CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003

DateRun: 03/03/2003

Experimenters: Jason Marshall

ClientType: Medical Instrument Mfr

ProjectNumber: Project #1

Substrates: Plastic

PartType: Part

Contaminants: Hucker's Soil

Cleaning Methods: Mechanical Agitation

Analytical Methods: Gravimetric, Photography

Purpose: To modify cleaning parameters to improve cleaning efficiency

Experimental Procedure: Four cleaners were selected from the previous test. Three products were diluted to 10% and the fourth was diluted to 5% using DI water in 600 ml beakers. All of the cleaners were heated to 130 F on a hot plate. Photographs were taken of clean tubing pieces. The inside of 12 preweighed PVC tubing pieces (3" long) were coated with the supplied Hucker' Soil (Creamy Peanut Butter, Salted Butter, Wheat glutton, Egg Yolk, Evaporated milk, DI water, Printer's ink with boiled linseed oil, India Ink, Saline Solution) using a squeeze bulb and then allowed to dry. The tubing was weighed and photographed again to determine the amount of soil added. Three pieces were cleaned in each solution for 10 minutes using mechanical agitation (moving pieces back and forth at an angle) at 130 F. Rinsing was performed for 15 seconds in tap water at 120 F and followed by drying with a forced air at for 30 seconds at 68 F. Once the tubing cooled to room temperature, final weights were recorded, pictures were taken and efficiencies were calculated.

Results: A majority of the contaminant was removed by each cleaning solutions. Each product did leave some soils behind. Only one product, Micro 90, had very little amounts of Hucker's soil visible in discrete spots. Others had grey films across the tubing. The table below lists the amount of soil added and removed from the PVC tubing.

Table 1. Soil Removal

Cleaner	Initial wt	Final wt	% Removed
Micro 90	0.3200	0.0021	99.34
	0.3408	0.0005	99.85
	0.2829	0.0010	99.65
United 450	0.4864	0.0017	99.65
	0.4298	0.0035	99.19
	0.4273	0.0037	99.13
Lestoil	0.4272	0.0113	97.35
	0.3185	0.0120	96.23
	0.4729	0.0134	97.17
Sea Wash 8	0.4634	0.0136	97.07
	0.6550	0.0210	96.79
	0.5172	0.0179	96.54

Summary:

Substrates:	Plastic
Contaminants:	Hucker's Soil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
International Products Corporation	Micro 90 Conc.	10	99.61	☑	
United Laboratories International	United 450 All Clear	10	99.32	☑	
Warren Chemical Company	Sea Wash 8 No Force	10	96.80	☑	
Clorox Company	Lestoil	5	96.92	☑	

Conclusion: The increase in concentration and cleaning time provided little benefit to Micro 90, but increased the effectiveness of United 450 All Clear. Despite the increases, there was still soil remaining behind on the PVC tubing. Increasing temperature will be reviewed next for Micro 90 and Untied 450 All Clear.