Survey of Reusable Dine-In, Reusable To-Go (Durable) and Disposable Single-Use Foodservice Items

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BACKGROUND

Foodservice packaging like paper and plastic cups, plates, and bowls were invented over 100 years ago to provide a more sanitary alternative to their reusable counterparts and help protect public health. Over the years, the Foodservice Packaging Institute (FPI) has commissioned independent studies with third-party laboratories to compare sanitary quality of single-use foodservice packaging and their reusable counterparts. In these studies, members of FPI and/or state health inspectors were secured by FPI to obtain samples and ship to a food testing microbiology laboratory. The last study was performed in 2012. FPI performed this study to include emerging reuse models for take-out and delivery. Addition of these items within foodservice has gained interest due to sustainability measures and reporting, the impact of disposable items on the environment and potential cost savings by reducing disposable item use.

OBJECTIVE

The objective of the study was to conduct a survey of reusable take-out and delivery items (reusable to-go items), single use items, and dine-in reusable foodservice ware items to determine the sanitary quality of these items in food service establishments in North America.

MATERIALS AND METHODS

Sample Collection Locations

Four (4) different foodservice establishments (restaurants) were surveyed at three (3) separate days each in North Carolina. Sourcing of these locations was conducted in collaboration with FPI. Agreement by each location was obtained to analyze samples taken within each foodservice establishment.

In each establishment, five durable (returnable), five reusable, and five single-use items were sampled. The samples included forks, knives, spoons, cups, containers, plates and bowls. Agreements for sampling each item type were made prior to a sampling visit.

Items

Cups, plates, utensils, clamshell containers, and boxes. Packaging materials can consist of paper (molded or board), plastic, metal, and ceramic

Sample Collection Procedure

One sterile transport culture swab (containing medium to prevent die off of microorganisms during shipping) was used to sample each food service item.

The culture swab was aseptically removed from the package and moistened in a sterile vial containing 10 ml of neutralizing buffer. Excess moisture was squeezed out against the inside wall of the vial with a rotational motion.

The swab was rubbed slowly and thoroughly over the entire food contact surface area. Guidelines developed for health inspectors including pictures and detailed instructions for sampling of each utensil are presented in Appendix A. The swab was returned to its transport vial for shipment.

Swabs were shipped in an insulated shipping container with ice packs to Silliker Food Science Center (FSC) for next day delivery via Federal Express. Swabs, containers, ice packs, and shipping documentation were provided for each inspector.

Microbiological Analyses

Swabs were collected according to an agreed upon schedule. All swabs were received in satisfactory condition at Silliker FSC in Crete, IL the day following sampling. Each swab and any residual transport medium were transferred to a 9.9 ml of Butterfield's Phosphate Buffer and homogenized. Serial dilutions were prepared and analyzed by aerobic plate count (FDA, BAM Online, January 2001) using Tryptone Glucose Yeast Extract (TGY) agar incubated at 35°C for 48 h, *Staphylococcus* plate count (FDA, BAM Online, January 2001) using Baird Parker (BP) agar incubated at 35°C for 48 h, and coliform plate count technique (FDA, BAM Online, January 2001) using Violet Red Bile Agar (VRBA) incubated at 35°C for 24 h.

Data Analyses

All bacterial counts were converted into logarithms for data analysis. A two sample t-test for difference of means was used to determine at each plate count whether there was a difference between the reusable to go, resusable in dining, and disposable food service items. If $p>0.05$, no significant difference was detected.

Outline for sampling foodservice items

Up to 60 samples (5 types of foodservice items x 3 categories of items x 4 locations x 3 visits each location, see below) were taken at each location in North Carolina. Each was swab sampled as described in Appendix A, packed and shipped in a cooler with ice paks to Silliker FSC in Crete, IL. Each sample was analyzed by 3 microbiological tests.

