

REPORT: FOAM-FREE SCHOOL LUNCH
Greenwich Public Schools PTA Council Green Schools
August 2018

The Hazards of Polystyrene Trays

The polystyrene (or Styrofoam) trays currently used in school cafeterias contain styrene, a possible human carcinogen that can migrate to food from these products.ⁱ Styrene may leach into the hot and acidic foods ingested by our children or can be consumed directly when children scrape the trays with forks or other sharp implements. The International Agency of for Research on Cancer (IARC) classified styrene as a “possible human carcinogen” (class 2-B carcinogen).ⁱⁱ A report from the U.S. Department of Health and Human Services states, “Styrene is reasonably anticipated to be a human carcinogen.”ⁱⁱⁱ Further, the EPA notes, “Chronic (long-term) exposure to styrene in humans results in effects on the central nervous system (CNS), such as headache, fatigue, weakness, and depression, CSN dysfunction, hearing loss, and peripheral neuropathy.”^{iv} The EPA summary also cites the possible increased risk of leukemia and lymphoma, as suggested by epidemiological studies.^v

While such classifications and research indicate a correlation between styrene and cancer and other adverse health effects, it may be argued that these studies are not definitive due to confounding factors and apply primarily to animals, not humans. However, we cannot afford to wait years, even decades, for expensive epidemiological studies on humans to be conducted, while credible evidence already exists from leading health organizations. We need to exercise precautionary principle heeding these red flags, as there is a possibility of harm to our children’s health by use of this product. You have the direct responsibility to protect our children from these hazards. Currently, students are exposed needlessly to styrene on a daily basis in our school cafeterias. Most at risk are the more than 15% of GPS students eligible for free and reduced lunch, who may eat meals on polystyrene trays every day for more than 13 years. Let’s follow the lead of John Deasy, the Superintendent of L.A. Unified District, who declared, “We don’t want to take the chance of our students eating off products made with styrene.”^{vi}

Not only are polystyrene trays a threat of our children’s health, they pollute our environment and contribute significantly to our waste stream. The manufacture of polystyrene requires fossil fuels and carcinogenic chemicals, such as benzene and styrene, as well as considerable water and energy resources. Its production creates a trail of pollutants for only minutes of use. The health of workers is endangered during its production. Further, polystyrene manufacture is the fifth largest producer of hazardous waste in the U.S., according to the EPA. The Clean Production Action’s Plastic Scorecard cites polystyrene as one of the most hazardous plastics, as every step of manufacturing involves the use of chemicals of high concern to human health and the environment.^{vii}

In addition to its health and environmental dangers, polystyrene trays are wasteful and hazardous to dispose. As of July 1, 2018, the Town of Greenwich no longer accepts polystyrene products for recycling, mandating the material for trash disposal. There is not a reliable economic market or environmentally effective means for recycling them. In the past, only clean polystyrene trays without food contamination could be recycled. At schools, students could not rinse or clean trays, as they did

at home. As a result, there was a high rate of contamination, and the trays were put in the trash instead of being recycled. Of the approximate 468,540 lunches served on these trays each year, about 75%, or 351,405 trays entered our waste stream annually.^{viii} Consequently in the past decade, over 3 million trays have been tossed in the trash in our cafeterias. Now, **Greenwich Public Schools will throw away almost half a million Styrofoam trays each year.** These trays are incinerated at the Wheelabrator waste-to-energy plants in Peekskill, NY and Bridgeport, CT with the ash buried at its Putnam, CT monofill at a cost to taxpayers and the detriment of our air and soil quality. Just as polystyrene is hazardous to produce, its disposal also has deleterious effects. The incineration of polystyrene releases harmful chemicals into our air, such as sulfur dioxide, dioxins, particulates, carbon dioxide and nitrogen dioxide.^{ix} The National Bureau of Standards, Center for Fire Research has found 57 chemical byproducts released during the combustion of this material.^x

