# CLEANING LABORATORY EVALUATION SUMMARY

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|---|---|
| SCL #: | 2000 |
| DateRun: | 05/31/2000 |
| Experimenters: | John Brunelle |
| ClientType: | Consultant |
| ProjectNumber: | Project #1 |
| Substrates: | Ceramics, Glass/Quartz |
| PartType: | Coupon |
| Contaminants: | Dirt, Fingerprints, Films, Soaps |
| Cleaning Methods: | Manual Wipe |
| Analytical Methods: | |
| Purpose: | HOTEL PROJECT summary |

**Experimental Procedure:**

Background

This document is a report summarizing the Hotel Project. The two hotels involved, the Copley and the Lenox, are seeking environmentally safe alternatives to their current cleaners. The hotels are currently using Ecolab's Tub & Tile, Germicidal Non-Acid, All-Purpose, Glass and Deodorizer/Air Freshener Cleaners. The objective of this experiment is to determine if selected Rochester Midland products can serve as adequate environmentally safe replacements. The Rochester Midland products include the Washroom Fixture, Tough Job, and Glass Cleaners. Housekeeping personnel from both hotels met with TURI SCL (Surface Cleaning Lab) staff on April 26, 2000 to finalize experimental procedures. Representatives from both parties worked closely together throughout the project to ensure accurate cleaner evaluation.

Experimental Procedure

SCL met with staff members from each hotel once per week for three hours. The experiment ran for approximately four weeks. A detailed visit-by-visit log sheet is included in the appendix. During each visit SCL met with two members of the housekeeping staff, approximately 90 minutes with each. The first week's visits consisted of an evaluation of all of the current Ecolab products. The housekeepers were observed for cleaning techniques and time of cleaning, followed by interviews for feedback on overall cleaner performance. Factors examined include ease of cleaning, specific applications of each cleaner, and side effects such as skin irritation and sneezing. Following this initial evaluation, SCL intended to implement one new Rochester Midland cleaner per week in replacement for the similar Ecolab product. The new products arrived a few days behind schedule resulting in a slight change of procedure. Due to this hold up all three products were simultaneously implemented at the Copley. The three cleaners were then evaluated as a whole for the remaining weeks of the experiment. Both the Rochester Midland Tough Job and Glass Cleaners were evaluated concurrently at the Lenox. The new products were used for a one week trial period, then replaced with the Rochester Midland Washroom Fixture Cleaner. After each trial period, the housekeepers were again interviewed for feedback on performance and an overall comparative evaluation to the Ecolab products. Cleaner dilutions were mixed by the housekeeping staff at the Copley and by SCL staff at the Lenox. All cleaner were also tested in house at SCL on common bathroom surfaces such as ceramic tile, marble, and glass/mirror contaminated with common bathroom products. Chemical concentration information was included with each of the cleaners. An extensive chemical concentration analysis was done on all products at SCL using nonionic and anionic titration tests.

**Results:**

Performance Analysis - Hotel

During the initial visits, it became evident that there was no set cleaning procedure, as each housekeeper had their own unique cleaning methods. Each hotel uses four cleaners, the Lenox using the Germicidal Non-Acid cleaner instead of the Tub & Tile which is used at the Copley. While these two cleaners were frequently used and had good overall performance, staff members complained of dry, irritated hands and sneezing as a result of repeated use. Overall satisfactory performance was reported for Ecolab's All-Purpose and Glass cleaners. Those who used the Deodorizer/Air Freshener liked the aroma but complained that the product induced sneezing. All Ecolab products were observed to have good results in leaving surfaces clean, shiny, and smooth, while leaving rooms smelling fresh.

The first new cleaners implemented were the Rochester Midland Tough Job and Glass cleaners. The week-long test produced mixed feedback. The users at the Copley reported very good performance for both new products in comparison with Ecolab's. No ill side-effects were reported, and the products appeared to have equivalent effectiveness in cleaning the designated surfaces. The users at the Lenox, however, experienced completely different results, reporting poor overall performance for both the Tough Job and Glass Cleaners. No ill side-effects were reported. They commented that the Tough Job dilution may have been too weak and that it was necessary to resort back to the Ecolab Germicidal Non-Acid Cleaner to obtain typical results. The Glass Cleaner was reported to smear and leave streaks on the surfaces cleaned. The Tough Job was observed to clean effectively while the glass cleaner did leave some streaks.