Number of location visits	12	Visit 4 locations, 3 times each in North Carolina
Number of items sampled at each location	5	Cups, plates, utensils, clamshell containers, and boxes. Packaging materials can consist of paper (molded or board), plastic, metal, and ceramic
Category	3	Sample each from: 1. Reusable dine-in 2. Single use 3. Reusable to-go (Durable) that is returned to a receptacle and washed at a central site
Location of sampling during process	1	Swab samples taken at site of selection by consumer (ready to use)
Sampling	Swab	Swab each item according to protocol, store, pack and ship to the laboratory for testing
Microbiological Testing	3	Aerobic plate count (APC) *Staphylococcus* plate count Coliform plate count

RESULTS AND DISCUSSION

Microbiological Results (Log CFU/Swab) for **Reusable To-Go** food service items sampled at 5 different sites on 3 separate days (November 16, 22, and 29, 2022) are presented in Table 1. Five (5) sites were sampled on November 16 and four (4) sites were sampled on both November 22 and 29. Clamshells with varying number of compartments were sampled. Aerobic Plate Count average was 2.24 (Log CFU/Swab), Staphylococcus average was 1.00 Log CFU/Swab and Coliform average was 1.00 Log CFU/Swab. Aerobic Plate Count (APC) results ranged from <1.00 – 4.70 Log Colony Forming Units per Swab (CFU/swab), Staphylococcus counts ranged from <1.00 – 1.30 Log CFU/Swab and Coliform results were <1.00 Log CFU/Swab.

Microbiological Results (Log CFU/Swab) for **Reusable Dine In** food service items sampled at 5 different sites on 3 separate days (November 16, 22, and 29, 2022) are presented in Table 2. Four (4) sites were sampled on each day (Nov 16, 22 and 29). Plates, cups, forks, spoons, knives, and bowls were randomly sampled. Aerobic Plate Count average was 1.20 (Log CFU/Swab), Staphylococcus average was 1.06 Log CFU/Swab and Coliform average was 1.00 Log CFU/Swab. Aerobic Plate Count (APC) results ranged from <1.00 – 2.65 Log Colony Forming Units per Swab (CFU/swab), Staphylococcus counts ranged from <1.00 – 1.95 Log CFU/Swab and Coliform results were <1.00 Log CFU/Swab.

Microbiological Results (Log CFU/Swab) for **Disposable** food service items sampled at 5 different sites on 3 separate days (November 16, 22, and 29, 2022) are presented in Table 3. Four (4) sites were sampled on each day (Nov 16, 22 and 29). Plates, cups, forks, spoons, knives, and bowls were randomly sampled. Aerobic Plate Count average was 1.10 (Log CFU/Swab), Staphylococcus average was 1.02 Log CFU/Swab and Coliform average was 1.00 Log CFU/Swab. Aerobic Plate Count (APC) results ranged from <1.00 – 3.54 Log Colony Forming Units per Swab (CFU/swab), Staphylococcus counts ranged from <1.00 – 1.90 Log CFU/Swab and Coliform results were <1.00 Log CFU/Swab.

Table 4 presents a summary of average Log CFU/Swab, Standard Deviation and number of samples taken for each category of food service items (reusable to-go durable, reusable dine-in and disposable). Significant difference ($p<0.05$) were determined and noted by different superscript lettering (i.e., A was different from B). APC results were significantly higher ($p<0.05$) for **Reusable To-Go Durable** items compared to **Reusable Dine-In** and **Disposable** items. Staphylococcus counts were lower ($p<0.05$) in the **Reusable To-Go** items compared to **Reusable Dine-In** and **Disposable** items. This difference is difficult to explain although the levels quantified were very low which may require a larger sampling set to evaluate in the future. No differences were observed in Coliform Counts. No differences ($p>0.05$) were observed between **Reusable Dine-In** and **Disposable** items. Previous studies in different parts of the country have shown differences where reusable items had higher microbiological counts than disposable items.

Overall, **Reusable To-Go Durable** food service items had higher aerobic plate count microbiological levels than **Reusable Dine-In** and **Disposable** items in a survey conducted in North Carolina.

Table 1. Microbiological Results (Log CFU/Swab) for **Reusable To-Go** Food Service Items Sampled at 5 Different Sites on 3 Separate Days.