Molded Fiber Wares and PFAS

Over the past year, the Green Schools committee of the PTA Council has explored possible substitutes for the polystyrene trays, in conjunction with Food Services Manager, John Hopkins. In fall 2017, three types of disposable molded fiber cafeteria trays were offered as an alternative ware to pilot at a district elementary school. Although they are more expensive than polystyrene trays, these products were thought to be more environmentally friendly, since they are paper-based, compostable and manufactured from 100% recycled material. Moreover, they are used by the Urban School Food Alliance, a coalition of the largest school districts in the U.S., which switched from polystyrene trays to a round Huhtamaki plate in 2014.^{xi}

Despite our optimism, it was soon discovered that molded fiber wares often contain per- and polyfluoroalkyl substances (PFAS). PFAS, or fluorinated additives, are highly persistent synthetic chemicals used in food service wares to impart resistance to moisture, oil and grease and make them less prone to leaking and sticking.^{xii} They are associated with serious health problems, including cancer, thyroid disease, decreased fertility and elevated cholesterol, as well as adverse developmental effects and decreased immune response in children.^{xiii} According to Laurel Schaidler of the Silent Spring Institute, “children are particularly at risk for health effects because their developing bodies are more vulnerable to toxic chemicals.”^{xiv} Further, because of the strength of the carbon-fluorine bond, PFAS are extremely persistent and break down very slowly in our bodies and the environment.^{xv} In 2015, over 200 international scientists released the Madrid Statement, which called for limiting production and use of PFAS.^{xvi} However, they continue to be widely employed in food wares and other industries, although some companies are currently researching potential alternatives.

After learning about the problems of PFAS in food service wares, Green Schools sent samples of the trays provided by Food Services to the Center for Environmental Health (CEH) to be tested for fluorine, using particle-induced gamma-ray emission (PIGE) spectroscopy. This method tests for total fluorine content to determine if a fluorinated compound was intentionally added or is present from naturally occurring sources or background levels. In all our samples, high levels of fluorine were detected, suggesting that fluorinated additives (or PFASs) were added deliberately. Hoping to find a non-fluorinated alternative, we reviewed the Cedar Gove list of compostable products and presented additional alternatives to CEH. All were found to have high fluorine content and likely contain

fluorinated additives (or PFAS) (see attached results). Seven molded fiber trays, which were composed of recycled paper, bagasse or a blend of plant fibers, were tested in their recent study.^{xvii} The only food tray that was found to contain no fluorine was a polylactic acid (PLA) product, a bioplastic ware manufactured by Grow Plastics that is not yet available for purchase.

Paper Boats and “Trayless Tuesdays”

Since an inexpensive, disposable multi-compartment tray that is safe and sustainable does not currently exist on the market, Green Schools explored other disposable options, specifically paper boats. There are several benefits associated with this product. First, they are a safer option than polystyrene trays and disposables with fluorinated additives for student health and the environment. The samples of paper boats tested recently by CEH all contained low levels or no PFAS. In addition, some of the products use recycled content in their production, and they can possibly be composted onsite at GPS schools, though this would have to be verified. If they cannot be composted, considerable waste will be generated from their disposal. At 5 cents, these products are almost double the price of the 3 cent foam trays. They are also more difficult for the youngest students to handle, and there is no separation of foods, which could be an issue for some children.

While paper boats are not a long-term solution because of these limitations, they can be used for some meals during the pilot period for “Trayless Tuesdays.” In 2011, four environmentally savvy fifth graders from Parkway School worked with GPS Food Services to institute a “Trayless Tuesday” program. Based on the New York City model, meals were served on paper boats once a week for entrees that were not too hot and didn’t contain too much liquid. We propose that “Trayless Tuesdays” be instituted at GPS schools during the pilot period this spring. Depending on the lunch menu, paper boats could be used several days a week to limit student exposure to polystyrene, minimize the environmental impact of the foam trays and reduce waste.

The Benefits of Reusables & Plastic Basket Pilot Program

In light of the increased costs, environmental impact, and limitations of disposable food wares, Green Schools set out to find a reusable durable option and discovered numerous case studies of schools that successfully transitioned from disposables to reusables in their cafeterias.^{xviii} Reusable wares, like plastic baskets, have numerous benefits over disposables. First and foremost, they generally lack the health and environmental concerns of polystyrene products and disposables containing PFAS and are a safer option for our children.

