CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2014
DateRun:	06/30/2014
Experimenters:	Jason Marshall, George Liang, Francisco Abreau
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Liquid
PartType:	Coupon
Contaminants:	Odor
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Smell
Purpose:	To evaluate supplied products for odor elimination

Experimental Procedure:

Clean 250 ml glass bottles were filled with six ml of whole milk. The bottles were capped and stored at room temperature for three days. At the end of the three days, the bottles were opened and observed for signs of spoiling odor.

Cleaning products were used at the recommended concentrations. Three bottles were opened and treated with two sprays of one of the supplied cleaning products. Bottles were capped and swirled to mix the cleaner with the milk.

A panel of three was initialized to the various odors. An untreated bottle, a bottle with spoiled milk, a bottle with Product 1 solution, a bottle with Product 2 and a bottle with Product 3 and a bottle with Product 4 and a bottle with Product 5 and a bottle with Product 6 and a bottle with water only were presented to the panelist. The exposure was to set a benchmark for each possible odor contributor.

The treated bottles were then presented uncapped to one member of the odor panel. The panelist was asked to describe odor and rank the level of intensity of the malodor. Each panelist was subjected to three bottles for each product/milk mixture plus a selection of the initial odor bottles in random odor.

After the panelists observed the odors, bottles were recapped and allowed to set overnight. Bottles were reopened and assessed for odors. Each bottle was subjected to a second round of treatment and each panelist rated the malodor stench. The rating was according to the scale set being 1 as best and 5 being the worse.

Chemistries Evaluated: Pet odor; Nu Smell Plus; Nu Compact Kleen; Nu Odor; Nu Odor Freshness; Febreze; Water:

Results:

Each of the three panelists observed high level of malodor still remaining in the contaminant after the soil had been applied with Pet Odor, water and Febreze treated bottles. Even after 2 cycles of spray; the water treated samples were nearly unchanged from the untreated spoiled milk benchmark bottles. After 1 cycle of spray with Nu Smell Plus; Nu Compact Kleen; Nu Odor, the soiled milk scent was masked by the scent of the cleaners. Nu Odor Freshness still had a hint of soiled milk lingering after 2 cycles of spray was applied to the contaminant.

Cleaner	Bottle 1	Bottle 2	Bottle 3	Avg.	Bottle 1	Bottle 2	Bottle 3	Avg.	Bottle 1	Bottle 2	Bottle 3	Avg.
	Original	Original	Original		Spray	Spray	Spray		2ndSpray	2nd Spray	2nd Spray	
Pet Odor	4	3.5	3.5	3.7	4	3.5	3	3.5	4	3.5	3	3.5
	4	4	3.5	3.8	4	4	2.5	3.5	3	3.5	2.5	3
	4	4	4	4	4	4	3	3.7	4	4	3	3.7
Nu Smell Plus	5	4.8	3.5	4.4	1.5	1.5	1	1.3	1.5	1.5	1	1.3
	3	3.5	3.5	3.3	1	1	1	1	1	1	1	1
	3	4	4	3.7	1.3	1.5	1	1.3	1.3	1.5	1	1.3
Nu Compact	4	3	4	3.7	1.5	1.5	1	1.3	1.5	1.5	1	1.3
Kleen												
	3.5	3.8	3.5	3.6	1.5	2	1	1.5	1.5	2	1	1.5
	3	2.8	3	2.9	1	2.5	1	1.5	1	2.5	1	1.5
Nu Odor	4.5	3	4	3.8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	4.5	5	3.5	4.3	1	1	1.5	1.2	1	1	1.5	1.2
	4	4	4	4	1	1	1	1	1	1	1	1
Nu Odor	4.5	4	3	3.8	2.5	2.5	2	2.3	3	2.8	1	2.3

CLEANING LABORATORY EVALUATION SUMMARY

Freshness												
	5	5	3.5	4.5	2	3	1.5	2.2	3	3	1.5	2.5
	3.5	3.5	3	3.3	1	1.5	2.5	1.7	3	3	1.5	2.5
Water	4.8	4.5	3.5	4.3	4.5	4	3	3.8	4	4	3	3.7
	5	5	3.5	4.5	3.5	4	3	3.5	3.8	4	3	3.6
	5	3.5	3	3.8	5	5	3	4.3	4	4	3	3.7
Febreze	3.5	4.5	3.5	3.8	3.5	3.5	2.5	3.2	3.5	3.5	2.5	3.2
	5	5	3.5	4.5	4	4	2.5	3.5	4	4	3	3.7
	5	4.5	3.5	4.3	4	4	2.5	3.5	4	4	3	3.7
Control	4.5	4	4	4.2	4.5	4	4	4.2	4.5	4	4	4.2