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/16/2022	Site 1	clamshell with 3 compartments	1.60	<1.00	<1.00
11/16/2022	Site 1	Durable clamshell	<1.00	<1.00	<1.00
11/16/2022	Site 1	Reusable clamshell	1.00	<1.00	<1.00
11/16/2022	Site 1	Reusable clamshell	2.65	1.00	<1.00
11/16/2022	Site 1	Reusable clamshell	2.43	<1.00	<1.00
11/16/2022	Site 1	Clamshell 1 comp	1.90	<1.00	<1.00
11/16/2022	Site 1	Clamshell 3 comp	2.83	<1.00	<1.00
11/16/2022	Site 1	Clamshell (scratches) 3 comp	1.60	<1.00	<1.00
11/16/2022	Site 1	Clamshell 3 comp	<1.00	<1.00	<1.00
11/16/2022	Site 1	Clamshell 3 comp	3.90	<1.00	<1.00
11/16/2022	Site 1	Clamshell 1 comp	2.08	<1.00	<1.00
11/16/2022	Site 1	Clamshell 1 comp	3.68	<1.00	<1.00
11/16/2022	Site 1	Clamshell 1 comp	1.00	<1.00	<1.00
11/16/2022	Site 1	Clamshell 1 comp	2.36	<1.00	<1.00
11/16/2022	Site 1	Clamshell 1 comp	<1.00	1.30	<1.00
11/16/2022	Site 2	Clamshell	2.53	<1.00	<1.00
11/16/2022	Site 2	Clamshell	3.78	<1.00	<1.00
11/16/2022	Site 2	Clamshell	2.15	<1.00	<1.00
11/16/2022	Site 2	Clamshell	3.61	1.00	<1.00
11/16/2022	Site 2	Clamshell	2.57	<1.00	<1.00
11/16/2022	Site 3	Clamshell 3 comp	2.64	<1.00	<1.00
11/16/2022	Site 3	Clamshell 3 comp	1.70	<1.00	<1.00
11/16/2022	Site 3	Clamshell 3 comp	1.70	<1.00	<1.00
11/16/2022	Site 3	Clamshell 3 comp	3.48	<1.00	<1.00
11/16/2022	Site 3	Clamshell 1 comp	1.70	<1.00	<1.00
11/16/2022	Site 4	Clamshell 1 comp	2.11	<1.00	<1.00
11/16/2022	Site 4	Clamshell 1 comp	2.11	<1.00	<1.00
11/16/2022	Site 4	Clamshell 1 comp	2.30	<1.00	<1.00

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/16/2022	Site 4	Clamshell 1 comp	2.46	<1.00	<1.00
11/16/2022	Site 4	Clamshell 1 comp	1.70	<1.00	<1.00
11/16/2022	Site 5	clamshell	2.59	<1.00	<1.00
11/16/2022	Site 5	clamshell	1.90	<1.00	<1.00
11/16/2022	Site 5	clamshell	1.60	<1.00	<1.00
11/16/2022	Site 5	clamshell	2.81	<1.00	<1.00
11/16/2022	Site 5	clamshell	2.34	<1.00	<1.00
11/22/2022	Site 2	Clamshell	2.04	<1.00	<1.00
11/22/2022	Site 2	Clamshell	3.43	<1.00	<1.00
11/22/2022	Site 2	Clamshell	4.70	<1.00	<1.00
11/22/2022	Site 2	Clamshell	1.95	<1.00	<1.00
11/22/2022	Site 2	Clamshell	2.60	<1.00	<1.00
11/22/2022	Site 3	Clamshell 3 comp	2.57	<1.00	<1.00
11/22/2022	Site 3	Clamshell 3 comp	2.95	<1.00	1.00
11/22/2022	Site 3	Clamshell 3 comp	1.48	<1.00	<1.00
11/22/2022	Site 3	Clamshell 3 comp	2.38	1.00	<1.00
11/22/2022	Site 3	Clamshell 3 comp	1.00	<1.00	<1.00
11/22/2022	Site 4	Clamshell 1 comp	2.60	<1.00	<1.00
11/22/2022	Site 4	Clamshell 1 comp	2.38	<1.00	<1.00
11/22/2022	Site 4	Clamshell 1 comp	2.58	<1.00	<1.00
11/22/2022	Site 4	Clamshell 1 comp	2.56	<1.00	<1.00
11/22/2022	Site 4	Clamshell 1 comp	2.30	<1.00	<1.00
11/22/2022	Site 5	Clam	1.00	<1.00	<1.00
11/22/2022	Site 5	Clam	1.48	<1.00	<1.00
11/22/2022	Site 5	Clam	2.48	<1.00	<1.00
11/22/2022	Site 5	Clam	3.23	<1.00	<1.00
11/22/2022	Site 5	Clam	2.23	<1.00	<1.00
11/29/2022	Site 2	Clamshell 3 comp	3.75	<1.00	<1.00
11/29/2022	Site 2	Clamshell 3 comp	2.28	<1.00	<1.00
11/29/2022	Site 2	Clamshell 3 comp	<1.00	<1.00	<1.00