Next, reusable wares are designed for thousands of uses, not just one. While disposables are relatively inexpensive to buy, the supply must be continually replenished, as they are single use. These ongoing costs add up quickly. On the other hand, reusables may cost more upfront but will be used over and over again, about 2,700 times in its life.^{xix} As soon as the return on investment is reached, the district will save money. These cost savings accrue with every use of a durable product and are significant. Bishop O’Dowd High School in Oakland, CA replaced disposable plates with plastic baskets, saving \$6,459 annually in disposable food ware costs after return on investment.^{xx} In another case study, two Minnetonka, MN middle schools transitioned from disposables to durable, metal

utensils and saved approximately \$6,000 in the first year.^{xxi} Over three years of use, the schools estimated a cost savings of \$26,000, dropping the annual per student cost for food ware from \$6.95 to \$2.56.

Like these schools, our district can achieve considerable savings by investing in reusable service ware, as is demonstrated in the cost analysis for plastic baskets (see Table 1). District-wide the upfront costs for the initial purchase of the baskets are estimated at \$2,317, in contrast to the annual cost of polystyrene trays of \$14,993. In the first year, the district could save \$12,232. The savings are magnified with time. Over a five-year period anticipated savings equal \$69,062 and ten-year period \$144,544. This accounts for savings attributed to disposable purchases only; savings could be even higher as these figures do not include possible savings from lower hauling and disposal fees.

Adoption of reusable wares, like plastic baskets, will also result in a significant reduction of waste and a subsequent cut in hauling and disposal fees for the Town of Greenwich. By switching to plastic baskets, Bishop O'Dowd High School eliminated 3,376 lbs (1.69 tons) of waste each year. The Minnetonka middle schools reduced about 6,000 lbs of on-site solid waste the first year, while Framingham, MA schools eliminated the use of 3.9 tons of polystyrene trays and plastic utensils annually by switching to reusable trays and silverware.^{xxii} By transitioning to plastic baskets and cutting over 468,000 polystyrene trays from the waste stream, Greenwich Public Schools will similarly experience a significant reduction in waste tonnage and volume and a corresponding decrease in hauling and disposal fees.

Durable reusable wares are also preferable to single-use products because their "cradle to grave" impact from raw materials extraction to disposal is far less detrimental to the environment.^{xxiii} These environmental impacts can be quantified through a life cycle assessment. The Minnetonka schools achieved a 77% reduction in greenhouse gases, water consumption and air pollution by transitioning from disposal to durable metal utensils, as determined from a life cycle assessment. Further, a School Nutrition Foundation study found that reusable compartment trays had a lower environmental impact when compared to disposable service ware options, in terms of energy use, solid waste and greenhouse gas emissions.^{xxiv} This metric can be used in our school district to quantify the environmental impact of polystyrene trays versus plastic baskets. Based on these case studies, we will find that our environmental footprint will be greatly reduced. This is the perfect opportunity for Greenwich Public Schools to demonstrate its commitment to environmental stewardship and model leadership in this field for our students. This initiative also offers countless possibilities for students to study the impact of environmentally conscious decision making.

In transitioning to reusable wares, the impacts on water and energy use, as well as demands on kitchen staff, need to be considered. Plastic baskets do not require a dishwasher. Rather, they can be washed, rinsed, soaked and sanitized in a three-sink system and air dried, as is practiced at Bishop O'Dowd High School and local Chipotle restaurants. A foil liner will be used to reduce soiling of the baskets. To achieve separation of foods, smaller paper boats can be inserted into the baskets for entrees with sauces, like macaroni and cheese, pasta and nachos. As a result, water and energy consumption and demands on time and labor of kitchen staff should be minimal.

If reusable compartment trays or metal utensils are used, a dishwashing system will be necessary, requiring capital investment, maintenance and possible increases in energy and water consumption

and labor. The district should be open to exploring this option to assess the true cost of these reusables. The Framingham and School Nutrition Foundation studies have demonstrated that these costs may be nominal or recouped in the long term. Unquestionably, dishwashing systems should be on the table when cafeteria renovations or new construction are undertaken, like at New Lebanon School. We highly recommend that the district cafeterias be surveyed and a cost analysis and life cycle assessment completed to determine the feasibility of reusables that require dishwashing systems, as the long-term savings may outweigh the upfront and other associated costs.