For the following week the Tough Job Cleaner was replaced with Rochester Midland's Washroom Fixture Cleaner. Use of the Glass Cleaner was discontinued. Again the experiment produced mixed feedback. The workers at the Copley reported very good performance in comparison with Ecolab. One user commented that this product is also an effective glass cleaner. Again, no ill side effects were reported, and the cleaner

was observed to work effectively on all the surfaces cleaned. The users at the Lenox reported poor overall performance and again commented that the dilution may be too week. No ill side-effects were reported. Users also commented that more manual work needed to be exerted to obtain the same results. The workers eventually went back to using the Ecolab Germicidal Non-Acid Cleaner.

Performance Analysis - SCL

Samples of all products used were taken after each session to be tested and analyzed by SCL. Each cleaner was tested for effectiveness in cleaning both ceramic tiles and marble surfaces. Glass cleaners were tested on glass/mirror. A contaminant solution consisting of water, soap scum, toothpaste, shaving cream, and hair spray was applied to each surface and let to dry. The surfaces were then sprayed with each cleaner and wiped with a rag until clean. The Rochester Midland cleaners were found to be just as effective as Ecolab's in cleaning ceramic tile and marble surfaces. The cleaners were diluted in the SCL at the lowest allowable concentrations to ensure an accurate and unbiased evaluation. Rochester Midland's Glass Cleaner, however, was slightly less effective than Ecolab in cleaning the glass/mirror surface. For the complete analysis see the following table:

| Company | Product | Surface | Evaluation |
|---|---|---|---|
| Ecolab | Oasis 499 Germicidal | Ceramic Tile | Easily cleaned, little streaking, surface shiny |
| Ecolab | Oasis 266 All Purpose | Ceramic Tile | Moderate effort, some streaking, surface shiny |
| Ecolab | Oasis Tub & Tile | Ceramic Tile | Easily cleaned, little streaking, surface shiny |
| Rochester Midland | EnviroCare Washroom Fixture | Ceramic Tile | Easily cleaned, some streaking, surface shiny |
| Rochester Midland | EnviroCare Tough Job | Ceramic Tile | Easily cleaned, little streaking, surface shiny |
| DI Water | DI Water | Ceramic Tile | Moderate effort, some streaking, surface shiny |
| Ecolab | Oasis 499 Germicidal | Marble | Easily cleaned, little streaking, surface shiny |
| Ecolab | Oasis 266 All Purpose | Marble | Moderate effort, some streaking, surface shiny |
| Ecolab | Oasis Tub & Tile | Marble | Difficult to clean, surface streaky and spotted |
| Rochester Midland | EnviroCare Washroom Fixture | Marble | Easily cleaned, little streaking, surface shiny |
| Rochester Midland | EnviroCare Tough Job | Marble | Easily cleaned, little streaking, surface shiny |
| DI Water | DI Water | Marble | Moderate effort, some streaking, surface shiny |
| Ecolab | Oasis 255 SF Glass | Glass/ Mirror | Easily cleaned, little or no streaking |
| Rochester Midland | EnviroCare Glass Cleaner | Glass/ Mirror | Moderate effort, leaves visible streaks |
| Rochester Midland | EnviroCare Washroom Fixture | Glass/ Mirror | Moderate effort, little streaking |

Sample Evaluation

To obtain a better understanding of the mixed feedback from the hotel experiment, a series of titration tests were performed in the SCL to determine approximate chemical concentration for all samples taken. The results displayed substantially higher chemical concentrations at the Lenox than at the Copley for all cleaners. Copley samples were within manufacturer specifications, while the Lenox samples were consistently higher than the recommended concentrations. Concentrations were particularly higher in the Ecolab cleaners. It was discovered that the housekeepers at the Lenox mix the cleaners on their own, while at the Copley they are consistently mixed to the correct dilutions by the same staff member. For the Rochester Midland samples, the concentrations at the Lenox were within manufacturer specifications but again found to be significantly higher than those at the Copley. This analysis provided some explanation for the split feedback received from the hotel staff members. Details of this experiment are provided below:

Non-Ionic Test

| Source | SCL | Lenox | Copley |
|---|---|---|---|
| Mfr | Ecolab | Ecolab | Ecolab |
| Product | 499 | 499 | 499 |
| Conc. % | 1.25 | 7.21 | Not Tested |
| Volume | 0.5 | 0.2 | Not Used at Copley |
| Wt of Surf | 0.0364 | 0.084 | |
| % Surf. | 6.5 | 37.5 | |

# CLEANING LABORATORY EVALUATION SUMMARY

| | | | |
|---|---|---|---|
| Total Surf % | 520 | 520 | |
| | | | |
| Mfr | Ecolab | Ecolab | Ecolab |
| Product | All Purpose | All Purpose | All Purpose |
| Conc. % | 1.25 | 16.25 | 1.09 |
| Volume | 1 | 0.5 | 1 |
| Wt of Surf | 0.0112 | 0.0728 | 0.0098 |
| % Surf. | 1 | 13 | 0.875 |
| Total Surf % | 80 | 80 | 80 |
| | | | |
| Mfr | Rochester Midland | | |
| Product | Tough Job | Tough Job | Tough Job |
| Conc. % | 6.25 | 33 | 7.75 |
| Volume | 5 | 1 | 5 |
| Wt of Surf | 0.0812 | 0.0868 | 0.1008 |
| % Surf. | 1.45 | 7.75 | 1.8 |
| Total Surf % | 23.2 | 23.485 | 23.225 |
| | | | |
| Mfr | Rochester Midland | | |
| Product | Washroom & Fixture Washroom & Fixture | Washroom & Fixture | |
| Conc. % | 3.125 | 6 | 1.25 |
| Volume | 25 | 10 | 40 |
| Wt of Surf | 0.0476 | 0.0364 | 0.0308 |
| % Surf. | 0.17 | 0.325 | 0.06875 |
| Total Surf % | 5.44 | 5.417 | 5.5 |
| | | | |
| Mfr | Rochester Midland | | |
| Product | Glass Cleaner | Glass Cleaner | Glass Cleaner |
| Conc. % | Not Supplied | 3.13 | 2.25 |
| Volume | 30 | 30 | |
| Wt of Surf | 0.1092 | 0.0784 | |
| % Surf. | 0.325 | 0.233 | |
| Total Surf % | 10.4 | 10.37 | |
| Anionic Test | | | |
| Source | SCL | Lenox | Copley |
| Mfr | Ecolab | Ecolab | Ecolab |
| Product | Glass Cleaner | Glass Cleaner | Glass Cleaner |
| Conc. % | 1.25 | <1.25 | <1.25 |
| Volume | 1 | 1 | 1 |
| Drops Req'd | 4 | 5 | 5 |

Summary:

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|---|---|
| **Substrates:** | Ceramics, Glass/Quartz |
| **Contaminants:** | Dirt, Fingerprints, Films, Soaps |

| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
|---|---|---|---|---|---|

# CLEANING LABORATORY EVALUATION SUMMARY

| | | | | | |
|---|---|---|---|---|---|
| EcoLab | Oasis 499 | | 0.00 | ☐ | |
| EcoLab | Oasis All Purpose | | 0.00 | ☐ | |
| EcoLab | Oasis 255 Glass Cleaner | | 0.00 | ☐ | |
| Rochester Midland Corporation | Washroom Cleaner | | 0.00 | ☐ | |
| Rochester Midland Corporation | EnviroCare Glass Cleaner | | 0.00 | ☐ | |
| Rochester Midland Corporation | EnviroCare Tough Job | | 0.00 | ☐ | |

Conclusion:

It is evident from the results obtained that this was not an entirely controlled and un-biased experiment. There are many outside factors that need to be included in the final evaluation. The difference in the Ecolab cleaner concentrations between the two hotels is more than enough to cause bias in the Lenox feedback. Ironically, the Lenox staff reported negative feedback regarding the Rochester Midland products despite having higher concentrated cleaners than the Copley staff, who reported positive feedback. The titration tests provide significant scientific evidence that the feedback provided by the Lenox staff may have been biased due to the fact that the workers are trained in cleaning at notably higher concentrations. There is still solid experimental evidence however, that at least two out of the three Rochester Midland cleaners (Tough Job and Washroom Fixture) provided at least equivalent performances to the Ecolab products. The Glass Cleaner overall did not seem to equate the performance of the Ecolab glass cleaner. None of the new cleaners caused side-effects of any kind.