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/29/2022	Site 2	Clamshell 3 comp	2.72	<1.00	<1.00
11/29/2022	Site 2	Clamshell 3 comp	2.30	<1.00	<1.00
11/29/2022	Site 3	Clamshell 3 comp	2.83	<1.00	<1.00
11/29/2022	Site 3	NA	NA	NA	NA
11/29/2022	Site 3	NA	NA	NA	NA
11/29/2022	Site 3	NA	NA	NA	NA
11/29/2022	Site 3	NA	NA	NA	NA
11/29/2022	Site 4	Clamshell 1 comp	2.48	<1.00	<1.00
11/29/2022	Site 4	Clamshell 1 comp	2.15	<1.00	<1.00
11/29/2022	Site 4	Clamshell 1 comp	1.30	<1.00	<1.00
11/29/2022	Site 4	Clamshell 1 comp	1.78	<1.00	<1.00
11/29/2022	Site 4	Clamshell 1 comp	2.36	<1.00	<1.00
11/29/2022	Site 5	clamshell	1.00	<1.00	<1.00
11/29/2022	Site 5	clamshell	1.95	<1.00	<1.00
11/29/2022	Site 5	clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 5	clamshell	2.63	<1.00	<1.00
11/29/2022	Site 5	clamshell	1.60	<1.00	<1.00

Total Average	2.24	1.00	1.00
Standard Deviation	0.81	0.04	0.00
# of Samples Tested	71	71	71

NA – not applicable (no samples taken)

Table 2. Microbiological Results (Log CFU/Swab) for **Reusable Dine In** Food Service Items Sampled at 5 Different Sites on 3 Separate Days.

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/16/2022	Site 2	Ceramic plate	1.60	<1.00	<1.00
11/16/2022	Site 2	Ceramic plate	1.00	<1.00	<1.00
11/16/2022	Site 2	plastic cup	1.30	<1.00	<1.00
11/16/2022	Site 2	metal fork	<1.00	<1.00	<1.00
11/16/2022	Site 2	metal spoon	<1.00	<1.00	<1.00
11/16/2022	Site 3	Big bowl	<1.00	<1.00	<1.00
11/16/2022	Site 3	Small bowl	<1.00	<1.00	<1.00
11/16/2022	Site 3	Small plate	<1.00	<1.00	<1.00
11/16/2022	Site 3	fork	<1.00	<1.00	<1.00
11/16/2022	Site 3	Knife	1.48	<1.00	<1.00
11/16/2022	Site 4	small boat	1.90	<1.00	<1.00
11/16/2022	Site 4	small bowl	1.00	1.00	<1.00
11/16/2022	Site 4	large bowl	1.95	1.30	<1.00
11/16/2022	Site 4	fork	<1.00	<1.00	<1.00
11/16/2022	Site 4	Knife	<1.00	<1.00	<1.00
11/16/2022	Site 5	water glass	<1.00	<1.00	<1.00
11/16/2022	Site 5	plate	<1.00	1.00	<1.00
11/16/2022	Site 5	fork	<1.00	1.30	<1.00
11/16/2022	Site 5	spoon	<1.00	<1.00	<1.00
11/16/2022	Site 5	bowl	<1.00	<1.00	<1.00
11/22/2022	Site 2	fork	1.70	<1.00	<1.00
11/22/2022	Site 2	spoon	<1.00	<1.00	<1.00
11/22/2022	Site 2	Small plate	<1.00	<1.00	<1.00
11/22/2022	Site 2	bowl	1.48	1.48	<1.00
11/22/2022	Site 2	cup	<1.00	<1.00	<1.00
11/22/2022	Site 3	Big bowl	2.40	1.60	<1.00
11/22/2022	Site 3	small bowl	<1.00	<1.00	<1.00
11/22/2022	Site 3	small plate	<1.00	<1.00	<1.00