Conclusion

While disposable wares seem inexpensive and convenient, there is a great cost to our children's health and our environment. We must remember that the decision to switch from disposable polystyrene trays to reusable durable wares extends beyond economic factors and should consider, first and foremost, the negative effects on our children's health and our environment. Our schools should lead in efforts to reduce waste, conserve energy and natural resources, and, above all, safeguard our children's health. The district should model environmental stewardship, creating a culture of responsibility, advocacy, problem solving and leadership, as highlighted in the Vision of the Graduate, Full Value Contract and District Wide School Norms. In addition, the Town of Greenwich recently committed to join Sustainable Connecticut, a program to promote environmental protection and education. Our schools are a major partner in these efforts and should be a leader in waste reduction and sustainability.

We ask you to support the replacement of the disposable polystyrene trays with reusable food wares, by taking the following actions:

- 1) Support a district-wide roll out of plastic baskets for the school year 2018-19, after an effective pilot program at Cos Cob School in spring 2018.
- 2) Support schools that would like to initiate "Trayless Tuesday" programs during the pilot period.
- 3) Survey school cafeteria infrastructure and complete a cost analysis and life cycle assessment of reusables versus disposables.
- 4) Investigate the possibility of installing a dishwashing system and investing in reusable compartment trays and utensils at New Lebanon School.

In addition, Green Schools invites you to attend a meeting with PTA presidents and invested PTAC committee chairs. Please confirm your participation at ptacgreenschools@gmail.com.

We look forward to discussing this issue with you further and hope to see you on March.

