CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2002
DateRun:	06/18/2002
Experimenters:	Jason Marshall, Heidi Wilcox
ClientType:	General
ProjectNumber:	Project #1
Substrates:	Paper
PartType:	Coupon
Contaminants:	Paints
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Visual
Purpose:	To compare new spray delivery system with traditional spray can method for stationary spray pattern.
Experimental Procedure:	A 2.5 feet by 3 feet piece of paper was mounted on a wall. The top of the paper was about 5 feet from the floor. Two spray distances were measured out, one at 18 inches and the other at 12 inches. Each system was sprayed at the paper for 5 seconds three times for each spray distance. Following the spraying, the paper was laid flat to dry. Once dry, two measurements were made. The first was to measure the concentrated inner circle of paint delivered to the paper. The second measurement was made to record the over-spray amount.
Results:	The Enviro Caddie system (EC system) resulted in a bigger concentrated circle than the Traditional Spray Can system (TSC system). In both systems, there was little difference in the diameter of the concentrated circle, although the EC system had more run off at the 12 inch distance than it did at the 18 inch distance. The TSC system had a slightly larger outer plume radius than the EC system. The EC system had some issues with spraying in the desired direction. When the handle mechanism was pointed in the desired direction, the spray nozzle was actually pointed in a different direction, resulting in spray in an unexpected/ undesired direction. Also, the EC system spray nozzle did become obstructed by excess paint around the nozzle. The extra paint was removed by purging the system. Finally, the EC system did have an usual over-spray pattern. The system created a V-shaped plume down to the floor. Tables 1, 2 and 3 list the measurements and observations for each system at both distances. Figures 1 and 2 show the spray patterns for both systems as well as the distances.

Table 1. Concentrated circle diameter (cm)

Enviro Caddie			Traditional		
Trial #	12 inches	18 inches	Trial #	12 inches	18 inches
1	16	17	1	12.5	12.2
2	16.2	18	2	12.5	13
3	16.6	17	3	13	13.4
average	16.27	17.33	average	12.67	12.87

Table 2.Total plume radius (circular part)

Trial #	12 inches	18 inches	Trial #	12 inches	18 inches
1	22	25.5	1	23.5	29
2	22.5	25.5	2	25	26
3	27	21	3	28	26
average	23.83	24	average	25.5	27

Table 3. Additional Observations

Enviro Caddie	Traditional
Concentrated circle diameter	Concentrated circle diameter
Circular concentrated inner circle	Smaller concentrated inner circle
Heavy paint application	Light paint application
Long drip of paint from circle (1-2)	Very short drip pattern (3-6 inches)
Downward overspray plume (2-3 ft)	Overspray is circular, not downward

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Aim of nozzle is off. Sprays to right	
Total plume radius	Total plume radius
Total plume reaches 2-3 ft downward	Plume is circular, evenly distributed around center circle
Plume is v shaped downward. Also	
circular plume around concentrated center circle	

Substrates	Steel Plate;			
Coating Type:	Paint;			
Delivery System:	12 Ave Conc. Diameter	Ave Plume Radius	18 Ave Conc. Diameter	Ave Plume Radius
Enviro Caddie	16.27	23.83	17.33	24
Traditional Spray Can	12.67	25.5	12.87	27

Summary:

Conclusion: The Enviro Caddie system provided a larger concentrated area than the Traditional Spray Can system did. The TSC system provided a larger over-spray plume than the EC system did.