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/22/2022	Site 3	fork	<1.00	<1.00	<1.00
11/22/2022	Site 3	knife	2.43	1.95	<1.00
11/22/2022	Site 4	sm boat	<1.00	<1.00	<1.00
11/22/2022	Site 4	sm bowl	1.70	1.30	<1.00
11/22/2022	Site 4	lg bowl	<1.00	1.48	<1.00
11/22/2022	Site 4	fork	<1.00	1.00	<1.00
11/22/2022	Site 4	knife	<1.00	<1.00	<1.00
11/22/2022	Site 5	fork	<1.00	<1.00	<1.00
11/22/2022	Site 5	spoon	1.00	<1.00	<1.00
11/22/2022	Site 5	cup	<1.00	<1.00	<1.00
11/22/2022	Site 5	bowl	2.00	<1.00	<1.00
11/22/2022	Site 5	plate	1.00	<1.00	<1.00
11/29/2022	Site 2	Ceramic plate	2.65	<1.00	<1.00
11/29/2022	Site 2	ceramic bowl	<1.00	<1.00	<1.00
11/29/2022	Site 2	lg plastic cup	<1.00	<1.00	<1.00
11/29/2022	Site 2	metal fork	<1.00	<1.00	<1.00
11/29/2022	Site 2	metal spoon	<1.00	<1.00	<1.00
11/29/2022	Site 3	Big bowl	<1.00	<1.00	<1.00
11/29/2022	Site 3	sm bowl	<1.00	<1.00	<1.00
11/29/2022	Site 3	sm plate	<1.00	<1.00	<1.00
11/29/2022	Site 3	fork	<1.00	<1.00	<1.00
11/29/2022	Site 3	knife	<1.00	<1.00	<1.00
11/29/2022	Site 4	sm boat	<1.00	1.00	<1.00
11/29/2022	Site 4	sm bowl	<1.00	<1.00	<1.00
11/29/2022	Site 4	lg bowl	2.26	<1.00	<1.00
11/29/2022	Site 4	fork	<1.00	<1.00	<1.00
11/29/2022	Site 4	knife	<1.00	<1.00	<1.00
11/29/2022	Site 5	clear water glass	<1.00	<1.00	<1.00
11/29/2022	Site 5	plate	<1.00	<1.00	<1.00
11/29/2022	Site 5	fork	<1.00	<1.00	<1.00

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/29/2022	Site 5	spoon	<1.00	<1.00	<1.00
11/29/2022	Site 5	bowl	<1.00	<1.00	<1.00

Total Average	1.20	1.06	1.00
Standard Deviation	0.42	0.17	0.00
# of Samples Tested	60	60	60

Table 3. Microbiological Results (Log CFU/Swab) for **Disposable** Food Service Items Sampled at 5 Different Sites on 3 Separate Days.

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/16/2022	Site 2	Bowl	<1.00	<1.00	<1.00
11/16/2022	Site 2	Clear cup	<1.00	<1.00	<1.00
11/16/2022	Site 2	Coffee cup	<1.00	<1.00	<1.00
11/16/2022	Site 2	Small eco clamshell	<1.00	<1.00	<1.00
11/16/2022	Site 2	fork	1.78	<1.00	<1.00
11/16/2022	Site 3	small clamshell	<1.00	<1.00	<1.00
11/16/2022	Site 3	small clamshell	1.00	<1.00	<1.00
11/16/2022	Site 3	small clamshell	<1.00	<1.00	<1.00
11/16/2022	Site 3	Clamshell 3 comp	<1.00	<1.00	<1.00
11/16/2022	Site 3	Clamshell 3 comp	<1.00	<1.00	<1.00
11/16/2022	Site 4	Plastic clamshell small	<1.00	<1.00	<1.00
11/16/2022	Site 4	plastic clamshell large	1.48	<1.00	<1.00
11/16/2022	Site 4	Plastic clamshell small	1.00	<1.00	<1.00
11/16/2022	Site 4	compostable clamshell small	<1.00	<1.00	<1.00
11/16/2022	Site 4	compostable clamshell large	<1.00	<1.00	<1.00
11/16/2022	Site 5	bowl	1.70	1.90	<1.00
11/16/2022	Site 5	small cup	<1.00	<1.00	<1.00
11/16/2022	Site 5	large cup	<1.00	1.30	<1.00
11/16/2022	Site 5	fork	<1.00	<1.00	<1.00
11/16/2022	Site 5	clamshell	<1.00	<1.00	<1.00
11/22/2022	Site 2	fork	1.00	<1.00	<1.00
11/22/2022	Site 2	Clear cup	<1.00	<1.00	<1.00
11/22/2022	Site 2	small coffee cup	1.00	<1.00	<1.00
11/22/2022	Site 2	small clamshell	<1.00	<1.00	<1.00
11/22/2022	Site 2	clear med shell	<1.00	<1.00	<1.00
11/22/2022	Site 3	sm clamshell	<1.00	1.00	<1.00
11/22/2022	Site 3	sm clamshell	<1.00	<1.00	<1.00
11/22/2022	Site 3	sm clamshell	<1.00	<1.00	<1.00