Sincerely,

PTAC Green Schools Committee

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- ⁱ P.H. Howard, "Styrene," in *Handbook of Environmental Fate and Exposure Data for Organic Chemicals*, vol 1: *Large Production and Priority Pollutants* (Chelsea, MI: Lewis Publishers, 1989), 490-498, and Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Styrene*, <http://www.atsdr.cdc.gov/toxprofiles/tp53.pdf>. Cited in National Toxicology Program, *Report on Carcinogens, Fourteenth Edition* (Research Triangle Park, ND: U.S. Department of Health and Human Services, Public Health Service, 2016), 5-6. Accessed 3 February 2018, <https://ntp.niehs.nih.gov/ntp/roc/content/profiles/styrene.pdf>.
- ⁱⁱ Paolo Vineis, and Lauren Zeise, "Styrene-7,8-oxide and Styrene," *IARC Monograph* 82 (2002): 72-78, accessed February 3, 2018, <https://monographs.iarc.fr/ENG/Publications/techrep42/TR42-9.pdf>.
- ⁱⁱⁱ "Styrene is reasonably anticipated to be a human carcinogen based on limited evidence of carcinogenicity from studies in humans, sufficient evidence of carcinogenicity from studies in experimental animals, and supporting data on mechanisms of carcinogenesis." NTP, 1.
- ^{iv} Environmental Protection Agency (EPA), *Styrene*, accessed February 3, 2018, <https://www.epa.gov/sites/production/files/2016-09/documents/styrene.pdf>.
- ^v Ibid.
- ^{vi} Lisa Kaas Boyle, "LA Unified School District Bans Foam Lunch Trays: Superintendent Cites Environment and Health of Students," *Huffington Post Blog*, August 29, 2012, accessed 3 February 2018, https://www.huffingtonpost.com/lisa-kaas-boyle/la-unified-school-district_b_1838066.html.
- ^{vii} Ann Blake and Mark Rossi, "Plastics Scorecard," *Clean Production Action* July 1, 2014, accessed 3 February 2018, <https://www.cleanproduction.org/resources/entry/plastics-scorecard-resource>.
- ^{viii} On November 14, 2017, trays were collected at Eastern Middle School during all lunch periods from trash and recycling containers. 107 trays were disposed in the trash, and 37 were recycled.
- ^{ix} Responsible Purchasing Network, *Green Purchasing Best Practices: Compostable Food Service Ware* (November 2012), 29, accessed February 3, 2018, http://www.responsiblepurchasing.org/purchasing_guides/food_service_ware/naspo_rpn_compostable_food_service_ware_purchasing_guide.pdf.
- ^x Joshua Gurman, Laura Baier and Barbara C. Levin, "Polystyrenes: A Review of the Literature on Products of Thermal Decomposition and Toxicity," *Fire and Materials* 11 (1987), 109-130, accessed February 3, 2018, <http://fire.nist.gov/bfrlpubs/fire87/PDF/f87014.pdf>.
- ^{xi} National Resource Defense Council, "Good-bye Polystyrene Tray. Hello Compostable Plate," 20 May 2015, accessed August 2, 2018, <https://www.nrdc.org/media/2015/150520-0>.
- ^{xii} Center for Environmental Health, *Avoiding Hidden Hazards: A Purchaser's Guide to Safer Foodware*, 2018, accessed March 1, 2018, <https://www.ceh.org/wp-content/uploads/CEH-Disposable-Foodware-Report-final-1.31.pdf>.
- ^{xiii} Laurel A. Schaidt, et al., "Fluorinated Compounds in U.S. fast Food Packaging," *Environmental Science & Technology Letters* 4, 3 (2017), 105-111, accessed February 3, 2018, <http://pubs.acs.org/doi/abs/10.1021/acs.estlett.6b00435>; and C8 Science Panel, "C8 Probably Link Reports," accessed January 20, 2018, http://www.c8sciencepanel.org/prob_link.html.
- ^{xiv} Silent Spring Institute, "Hormone disrupting chemicals common in fast food packaging," *Early Life Exposures in Latina Adolescents*, accessed February 3, 2018, <https://silentspring.org/ellastudy/hormone-disrupting-chemicals-common-in-fast-food-packaging/>.
- ^{xv} Glenys Webster, "Potential human health effects of perfluorinated chemicals (PFCs)," *National Collaborating Centre for Environmental Health* (October 2010), 2, accessed Jan. 20, 2018, http://www.nccch.ca/sites/default/files/Health_effects_PFCs_Oct_2010.pdf.
- ^{xvi} "The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)," *Environmental Health Perspectives*; DOI:10.1289/ehp.1509934, vol 123 (2015), accessed Jan. 20, 2018, <https://ehp.niehs.nih.gov/1509934/>.
- ^{xvii} Center for Environmental Health, *CEH Foodware Database*, accessed March 7, 2018, <https://www.ceh.org/campaigns/endocrine-disrupting-chemicals/edc-resources/>.
- ^{xviii} School Nutrition Foundation, *Life Cycle Environmental and Cost Analysis of Disposable and Reusable Ware in School Cafeterias, Including Dishwasher Operation*, November 2009, accessed January 14, 2018, https://www.thegreenteam.org/wp-content/uploads/2014/04/Warewash_Study-Summary.pdf; Minnesota Pollution Control Agency, *The Cost and Environmental Benefits of Using Reusable Food Ware in Schools: A Minnesota Case Study*, October 2014, accessed January 7, 2018, <https://www.pca.state.mn.us/sites/default/files/p-p2s6-16.pdf>; Clean Water Action/Clean Water Fund, *Institutional Case Study: University of San Francisco's Market Café*, October 3, 2017, accessed February 3, 2018, <http://www.rethinkdisposable.org/resources>.

^{xix} According to Franklin Associates, the estimated number of uses is 2,700 based on one use per day, 180 days per year and a 15-year life. School Nutrition Foundation, *Life Cycle Environmental and Cost Analysis of Disposable and Reusable Ware in School Cafeterias, Including Dishwasher Operation*, November 2009, accessed January 27, 2018, https://www.thegreenteam.org/wp-content/uploads/2014/04/Warewash_Study-Summary.pdf

^{xx} For case study and video, see Clean Water Action ReThink Disposable, *ReThink Disposable Testimonial: Bishop O'Dowd High School*, accessed March 7, 2018, <http://www.rethinkdisposable.org/dev/case-studies/bishop-odowd-high-school>

^{xxi} Minnesota Pollution Control Agency, *The Cost and Environmental Benefits of Using Reusable Food Ware in Schools*, October 2014, Accessed March 7, 2018, <https://www.pca.state.mn.us/sites/default/files/p-p2s6-16.pdf>

