CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003

DateRun: 05/15/2003

Experimenters: Jason Marshall

ClientType: Chemical Company

ProjectNumber: Project #1

Substrates: Stainless Steel, Steel

PartType: Coupon

Contaminants: Adhesive, Paints, Resins/Rosins, Chemical

Cleaning Methods:

Analytical Methods:

Purpose: Information request

Experimental Procedure: Using the laboratory's database, two lists of products were generated. The first list consists of products that have been evaluated at SSL under conditions similar to current cleaning process. The second list contains products that meet the requirements according to vendor supplied information, but may not have been verified experimentally by the lab.

Results: RESPONSE: The Massachusetts Toxics Use Reduction Institute (TURI) has made the results of the tests conducted at the Institute's Surface Solutions Laboratory into a searchable database format. This should make alternative cleaner selection faster and easier. Here are the results of your query, based on the information supplied. The first table includes the products evaluated at SSL. The specific contaminants tested at SSL on steel or stainless steel substrates are listed afterwards. Process equipment included manual wiping, immersion soaking, and ultrasonics.

Table of Products Evaluated on Steel and Stainless Steel

Company	Product	Classification	Total	Adhesive #
Bio Chem Systems	Bio T Max	Terpene-Semi-Aqueous	3	1, 2, 7
CSA Inc	Bio Safe 1023	Hydrocarbon	1	5
Dynamold Solvents Inc	DS 104	Petroleum Distillate	6	2, 7
Ecolink	Positron	Organic	1	1
Ecolink	Safe Strip	Organic	1	1
Ecolink	VG 151	Terpene	1	4
Inland Technologies Inc	Citrasafe	Terpene	1	3
International Products Corp	Surface Cleanse 930	Neutral Aqueous	1	6
MacDermid	ND Supreme	Alkaline Aqueous	1	8
Safe Science	All Purpose	Alkaline Aqueous	2	10, 11
Safe Science	Concrete/ Graffiti	Alkaline Aqueous	2	10, 11
Safe Science	Engine Degreaser	Terpene	1	11
Today & Beyond	Beyond 2009	Organic	2	2, 7
US Polychem Corporation	Hydropurge HPL 790	Caustic	1	10

Second Soil

Company	Product	Classification	Total	Paint #
Armex		Blasting	1	4

	Sodium Bicarbonate			
AW Chesterton Company	181 Low Alkaline Cleaner	Alkaline Aqueous	2	2
Bio Chem Systems	Bio T Max	Terpene-Semi-Aqueous	2	1, 5
Brulin Corporation	Natural Sol 100	Alkaline Aqueous	1	2
Calgon Corporation	GP Xtra	Alkaline Aqueous	1	2
Florida Chemical Company	D-Limonene	Terpene	2	1, 5
Metabolix Inc	Metabolix E3HB	Ester	1	3
Simple Green	Crystal Simple Green	Alkaline Aqueous	1	2
Vertec BioSolvents	Take Off Green	Organic	1	3

Third Soil

Company	Product	Classification	Total	Resin #
Bio Chem Systems	Bio T 300 B	Terpene-Semi-Aqueous	2	1, 3
Bio Chem Systems	Bio T Max	Terpene-Semi-Aqueous	1	1
Chrisal USA Inc	Super CMF 240	Alkaline Aqueous	1	2
Finger Lakes Chemicals	Resineater	Terpene	1	1
Gemtek Products	SC 1000	Alkaline Aqueous	1	2
ISP Technologies	Ship Shape Resin Cleaner	Organic	1	1
Magnaflux	Daraclean 232	Alkaline Aqueous	1	2
Solvent Kleene Inc	D Greeze 500 LO	Organic	1	1
Tarksol Inc	Tarksol HTF-50	Semi-Aqueous	1	2

