. Commercial operation approved October 1997. | |
| SRL Plasma Pty. Ltd. | PLASCON Plasma Arc | 24/05/1999 - 15/09/1999 | | F | HCB;α-HCB; Lindane; Heptachlor; Aldrin; β-BHC; δ-BHC; Heptachlorepoxyde; DDT; DDD; DDE; Dieldrin; Chlordane; Endosulphan; Endrin aldehyde. | | | | Treatability Trial - Victorian EPA Research, Development and Demonstration (RD&D) Approval, number RD 37847, on 22 March 1999. This approval is for the destruction of organochlorine based pesticide mixtures, both with and without arsenic compounds. The location of the trial program is at premises situated at Beachley St., Tottenham in accordance with EPA Licence EI 33267 issued on 28 October 1997. PCDDs & PCDFs I-TEQ 0.0212 ng/Nm3 including LOD values. All pesticides tested for were below detection limits. DEs of 99.9999% or better were achieved for all trials | |
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 13/10/1997 - 28/11/1997 | | F | | PCBs | | DA | Commissioning and treatability trials. Plant operating under a R&D licence issued by Queensland Environmental Protection Authority. 7500 Kg of Aroclors destroyed. | |
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 02/03/1998 | | F | | PCBs | | DA | Validation trials conducted prior to granting of a commercial operating licence by the Queensland Environmental Protection Agency. Queensland EPA Licence SR674 endorsed for commercial PLASCON treatment of PCBs July 1998. | |
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 01/09/1998 - 01/12/1999 | | | DDT,DDE, Methoxychlor, Endrin aldehyde, Dieldrin, Endosulfan, Chlordane, Heptachlor, BHC, HCB, Aldrin, Dichlorvos, Dimethoate, Diazinon, Chloropyrifos, Malathion,Fenthion, Parathion, Pyrimiphos, Chlorfenvinphos, Ethion, 2,4 D, 2,4,5 T, DCMA | | | DA | Treatability and validation trials conducted using PLASCON destroying a mixture of commercial OCPs. & OPPs. DE for all trials were 99.99997% or better. Queensland EPA Licence SR674 endorsed for the commercial destruction of OCPs & OPPs. During these trials 2500Kg of OCPs & OPPs were destroyed. | |

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|---|--------------------|------------------------|--|---|--|--------------|--|----|---|
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 04/10/2000 | | F | | PCBs | Plascon DE Trials for Prospective Japanese Customer | DA | Feed Stock Aroclor 1254 (65% Aroclor 1254 35% TCB). Trials witnessed/validated by Mitsubishi Chemical Corporation Personnel. DEs of 99.99999% or better were achieved. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ 0.05 ng/Nm3 including LOD values. |
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 18/10/2000 | | F | | PCBs | Plascon DE Trials for Prospective Japanese Customer | DA | Feed Stock Aroclor 1254 (65% Aroclor 1254 35% TCB). Trials witnessed/validated by Mitsubishi Chemical Corporation Personnel. DEs of 99.99999% or better were achieved. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ 0.03 ng/Nm3 including LOD values. |
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 19/10/2000 | | F | | PCBs | Plascon DE Trials for Prospective Japanese Customer | DA | Feed Stock Aroclor 1242. Trials witnessed/validated by Mitsubishi Chemical Corporation Personnel. DEs of 99.99999% or better were achieved. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ 0.03 ng/Nm3 including LOD values. |
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 10/10/2001- 11/10/2001 | | F | | PCBs | Plascon DE Trials for Japanese Customer | DA | Feed Stock Aroclor 1242 50%/w/w in Kerosene matrix. Three (3) trials conducted. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ 0.0119 - 0.0205 ng/Nm3 including LOD values. DEs of greater than 99.99999%. |
| BCD Technologies Pty. Ltd. | PLASCON Plasma Arc | 9/1/2004 - 15/1/2004 | | F | | TCBs | Plascon Plants commissioning trials prior to export to Japan | DA | Feed Stock Trichlorobenzene 50% in hydrocarbon matrix. Twelve (12) hour DE trials. DEs 99.999991 - 99.999992% |
| DASCEM Europe Limited | PLASCON Plasma Arc | 19/11/2003 | | F | | Halons; CFCs | Technology Validation Trials | DA | Validation trials conducted prior to granting of a commercial UK operating licence. Commercial operating licence granted in February 2004. DEs greater than 99.9999% achieved. Total(PCDFs+PCDDs) I -TEQ < 0.0024 pg/L including LOD values. |
| Mitsubishi Chemical Corporation Yokkaichi Japan | PLASCON Plasma Arc | May 2004 - July 2004 | | F | | PCBs | | DA | Destruction of stockpiled PCBs 50% in hydrocarbon matrix. 100 tonnes mixture destroyed from May 2004 - 15 July 2004. DE better than 99.999999%. After flare, total (PCDFs+PCDDs+Coplanar PCBs) I -TEQ < 0.01 ng/Nm3 including LOD values. Total(PCDFs+PCDDs+Coplanar PCBs) in aqueous effluent I -TEQ < 0.01 pg/L including LOD values. |