^{xxii} MassDEP, *School Cafeteria Foodservice Ware: Program Alternatives*, June 2014, Accessed March 7, 2018, https://c.ymcdn.com/sites/www.masbo.org/resource/resmgr/Event_20151209/SchCafeteriaFoodSvcWare.pdf

^{xxiii} Clean Water Action, *Literature Review and Inventory, Greenhouse Gas Impacts of Disposable vs Reusable Foodservice Products*, January 2017, accessed January 20, 2018, <http://www.rethinkdisposable.org/resources>. The life cycle emissions can be estimated using tools such as the Carnegie-Mellon EIO-LCA open-source online environmental life cycle assessment. See Minnesota Pollution Control Agency, <https://www.pca.state.mn.us/sites/default/files/p-p2s6-16.pdf>.

^{xxiv} School Nutrition Foundation, *Life Cycle Environmental and Cost Analysis of Disposable and Reusable Ware in School Cafeterias, Including Dishwasher Operation*, November 2009, accessed January 27, 2018, https://www.thegreenteam.org/wp-content/uploads/2014/04/Warewash_Study-Summary.pdf

Table 1. GPS Cafeteria Foodservice Ware Cost Analysis

PTAC Green Schools 5/4/18

Estimated Net Cumulative Cost Savings
of Plastic Baskets**

School	Average # daily lunches	# meals/yr (x 180 days)	Annual Cost of Foam Trays @.032¢	Initial Purchase of Plastic Baskets @\$1.559*	Number of Baskets in Initial Order total number (dozen)	Estimated Net Cumulative Cost Savings of Plastic Baskets**		
						Year 1	Year 5	Year 10
Cos Cob	188	33,840	1,083	392	252 (21)	631	4,739	9,874
Glenville	160	28,800	922	374	240 (20)	492	3,956	8,286
Hamilton Ave	225	40,500	1,296	468	300 (25)	753	5,637	11,742
ISD	100	18,000	576	224	144 (12)	315	2,471	5,166
Julian Curtiss	190	34,200	1,094	393	252 (21)	645	4,797	9,987
New Lebanon	190	34,200	1,094	393	252 (21)	645	4,797	9,987
North Mianus	180	32,400	1,037	393	252 (21)	588	4,512	9,417
North Street	155	27,900	893	337	216 (18)	500	3,848	8,033
OGS	130	23,400	749	355	228 (19)	338	3,110	6,575
Parkway	105	18,900	605	225	144 (12)	343	2,615	5,455
Riverside	110	19,800	634	243	156 (13)	354	2,733	5,718
Western MS	220	39,600	1,267	468	300 (25)	724	5,492	11,452
Central MS	210	37,800	1,210	449	288 (24)	694	5,266	10,981
Eastern MS	210	37,800	1,210	449	288 (24)	694	5,266	10,981
GHS	230	41,400	1,325	486	312 (26)	772	5,804	12,094
TOTAL	2,603	468,540	14,993	5,649		8,488	65,043	135,748

*Tablecraft C1079R Mas Grande Rectangular Basket, 11.75 x 8.5", \$18.71 per dozen; initial purchase includes additional ~15% replacement cost

**Savings after return on investment and ~15% replacement cost for basket loss/damage per year; does not include cost of drying racks

