

By Leng Xiong

ENVR 395

Advisors Derek Larson and Jean Lavigne

Introduction

Disposable containers are a problem due to the amount of waste they can produce and the pollution they create. An estimate of 1 million tons of polystyrene (Styrofoam) is used annually in the U.S. Polystyrene, a chemical by-product that is used to make Styrofoam containers does not decompose

and contains harmful chemicals such as benzene. The problem with polystyrene is their accumulation in landfills, ocean, and any solid waste sinks. Compostable containers are much greener than the disposable containers, but due to the manufacturing over seas, their carbon footprint is high, must be disposed properly in compost areas and not in landfills. If they are in landfills, the anoxic conditions will not allow them to decompose.

Reusable containers is the solution to the disposable containers, they are type 5 plastic called polypropylene that is sturdy, BPA free and does not leech harmful chemicals, will pay back themselves because they are reusable and the "Green" advertisement restaurants would increase their business. Would reusable containers be much greener and a better alternative to the disposable containers?

Cost Benefit Analysis

Containers	Initial Cost: 100 pack	Ongoing cost per Month	Total Annual Cost	Extra Cost
Polystyrene	Hefty Foam Hinged 3 Compartment Togo Boxes, \$19.50/free shipping	\$19.50/Free Shipping	\$234	\$0
Compostable	World Centric's 9" X 9" X 3" Clamshell To Go Container \$46.95/with shipping	\$46.95/with shipping	\$563.4	\$0
Reusable	G.E.T. Clamshell Eco To Go Containers 9"L x 9"W x 2 3/4"H \$810.79/with shipping	Undetermined Labor, Water and Labor Cost	\$810.79+ 1st Year Undetermined Labor, Water and Labor Cost	Hubert Under the Cover Dishwasher:\$5000 Electricity: Undetermined Water: Undetermined Labor: Undetermined

Reusable Container Process

- ◆ Once a customer buys into the program they will receive either a token for exchange or the container.
- ◆ The used container brought back can be exchanged for another container or token for exchange for future use.
- ◆ The containers should be cleaned and ready by the restaurant or dining area.
- ◆ Any incentives, broken container and extra rules will vary on the dining facility and their program.

Reusable Container Barriers

- ◆ Expensive initial cost and long payback time.
- ◆ Managing and implementing the program.
- ◆ Customers accepting or willing to join the program.
- ◆ Space for the new containers.

Method



I implemented a reusable container program called Green2Go in SJU Dining Refectory on March 2016. Gree2Go program replaced our compostable containers which resulted in our waste reduction and cost. It was a success in the SJU Refectory, but on the other campus, CSB Goreki. I've contacted CSB's dining area Gorecki and interviewed them about implementing a reusable container program. They do not provide containers and do not plan on in the future. Along with the reusable container implementation, I've interview China One, a small Chinese restaurant that uses take-out containers and Mall of America, who would benefit form the program. The goal of the interview is to figure out the willingness and their interest for the program.

Conclusion

Reusable containers may cost more initially at an estimate \$810.79 and work best for larger dining facilities, but they save more money and are environmentally greener compared to the other two. Reusable containers have an estimate payback period of 43 months or 4 years. However, reusable container program works best in large dining facilities that has a commercial dishwasher preinstalled. Otherwise it will take a longer time for the estimate payback. I recommend smaller restaurants that do not have the facilities to maintain the program, use compostable containers, and provide information about disposing of them properly. This may cost more, but it is environmentally friendly and would reduce high tax for polystyrene waste clean ups.

Figure 2. This chart is a cost benefit analysis with each container. The chart jumps from the first 3 months to the 43rd month or around 3 and a half years, which is payback time of the reusable containers. Containers will vary on the distribution and supplier, but the ones used are simple google searches.

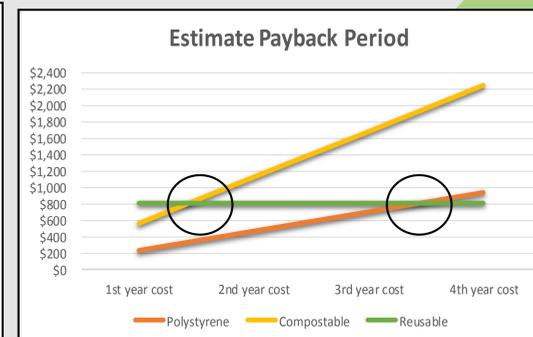
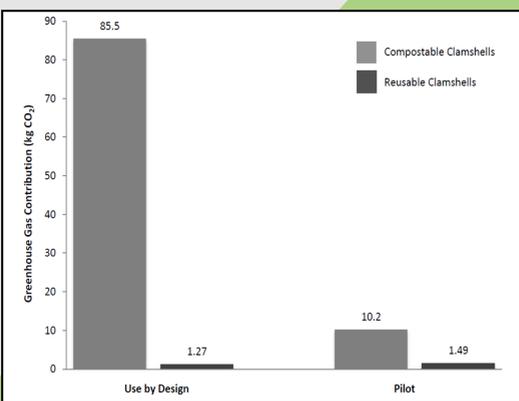


Figure 3. This graph shows the estimate payback period of switching over to reusable containers in 4 years period. The reusable container estimate annual cost excludes the extra and undetermined cost.

Greenhouse Emissions

Figure 1: This chart shows compostable containers compared to reusable containers (43 times used) of how much Green House Gas (GHG) each containers emits.



Eco-Product Compostable Clamshell



G.E.T Polypropylene Reusable Container



Polystyrene Clamshell

Sources

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