+ Key: F - Full Scale Application completed

P - Pilot/Demonstration scale completed; no F-applications

B - Bench/Laboratory scale completed; no P or F-applications

T - Theoretical applicable, no B,P,F-applications

* Vendor claims performance of demonstration, but no data provided

John Vijgen, International HCH and Pesticides Association and Dr.Ir. Ron McDowall, Auckland New Zealand for Secretariat of the Basel Convention, Date 01.09.08

Tables in the Annex have been supplied by BCD Technologies Pty Ltd

++Key: Applicability ranking for pesticides

DA - Directly applicable

FS 1 - Full scale within reasonable period possible 0-2 years

FS 2 - Full scale within considerable period possible 2-5 years

** Validation on the basis of info provided in Table 2 and 3

Table 2: Overview project experience per technology supplier

| Location/Project | Contaminants | | Amount Treated in Tonnes | Results Including DE, Pre-treatment, Post Treatment, Emissions, Energy Consumptions & Costs | Client References Name, Address, Contact Person, Phone, E-mail, Facsimile |
|--|---|--|---|--|---|
| Nufarm Limited Laverton Victoria Australia - Routine Operations and Regulatory Testing | Dichlorophenols; Dichlorophenoxy acetic acids in a hydrocarbon matrix | | >1000 tonnes chlorophenols & chlorophenoxy acetic acids | DE greater than 99.9999% achieved. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ 0.006 - 0.009 ng/Nm3 including LOD values. | Refer Table 4 |
| SRL Plasma Ply. Ltd. Tottenham Victoria Australia Routine Operations and Regulatory Testing | Halon & CFCs | | > 2200 tonnes Halons & CFCs | DE ranged from 99.9999% to 99.9981%. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ 0.06 ng/Nm3 including LOD values. | Refer Table 4 |
| BCD Technologies Pty. Ltd. Narangba Queensland Australia - Routine Operations and Regulatory Testing | PCBs; POPs; Chlorinated Solvents; Mercaptans; ODS materials | | > 1200 tonnes of liquid PCBs, OCPs & OPPs | DE greater than 99.9999% achieved. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ 0.01 - 0.019 ng/Nm3 including LOD values. | Refer Table 4 |
| DASCEM Europe Limited Peterlee County Durham UK - Routine Operations and Regulatory Testing | Halons & CFCs | | | DE greater than 99.9999%. Total(PCDFs+PCDDs+Coplanar PCBs) I -TEQ < 0.0024 ng/Nm3 including LOD values. | Refer Table 4 |
| Mitsubishi Chemical Corporation Yokkaichi Japan | PCBs in Hydrocarbon Matrix | | > 100 tonnes | DE better than 99.999999%. After flare, total (PCDFs+PCDDs+Coplanar PCBs) I -TEQ < 0.01 ng/Nm3 including LOD values. Total(PCDFs+PCDDs+Coplanar PCBs) in aqueous effluent I -TEQ < 0.01 pg/L including LOD values. | Refer Table 4 |
| | | | | | |

John Vijgen, International HCH and Pesticides Association and Dr. Ir. Ron McDowall, Auckland New Zealand for Secretariat of the Basel Convention, Date 01.09.08
 All tables in the Annex have been supplied by BCD Technologies Pty Ltd