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/22/2022	Site 3	Clamshell 3 comp	1.00	<1.00	<1.00
11/22/2022	Site 3	Clamshell 3 comp	<1.00	<1.00	<1.00
11/22/2022	Site 4	sm plastic clamshell	1.00	<1.00	<1.00
11/22/2022	Site 4	lg plastic clamshell	2.11	<1.00	<1.00
11/22/2022	Site 4	sm plastic clamshell	<1.00	<1.00	<1.00
11/22/2022	Site 4	sm plastic clamshell	<1.00	<1.00	<1.00
11/22/2022	Site 4	lg plastic clamshell	<1.00	<1.00	<1.00
11/22/2022	Site 5	Clamshell	<1.00	<1.00	<1.00
11/22/2022	Site 5	Coffee cup	<1.00	<1.00	<1.00
11/22/2022	Site 5	water cup	<1.00	<1.00	<1.00
11/22/2022	Site 5	fork	<1.00	<1.00	<1.00
11/22/2022	Site 5	spoon	<1.00	1.00	<1.00
11/29/2022	Site 2	bowl	<1.00	<1.00	<1.00
11/29/2022	Site 2	clear cup	<1.00	<1.00	<1.00
11/29/2022	Site 2	Coffee cup	<1.00	<1.00	<1.00
11/29/2022	Site 2	sm eco clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 2	plastic fork	1.30	<1.00	<1.00
11/29/2022	Site 3	sm clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 3	sm clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 3	sm clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 3	lg clamshell 1 comp	<1.00	<1.00	<1.00
11/29/2022	Site 3	lg clamshell 3 comp	<1.00	<1.00	<1.00
11/29/2022	Site 4	sm plastic clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 4	lg platic clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 4	sm plastic clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 4	sm plastic clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 4	lg platic clamshell	<1.00	<1.00	<1.00
11/29/2022	Site 5	bowl	<1.00	<1.00	<1.00
11/29/2022	Site 5	sm cup	<1.00	<1.00	<1.00
11/29/2022	Site 5	lg cup	<1.00	<1.00	<1.00

Date Sampled	Location	Inspector's Description	Aerobic Plate Count (Log CFU/swab)	Staphylococcus Plate Count (Log CFU/swab)	Coliforms Plate Count (Log CFU/swab)
11/29/2022	Site 5	fork	3.54	<1.00	<1.00
11/29/2022	Site 5	clamshell	<1.00	<1.00	<1.00

Total Average	1.10	1.02	1.00
Standard Deviation	0.38	0.12	0.00
# of Samples Tested	60	60	60

Table 4. Summary of Average and Standard Deviations for Aerobic Plate Count, Staphylococcus Count and Coliform Count Results for Reusable To Go- Durable, Reusable Dine In and Disposable Food Service Items.

APC (Log CFU/Swab)		
	Average	**Stdev**
Reusable to go durable	2.24[A]	0.81
Reusable dine in	1.20[B]	0.42
Disposable	1.10[B]	0.38

Staphylococcus (Log CFU/Swab)		
	Average	**Stdev**
Reusable to go durable	1.00 [A]	0.04
Reusable dine in	1.06 [B]	0.17
Disposable	1.02 [B]	0.12

Coliform (Log CFU/Swab)		
	Average	**Stdev**
Reusable to go durable	1.00 [A]	0.00
Reusable dine in	1.00 [A]	0.00
Disposable	1.00 [A]	0.00

A was significantly different (p>0.05) from B