Table of Specific Contaminants

Adhesive #	Contaminant Information
1	Adhesive
2	Adhesive - AC-059 adhesive (108-88-3)
3	Adhesive - Ashland Chemical Acrylic Sealant 5504 (108-88-3, 141-78-6, 142-82-5, 67-63-0)
4	Adhesive - Ashland Chemical Aroset PS 8078,
5	Adhesive - Duro-Tac toluene-heptane based adhesives
6	Adhesive - Insta-Cure adhesive (7085-85-0), Insta-Set (64742-89-8, 99-97-8)
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	Adhesive - Morton 717 (108-88-3, 108-05-4, 110-54-3, 142-82-5, 67-63-0)
8	Adhesive - Resin compounds
9	Adhesive (108-88-3, 9010-98-4, 65997-13-9, 68083-03-4)
10	Adhesive (108-88-3, 9010-98-4, 65997-13-9, 68083-03-4, 657-13-9)
11	Adhesive (9010-98-4, 65997-13-9, 68083-03-4, 108-88-3, 67-56-1, 1314-13-2, 119-47-1, 8052-10-6)
Paint #	Contaminant Information
1	Paint - Bowman Distribution Semi Gloss Black Enamel (67-64-1, 1330-20-7, 64-17-5, 763-69-9, 78-93-3, 141-78-6, 68476-86-8)
2	Paint - Diversy WB Filmite-Paint Maskant
3	Paint - Glidden Paint Company Ultra Hide Alkyd semi gloss paint (136-52-7, 1317-65-3, 1332-58-7, 66402-68-4, 8052-41-3, 64742-88-7, 71-43-2, 13463-67-7, 68604-95-5, 66070-62-0, 67746-05-8)
4	Paint - Nybco Designer Colors Satin finish 4660 Country Blue, Contains Toluene, Xylene,Acetone
5	Paint - Sheboygan Paint Company Coating Black Gloss Air Dry Acrylic Enamel (1330-20-7, 100-41-4, 108-10-1, 1333-96-4, 7727-43-7, 108-88-3, 67-64-1)
Resin #	Contaminant Information
1	Resin - Ashland Specialty Chemical Co, Acrylic Resin, Aroset 1872 Z 40 (108-88-3, 141-78-6, 142-82-5, 67-63-0)
2	Resin - Formaldehyde Based Resin
3	Resin - Solutia Inc. Gelva Multipolymer Resin Solution 2895 (50862-46-9, 141-78-6, 142-82-5, 67-63-0, 64-17-5, 108-05-4)

The vendor recommended products that were identified for adhesive, paint and resin removal from steel and stainless steel using ultrasonic energy. The Value listed in the table is an environmental ranking based on SSL's indicators: VOC content, Global Warming Potentials, Ozone Depletion Potentials, HMIS/NFPR ratings and pH. Scores are based on a maximum of 50 points. The higher scores implies a potentially safer product.

Safety Score	Company	Product	Classification
49	Amax Corporation	Safety First	Semi-Aqueous
49	Ausimont USA Inc	Perfluorosolv PFS 1	HCFC
49	Innovative Organics Inc	Amber Clean SC 11	Neutral Aqueous
49	Tarksol Inc	Tarksol HTF 40	Terpene-Semi-Aqueous
48	Buckeye International	Shopmaster LPH	Alkaline Aqueous
48	Gemtek Products	ODOR-EX	Alkaline Aqueous
48	Solvent Kleene Inc	D Greeze 1000	Petroleum Distillate
47	Chemtronics	Super Bio Wash	Semi-Aqueous
47			Organic

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	Gemtek Products	SC Supersolve	
47	Innovative Organics Inc	Amberclean Q3	Alkaline Aqueous
47	Kyzen Corporation	Misprint Stencil Remover	Hydrocarbon
47	Phase III Ink	California Parts Washer Solution	Neutral Aqueous
47	US Polychem Corporation	Polychem 2000 P	Alkaline Aqueous
47	Westford Chemical Corporation	Biosolve	Neutral Aqueous
46	Church & Dwight	Armaklean E 2001	Alkaline Aqueous
46	Church & Dwight	Armaklean E 2002	Alkaline Aqueous
46	International Products Corp	Micro	Alkaline Aqueous
46	International Products Corporation	Micro 90	Alkaline Aqueous
46	International Products Corporation	Surface Cleanse 930	Neutral Aqueous
46	Today & Beyond	Beyond 2007	Alcohol
46	US Polychem Corporation	Polyspray Jet 790 P	Alkaline Aqueous
45	Brulin Corporation	EXP 1400	Alkaline Aqueous
45	Buckeye International	Shopmaster	Alkaline Aqueous
45	Church & Dwight	Armaklean M Aero	Alkaline Aqueous
45	Magnaflux	Daraclean 235	Neutral Aqueous
45	Simple Green	Crystal Simple Green	Alkaline Aqueous
45	US Polychem Corporation	Polychem A 2000 XS	Alkaline Aqueous
45	US Polychem Corporation	Polyspray Jet 790 XS	Alkaline Aqueous
44	CSA Inc	Bio Safe 1024	Hydrocarbon
44	Simple Green	Simple Green D	Alkaline Aqueous
44	US Polychem Corporation	Polychem DEOX 007	Alkaline Aqueous
44	US Polychem Corporation	Polychem Ultra CR	Alkaline Aqueous
44	Vertec BioSolvents	Vertec Paint Stripper	Organic
43	Alconox Inc	Det-O-Jet	Alkaline Aqueous
43	Alconox Inc	Luminox	Neutral Aqueous