Table 3: Overview detailed project information per project - Project name (from Table 2)

| Location/Project | Pre Treatment mg/kg | Post Treatment mg/kg | DEs | Emissions Air (HCl, Dioxins & Furans etc.) 2. Water Waste (slags) 3. | Client References Name, Address. | Energy Consumption | Costs (Capital, Operating Costs) |
|---|---|--|---|--|---|--------------------|--|
| BCD Technologies Pty. Ltd. Narangba Queensland Australia - Routine Operations and Regulatory Testing | (2001) 50% w/w PCBs in Hydrocarbon matrix containing 564900 ng/g Dioxins (2002) PCB/Kerosene Mixture containing 44100000ng/g PCBs 61000 ng/g Dioxins | (2001) Aqueous Effluent including LOD values. Total PCBs I-TEQ 10.5 pg/L Total(PCDFs+PCDDs) I-TEQ 39.1pg/L including LOD values. (2002) Aqueous Effluent | DEs greater than 99.99999% | DE greater than 99.99999% achieved. (2001) Total(PCDFs+PCDDs) I-TEQ 0.010 - 0.019 ng/Nm3 including LOD values. (2002) Total (PCDFs+PCDDs) I-TEQ 0.00 - 0.05 ng/Nm3 including LOD values No slag produced Particulate Matter 0.013 - 0.021 g/min HCl <1mg/m3 at NTP | Refer Table 4 | | Standard 150KW PLASCON Plant approx. \$USD 1 million. Operating & Maintenance Costs \$USD 1.50 per Kg for Schedule Wastes |
| BCD Technologies Pty. Ltd. Narangba Queensland Australia - 12 Hour Commissioning Trials Japanese Plants | January 2004 TCB in Kerosene Mixture Plant 1- 4 590 - 670g/L 1,2,4 Trichlorobenzene | Aqueous - all plants < 1.0 µg/L | DEs: Plant1 99.999991% Plant2 99.999992% Plant3 99.999992% Plant4 99.999991% | | Refer Table 4 | | |
| Mitsubishi Chemical Corporation Yokkaichi Plant Japan | May - July 2004 Feed Stock PCBs 50%w/w. In excess of 100 tonnes destroyed during this period | Aqueous - all plants typically (PCDFs+PCDDs+Coplanar PCBs) Total I-TEQ < 0.01pg/L | DEs greater than 99.999999% | After flare Total (PCDDs+PCDFs+Coplanar PCBs) I- TEQ < 0.01 ng/Nm3 | Refer Table 4 | | |
| SRL Plasma Pty. Ltd. Tottenham Victoria Australia | January - June 1997 Feed Stock Halons & CFCs 70 tonnes destroyed | | DEs 99.9999% - 99.9981% | Typical Total (PCDDs+PCDFs) I-TEQ 0.006 ng/Nm3 including LOD values | Refer Table 4 | | |
| Dascem Europe Peterlee County Durham United Kingdom | November 2003 Feed Stock Halon 1211 | | DEs greater than 99.9999% | Total (PCDDs+PCDFs) I-TEQ 0.0024 ng/Nm3 HCl < 0.12 mg/Nm3 | Refer Table 4 | | |

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Table 4: Client References for Plascon Plants in Australia

