CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2024
DateRun:	04/30/2024
Experimenters:	Amelia Wagner
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Aluminum, Galvinized Steel, Stainless Steel
PartType:	Coupon
Contaminants:	Greases
Cleaning Methods:	Manual Wipe
Analytical Methods:	Gravimetric
Purpose:	All-purpose test to determine the efficacy of the GeoPro X product in removing Lithium grease from a variety of substrates compared to other janitorial and industrial degreasing products. Rerun of previous test using a higher concentration of GeoPro X to see if the higher concentration leads to a higher efficacy.
Experimental Procedure:	Three coupons of each substrate were used per cleaning product, for a total of 24 coupons. Each coupon was weighed using a gravimetric balance and had their weights recorded. Each coupon was then soiled with about 0.5 grams of lithium grease by using a swab to administer the contaminant down the center of the coupons. Each coupon was then weighed again, and had their 'dirty weights' recorded. The coupons were then cleaned with their respective cleaning product using the Straight Line Washability Unit (or SLW) to ensure a standard pressure is applied to each coupon while being manually wiped. Two sprays of the correct cleaner was applied to a wypall that is attached to the cleaning sled of the SLW to wipe the soil away and two sprays were applied directly to each coupon (meaning each coupon was cleaned with about 2.5 ml of cleaning chemistry). The SLW unit was run for 20 cycles (20 back and forth motions) for each coupon. Once cleaned, the coupons were allowed to air dry before having their final weights recorded.

Results:

Cleaner	Substrate	Initial wt of cont.	Final wt of cont.	%Cont Removed	AVG % Removed	Overall % Removed
GeoPro X 3%	Aluminum	0.0267	0.0209	21.72	0.57	11.26
		0.0140	0.0140	0.00		
		0.0140	0.0168	-20.00		
	Galvanized Steel	0.0189	0.0161	14.81	11.24	
		0.0189	0.0171	9.52		
		0.0245	0.0222	9.39		
	Stainless Steel	0.0149	0.0097	34.90	21.96	
		0.0123	0.0108	12.20		
		0.0213	0.0173	18.78		
Formula 409 RTU	Aluminum	0.0733	0.0150	79.54	67.03	53.04
		0.0580	0.0241	58.45		
		0.0439	0.0162	63.10		
	Galvanized Steel	0.0503	0.0186	63.02	54.18	
		0.0586	0.0282	51.88		
		0.0674	0.0353	47.63		
	Stainless Steel	0.0450	0.0339	24.67	37.93	
		0.0764	0.0415	45.68		
		0.0465	0.0263	43.44		
Polychem Deox 007 1:7	Aluminum	0.0325	0.0219	32.62	42.98	57.08
		0.0479	0.0247	48.43		
		0.0499	0.0260	47.90		
	Galvanized Steel	0.0390	0.0123	68.46	69.00	
		0.0792	0.0153	80.68		
		0.0650	0.0274	57.85		
	Stainless Steel	0.0440	0.0161	63.41	59.25	
		0.0519	0.0179	65.51		
		0.0602	0.0308	48.84		

General observations:

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One of the coupons cleaned using the GeoPro X 3% showed a negative removal percentage. This could likely be due to some of the grit (the individual granuals of the powder) of the GeoPro X getting stuck to the contaminant and being left on the surface of the substrate. The weight of this grit in addition to the weight of the contaminant is probably what has caused the clean weight to be heavier than the dirty weight.

Summary:

Substrates:	Aluminum, Galvinized Steel, Stainless Steel				
Contaminants:	Greases				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
AquOm Inc	GeoProX	3%	11.26	☐	
Clorox Company	Formula 409 All Purpose Cleaner	RTU	53.04	☐	
US Polychem Corporation	Polychem DEOX 007	12.5%	57.08	☐	

Conclusion:

None of the products are effective in removing lithium grease from Aluminum, Galvanized Steel, or Stainless Steel. The Fomula 409 and Polychem Deox 007 performed comparatively and removed, on average, about 50% of the soil from the coupons. The GeoPro X 3% concentration unfortunately did not perform comparatively to the two other products, removing only about 11.26% of soil from the coupons.