Overall summary result:

Original	Avg. Overall	Spray 1	Avg. Overall	Spray 2	Avg. Overall
Pet Odor	3.7	Pet Odor	3.6	Pet Odor	3.4
Nu Smell Plus	3.8	Nu Smell Plus	1.2	Nu Smell Plus	1.2
Nu Compact Kleen	3.4	Nu Compact Kleen	1.4	Nu Compact Kleen	1.4
Nu Odor	4.1	Nu Odor	1.2	Nu Odor	1.2
Nu Odor Freshness	3.9	Nu Odor Freshness	2.1	Nu Odor Freshness	2.4
Water	4.2	Water	3.9	Water	3.6
Febreze	4.2	Febreze	3.4	Febreze	3.5

During the overnight the malodor levels of pet odor, nu odor and nu odor freshness has increased to almost the initial level of the untreated milk bottles. A second application of pet odor, water and febreze did little to lessen the malodor levels. A second application of nu odor and nu odor freshness lessened the malodor level of the milk slightly.

After overnight stay result:

Cleaner	Original 1	Original 2	Original 3	Avg.	Spray 1.1	Spray 2.1	Spray 3.1	Avg.
Pet Odor	3	3	4	3.3	3.5	3	3.5	3.3
	4	3.5	4	3.8	3.5	2.5	3.5	3.2
	2	3	3.5	2.8	4	3	3	3.3
Nu Smell Plus	3	1	1	1.7	3	1	1	1.7
	1.5	2	1.5	1.7	1.5	2	1.5	1.7
	1.5	2.5	1	1.7	1.5	2.5	1	1.7
Nu Compact Kleen	1.5	1.5	1	1.3	1.5	1.5	1	1.3
	2	1.5	1	1.5	2	1.5	1	1.5
	3	3	1.5	2.5	3	3	1.5	2.5
Nu Odor	3.5	2	2	2.5	3	1.5	1	1.8
	2	1.5	1.5	1.7	2.5	1	1.5	1.7
	2	3.5	1	2.2	2	1.5	1	1.5
Nu Odor Freshness	3.5	3.5	2	3	3	2.5	2	2.5
	3.5	3.5	3	3.3	3	3	2	3.7
	2	4	2	2.7	2.5	2	2	2.2
Water	3	4	4	3.7	4.5	4	4	4.2
	3	3.5	4	3.5	3.5	3.5	4	3.7
	3.5	3.5	3.5	3.5	4	4	3.5	3.8
Febreze	3	4	4	3.7	4	4	3.5	3.8
	3	4	4	3.7	3.5	3	3	3.2
	3.5	4	4	3.8	5	3.5	4	4.2
Control	5	3.5	4	4.2	5	3.5	4	4.2

After overnight overall summary result:

CLEANING LABORATORY EVALUATION SUMMARY

Original	Avg. Overall	Spray 1	Avg. Overall
Pet Odor	3.3	Pet Odor	3.3
Nu Smell Plus	1.7	Nu Smell Plus	1.7
Nu Compact Kleen	1.8	Nu Compact Kleen	1.8
Nu Odor	2.1	Nu Odor	1.7
Nu Odor Freshness	3	Nu Odor Freshness	2.8
Water	3.6	Water	3.9
Febreze	3.7	Febreze	3.7

Summary:

Substrates:	Liquid
Contaminants:	Odor

Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
A & C Green Cleaner LLC	Pet odor & Stain Remover	100	0.00	☐	Little to no reduction in odor
Procter & Gamble	Febreze Free Nature	100	0.00	☐	No reduction in odor
Water	Water	100	0.00	☐	No reduction in odor
Innu Science	Nu Smell Plus	100	0.00	☑	Removed most of the odor initially but marginal odor returned
Innu Science	Nu Compact Kleen	100	0.00	☑	Removed most of the odor initially but marginal odor returned
Innu Science	Nu Odor	100	0.00	☑	Removed most of the odor initially but marginal odor returned
Innu Science	Nu Odor Freshness	100	0.00	☐	Removed most of odor initially but odor returned

Conclusion:

The product cleaners: Nu Smell Plus, Nu Compact Kleen and Nu Odor worked the best to mask the smell of spoiled milk. Nu odor Freshness was not as effective in removing the smell of spoiled milk. Febreze and water were not effective at removing the smell of spoiled milk.