| Organisation | Contact | | Description / Notes |
|---|---|--|--|
| Queensland Environment Protection Agency | <p>Dr. Faiz Khan - Env. Policy & Economic Division 12th Floor 160 Ann Street Brisbane Queensland 4002 Australia Telephone: +61 7 3227 7349 Facsimile: +61 7 3227 8341 E-mail: faiz.khan@env.qld.gov.au</p> <p>Mr. Gary O'Connor Chief Scientific Advisor, Hazardous Wastes 12th Floor 160 Ann Street Brisbane Queensland 4002 Australia Telephone: +61 7 3225 1455 Facsimile: +61 7 3227 7677 E-mail: gary.oconnor@env.qld.gov.au</p> | | <p>- General knowledge of BCD Technologies' operations and licencing</p> <p>- Queensland EPA Licencing for Environmental Operations</p> |
| Victorian Environmental Protection Agency | <p>Mr. Bruce Dawson - Manager West Metropolitan Region Environment Protection Authority GPO Box 4395QQ Melbourne Victoria Australia 3001 Telephone: +61 3 9628 5766 Facsimile: +61 3 9628 5053</p> | | |
| BCD Technologies Pty. Ltd. | <p>Mr. Daniel Allen - General Manager BCD Technologies Pty. Ltd. PO Box 119 Narangba Queensland 4504 Australia Telephone: +61 7 3203 3400 Facsimile: +61 7 3203 3450 E-mail: bcdt@gil.com.au</p> | | <p>- POPs and ODS destruction facilities</p> <p>BCD Technologies has operated a Plascon Plant since 1996 for the destruction of CFCs and Halons. A second Plascon has operated since 1997 for the destruction of PCBs, Organochlorine Pesticides and chlorinated wastes.</p> |
| Mitsubishi Chemical Corporation | <p>Mr. Kohei Sarumaru - Associate Director Mitsubishi Chemical Corporation 5-2, Marunouchi 2-chrome, Chiyoda-ku Tokyo 100-0005 Japan E-mail: sarumaru.kohei@mb.m-kagaku.co.jp Telephone: 81-3-3283-6770 Facsimile: 81-3-3283-6459</p> <p>Mr. Teruyuki Ono - General Manager PCB Treatment Planning Department Mitsubishi Chemical Corporation Yokkaichi Plant, 1 Toho-cho Yokkaichi, Mie 510-8530 Japan Telephone: 0593-45-7098 Facsimile: 0593-45-7046</p> | | <p>- Chemical Manufacturer</p> <p>Mitsubishi Chemical Corporation operates four (4) PLASCON plants at Yokkaichi Japan. The PLASCON plants, following successful commissioning and the granting of operational approval by the Provincial Government and Technical Committee under the Ministry of Environment Japan, are destroying stockpiled PCB wastes. Since operational approval was granted in late April 2004 until the present time (July 2004) in excess of 100 tonnes of PCB mixture - (50%/w/w PCBs in a hydrocarbon matrix) have been successfully destroyed.</p> |
| Quimobásicos, S.A. de C.V. | <p>Ing. Mauricio Puente Oviedo - Engineering Manager (Suplte de Ing. de Proceso/Tecnología) Quimobásicos, S.A. de C.V., Division Quimica Ave. Ruiz Cortines 2333 Pte. Col. Pedro Lozano Monterrey, N.L., Mexico C.P. 64400 E-mail: mapuente@cydsa.com Telephone: +52 81 8305 4673 Facsimile: +52 81 8305 4657</p> | | <p>- Chemical Manufacturer, including Refrigerant HCFC-22</p> <p>Quimobásicos operates one (1) Plascon Plant at their facility in Monterrey Mexico. This plant was commissioned in April 2006, having previously been operating to destroy Ozone depleting Substances (ODS) for Dascem Europe since February 2004. This Plascon now destroys R23 which is produced as a byproduct of the manufacture of the refrigerant HCFC-22. It operates under a Clean Development Mechanism (CDM) in accordance with the Kyoto Protocol.</p> |
| Remtec International | <p>Richard Marcus - President Remtec International 1100 Haskins Road, Bowling Green, Ohio, USA 43402 E-mail: richard.marcus@remtec.net Telephone: +1 419 867 8990 Facsimile: +1 419 867 3279</p> | | <p>- Removal, Collection, Reclamation and Destruction of redundant ODS materials from the United States of America and Globally</p> <p>Remtec International operates one (1) PLASCON Plant at their plant in Ohio, USA. Commissioned in March 2006, the plant operation is for the destruction of Halons and CFCs</p> |
| Nufarm Limited | <p>Volker Maier Group HS&E Manager Nufarm Limited PO Box 103, North Laverton Victoria Australia 3028 Telephone: + 61 3 9282 1225 Mobile +61 418 368 410 Facsimile: +61 3 9282 1000</p> | | <p>- Manufacturer of agricultural chemicals including 2,4-D</p> <p>The first commercial use of the PLASCON technology involved the onsite destruction of a chlorophenol mixture at Nufarm Limited's 2,4-D herbicide manufacturing manufacturing plant. The plant was commissioned in March 1992 and was subsequently licenced by the Victorian EPA in October 1993. The successful destruction of the chlorinated waste streams has allowed Nufarm to improve efficiency of the whole production unit. Nufarm's on-site waste treatment was been further enhanced by the installation of a second unit commissioned in May 1995.</p> |