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43	CRC Industries	Complex Blue	Semi-Aqueous
43	Finger Lakes Chemicals	Safer Stuff	Terpene
43	International Products Corporation	LF 2100	Alkaline Aqueous
43	Kyzen Corporation	Ionox HC	Alcohol
43	Magnaflux	Daraclean 212	Neutral Aqueous
43	Metabolix Inc	Metabolix E3HB	Ester
43	Solutia Inc	Santosol DME	Ester
42	Buckeye International	Shopmaster FF	Alkaline Aqueous
42	By*Pas & Star Cleaning Products	Star Cleaning Miracle # 50	Alkaline Aqueous
42	Kyzen Corporation	Ionox HC 2	Alcohol
42	Safe Science	Concrete/ Graffiti (Industrial)	Alkaline Aqueous
42	Tower Products Inc	Tower 270 Cleaner Concentrate	Alkaline Aqueous
41	Chem Tech	CT 1 Multipurpose Cleaner	Alkaline Aqueous
41	Fine Organic Corporation	FO 2085 M	Alkaline Aqueous
41	Smart Sonic	440 R SMT Detergent	Alkaline Aqueous
40	Alconox Inc	Detergent 8	Alkaline Aqueous
40	Valtech Corporation	Valtron SP 2200	Alkaline Aqueous
40	Valtech Corporation	Valtron SP 2250 2LF	Alkaline Aqueous
39	Bio Chem Systems	Bio T 200 A	Terpene
39	By*Pas & Star Cleaning Products	By*Pas #1500	Alkaline Aqueous
39	Finish Line Technologies Inc	Bio Degradable Degreaser	Semi-Aqueous
39	Magnaflux	Daraclean 232	Alkaline Aqueous
39	Oakite Products	Inproclean 4000 T	Terpene-Organic
39	US Polychem Corporation	Polychem PW 147	Alkaline Aqueous
39	US Polychem Corporation	Polyspray Jet 790 C	Caustic
39	Vertec BioSolvents	VertecBio Gold 2	Organic
38	Du Pont	DBE	Ester
38	Du Pont	DBE 3	Ester
38	Loctite Corporation	7360	Ester

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38	Magnaflux	Daraclean 200	Alkaline Aqueous
38	Magnaflux	Daraclean 283	Alkaline Aqueous
38	Solvent Kleene Inc	D Greeze 500 LO	Organic
38	Today & Beyond	Beyond 2001	Alkaline Aqueous
38	Today & Beyond	Beyond 2002	Alkaline Aqueous
38	Today & Beyond	Beyond 2003	Alkaline Aqueous
38	Today & Beyond	Beyond 2005	Alkaline Aqueous
37	Bio Chem Systems	Solsafe 245	Petroleum Distillate
37	Dynamold Solvents Inc	DS 104	Petroleum Distillate
37	Dynamold Solvents Inc	DS 108	Petroleum Distillate
37	Ecolink	Safe Strip	Organic
37	Ecolink	Vortex	Semi-Aqueous
37	Florida Chemical Company	Citrus Burst 7	Terpene
37	ISP Technologies	N Methyl Pyrrolidone	Organic
37	LPS Laboratories	LPS Precision Clean	Alkaline Aqueous
37	Magnaflux	Daraclean 282 GF	Alkaline Aqueous
37	National Diagnostic	Histo Clear	Terpene
37	National Diagnostic	Opti Clear	Terpene
37	Today & Beyond	Beyond 2004	Alkaline Aqueous
37	Universal Photonics	Uni Clear	Terpene
37	US Polychem Corporation	Hydropurge 36	Alkaline Aqueous
36	General Chemical Corporation	Aquaclean 4784	Caustic
36	Today & Beyond	Beyond 2006	Alkaline Aqueous
35	Brulin Corporation	Compliance	Caustic
35	Oakite Products	Citradet	Semi-Aqueous
34	Bio Chem Systems	Bio T Foam Plus	Terpene
34	Calgon Corporation	GP Xtra	Alkaline Aqueous
34	Calgon Corporation	SMS 206 K	Alkaline Aqueous
34	Kyzen Corporation	Ionox FCR	Semi-Aqueous
34	Magnaflux	Daraclean 282	Alkaline Aqueous
34	Tarksol Inc	Tarksol HTF 10 B	Terpene
33	Ecolink	Bulldog	

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			Alkaline Aqueous
31	AJ Associates	Dynadet	Caustic
28	AGA Chemical	AK 225	HCFC

Summary:

Conclusion: Cleaning varies from case to case. The SSL recommends process specific testing on potential replacement cleaning chemicals. If more information is needed on a particular product, or you are interested in conducting cleaning trials, please contact the lab at (978)934-3133.