

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2014  
 DateRun: 11/11/2014  
 Experimenters: Loc Nguyen, George Liang  
 ClientType: Cleaning Equipment Mfr  
 ProjectNumber: Project #1  
 Substrates: Ceramics, Porcelain  
 PartType: Coupon  
 Contaminants: Films, Soaps  
 Cleaning Methods: Manual Wipe  
 Analytical Methods: Gravimetric

Purpose: To evaluate the supplied products for bathroom cleaning using manual cleaning

Experimental Procedure: The comparative cleaning products were used at the ready to use concentrations. Preweighed coupons were coated with SSL Soil 1 (Bathroom soap scum: All-in-one shampoo and conditioner 28.6%, Dry skin lotion 21.4%, Liquid hand soap 21.4%, Liquid body wash 14.3%, Deodorant bar soap 7.2% and water 7.1%) using a handheld swab and allowed to dry for 24 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added.

Three coupons were placed into a Gardner Straight Line Washability unit. A Wypall X60 reinforced wipe was attached to the cleaning sled and soaked with 2-3 sprays of cleaning solutions. Each coupon was sprayed 1-2 times with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded and efficiencies were calculated and recorded.

Chemistries Evaluated: Force of Nature, SC Johnson Scrubbing Bubbles; Lysol Power Bathroom Cleaner

Results:  
 Force of Nature  
 pH = 7.03  
 Concentration = 310 ppm

| Cleaner                                                   | Initial wt | Final wt | % Removed | Average | Std Dev |
|-----------------------------------------------------------|------------|----------|-----------|---------|---------|
| HealthierCleaning_BathroomSoil_ForceOfNature_Porcelain    | 0.3953     | 0.1607   | 59.35     | 83.41   | 15.88   |
|                                                           | 0.3299     | 0.0271   | 91.79     |         |         |
|                                                           | 0.3106     | 0.0222   | 92.85     |         |         |
|                                                           | 0.3396     | 0.1522   | 55.18     |         |         |
|                                                           | 0.3403     | 0.0303   | 91.10     |         |         |
|                                                           | 0.4315     | 0.0082   | 98.10     |         |         |
|                                                           | 0.2985     | 0.0679   | 77.25     |         |         |
|                                                           | 0.3207     | 0.0209   | 93.48     |         |         |
|                                                           | 0.2860     | 0.0240   | 91.61     |         |         |
| HealthierCleaning_BathroomSoil_ForceOfNature_Ceramics     | 0.3463     | 0.0104   | 97.00     | 95.68   | 1.45    |
|                                                           | 0.4215     | 0.0144   | 96.58     |         |         |
|                                                           | 0.5296     | 0.0165   | 96.88     |         |         |
|                                                           | 0.4166     | 0.0110   | 97.36     |         |         |
|                                                           | 0.3864     | 0.0181   | 95.32     |         |         |
|                                                           | 0.3480     | 0.0172   | 95.06     |         |         |
|                                                           | 0.3863     | 0.0159   | 95.88     |         |         |
|                                                           | 0.4833     | 0.0328   | 93.21     |         |         |
|                                                           | 0.4021     | 0.0248   | 93.83     |         |         |
| HealthierCleaning_BathroomSoil_ScrubbingBubbles_Porcelain | 0.2593     | 0.0981   | 62.17     | 66.48   | 10.22   |
|                                                           | 0.3080     | 0.1037   | 66.33     |         |         |
|                                                           | 0.2862     | 0.1091   | 61.88     |         |         |
|                                                           | 0.3139     | 0.1358   | 56.74     |         |         |
|                                                           | 0.2825     | 0.1459   | 48.35     |         |         |
|                                                           | 0.5447     | 0.1456   | 73.27     |         |         |
|                                                           | 0.4124     | 0.0804   | 80.50     |         |         |
|                                                           | 0.3745     | 0.0931   | 75.14     |         |         |

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|                                                          |        |        |       |       |       |
|----------------------------------------------------------|--------|--------|-------|-------|-------|
|                                                          | 0.3204 | 0.0836 | 73.91 |       |       |
| HealthierCleaning_BathroomSoil_ScrubbingBubbles_Ceramics | 0.2736 | 0.0171 | 93.75 | 80.53 | 20.62 |
|                                                          | 0.3130 | 0.0085 | 97.28 |       |       |
|                                                          | 0.2553 | 0.0255 | 90.01 |       |       |
|                                                          | 0.5037 | 0.0333 | 93.39 |       |       |
|                                                          | 0.4535 | 0.0411 | 90.94 |       |       |
|                                                          | 0.5518 | 0.0274 | 95.03 |       |       |
|                                                          | 0.2857 | 0.0974 | 65.91 |       |       |
|                                                          | 0.2808 | 0.1147 | 59.15 |       |       |
|                                                          | 0.2440 | 0.1481 | 39.30 |       |       |
| HealthierCleaning_BathroomSoil_Lysol_Porcelain           | 0.4480 | 0.0265 | 94.08 | 91.36 | 5.65  |
|                                                          | 0.2807 | 0.0221 | 92.13 |       |       |
|                                                          | 0.4557 | 0.0138 | 96.97 |       |       |
|                                                          | 0.3277 | 0.0630 | 80.78 |       |       |
|                                                          | 0.4081 | 0.0177 | 95.66 |       |       |
|                                                          | 0.3795 | 0.0315 | 91.70 |       |       |
|                                                          | 0.4628 | 0.0108 | 97.67 |       |       |
|                                                          | 0.2785 | 0.0361 | 87.04 |       |       |
|                                                          | 0.3950 | 0.0544 | 86.23 |       |       |
| HealthierCleaning_BathroomSoil_Lysol_Ceramics            | 0.3183 | 0.0631 | 80.18 | 87.35 | 10.36 |
|                                                          | 0.2417 | 0.0654 | 72.94 |       |       |
|                                                          | 0.4099 | 0.017  | 95.85 |       |       |
|                                                          | 0.3971 | 0.0313 | 92.12 |       |       |
|                                                          | 0.2953 | 0.0879 | 70.23 |       |       |
|                                                          | 0.4936 | 0.0193 | 96.09 |       |       |
|                                                          | 0.2487 | 0.0231 | 90.71 |       |       |
|                                                          | 0.4437 | 0.008  | 98.20 |       |       |
|                                                          | 0.3306 | 0.0335 | 89.87 |       |       |

Summary:

|                                |                        |               |                    |                                     |                      |
|--------------------------------|------------------------|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>             | Ceramics, Porcelain    |               |                    |                                     |                      |
| <b>Contaminants:</b>           | Films, Soaps           |               |                    |                                     |                      |
| <b>Company Name:</b>           | <b>Product Name:</b>   | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Healthier Cleaning Innovations | Force of Nature        | 100           | 89.51              | <input checked="" type="checkbox"/> |                      |
| SC Johnson & Son Inc           | Scrubbing Bubbles      | 100           | 83.14              | <input checked="" type="checkbox"/> |                      |
| Reckitt Benckiser              | Lysol Bathroom Cleaner | 100           | 97.35              | <input checked="" type="checkbox"/> |                      |

Conclusion:

All three products had a wide range of cleaning performance as indicated by the standard deviation for the surface materials cleaned. The Force of Nature compared well with the Lysol Power Bathroom product in average performance and was only less consistent. The product had a higher soil removal rate than the Scrubbing Bubbles and was more consistent in the cleaning over the two surfaces.