COS COB WASTE AUDIT
June 12, 2018

Lunch: Fish sandwich; empanada;
nachos, corn

K	1	2	3	4	5
4.6	0.75	0.1	2.1	0.2	5
0.7	6.2	1	1.3	0.33	0.3
0.5	0.4	0.4	12.7	0.8	0.2
3.7	3.1	4.5	8.3	1	4.2
0.5	4.4	0.6	0.3	5.8	2.8
3.6	5.8	2.4	0.3	2.1	0.8
7.2	9.4	2.9	4.3	4.6	4.6
12.1	2.6	0.9	1.6	4.2	0.8
5.2	3.8	2.4	0.5	2.2	3
6.6	0.9	0.7	1.5	3.5	0.2
3.5	5	3.7	6.2	11.2	0.2
0.4	1.6	1.2	8.5	2.3	1
3.7	1.5	0.3	6.5	2.5	8.9
3.6	0.4	0.3	6.8	1	0.52
3.6	6.2	1.3	4.1	2.8	0.29
16.8	1.8	1.4	1	1.1	15.6
5.2	3.9	4.3	5.5	4.7	3.4
7.5	0.4	2.8	1.8	1	1.1
8.9	2.3	4.5	3.5	3.4	13.3
16.8	1.8	0.1	0.3	6.1	9.4
1.5	7.8	3.3	0.8	6.4	9.9
0.2	4	2.8	2.6	0.2	4.8
3.3	4.9	0.1	83.5	2.2	11
9.1	1	2.2	5.2 lbs	3.6	9.5
2.3	5.2	2.2		0.3	8.1
131.1	1	1.8		5.9	5.9
8.2 lbs	5.2	0.4		2.5	0.3
	4.4	4		1.2	0.2
	5	1.3		0.4	4.2
	2	0.3		0.1	2.8
	4.5	0.4		0.2	0.8
	0.4	0.3		2.6	3
	0.8	0.3		0.4	0.2
	0.3	2.57		0.8	0.2
	8	0.74		0.5	1
	0.8	2.13		0.3	8.9
	0.8	0.8		3.8	151.41
	0.4	2.8		0.4	9.5 lbs
	4.9	0.4		1.6	
	124.65	0.5		2.6	
	7.8 lbs	0.4		2.3	
		1.4		5.1	
		68.94		1.4	
		4.3lbs		4.4	
				2.3	
				3.4	
WEIGHT: 43 LBS TOTAL				2.8	
				122.53	
				7.7 lbs	

----- Forwarded Message -----

From: Julie des <juliechamps@yahoo.com>

To: GENE SCHMIDT <gene_schmidt@greenwich.k12.ct.us>; John Hopkins <john_hopkins@greenwich.k12.ct.us>; GreenSchools Greenwich <ptacgreenschools@gmail.com>; Kathy McCormack <cmccorm625@aol.com>

Sent: Friday, June 15, 2018, 12:27:55 PM EDT

Subject: CCS Pilot Meeting 6/18

Dear Gene and John,

Green Schools is looking forward to our meeting to discuss the waste reduction pilot at Cos Cob on Monday, June 18th at 1:45 pm. We plan to meet with the custodians first before they leave for the day, followed by the monitors and food service staff. Will the meeting be in the office conference room?

Please confirm attendance of your staff:

Custodians: Dale & Elizabeth

Monitors: Deb & April

Food Services: Mirjana & Heather

Also, please find attached an agenda with some discussion points for your review and send any suggestions or additions to us.

Best,

Michael and Julie

**Cos Cob Pilot Meeting: Agenda
June 18, 2018**

- I. Custodial Staff (Dale Ginise & Elizabeth Mills)
 - a. Reduction in waste
 - b. General cleanliness
 - c. Changes in labor
 - d. Suggestions/Improvements
- II. Monitors (Deb Jezierski & April)
 - a. Sorting process
 - b. Composting
 - c. Liquids collection
 - d. Time & labor
 - e. Further education
 - f. Suggestions & improvements
 - g. Procedure for next school year
- III. Food Services (Mirjana Abramovic & Heather Pagni)
 - a. Issues with Styrofoam trays: health, environmental, waste, cost

- b. Basket prep
 - i. Use of additional disposables
 - ii. Time & labor
 - c. Cleaning procedures
 - i. Time requirements
 - ii. Additional costs
 - iii. Cleanliness & water temperature
 - iv. Drying racks: costs & space issues
 - d. Basket type
 - i. Health department issues
 - ii. Non-perforated options: type & cost
 - e. Suggestions & improvements
 - f. Possible solutions
 - i. Continuation of reusable baskets
 - ii. Dishwasher & reusable compartment trays/utensils
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----- Forwarded Message -----

From: Julie des <juliechamps@yahoo.com>
To: GreenSchools Greenwich <ptacgreenschools@gmail.com>
Cc: Abbe Large <alarge@lenoxadvisors.com>
Sent: Tuesday, May 1, 2018, 11:09:05 AM EDT
Subject: PTAC presentation

Hi Michael, Meg and Abbe,

Please find attached my presentation with notes for tomorrow's Green Schools meeting and Friday's PTAC meeting. It's running about 6.5 minutes... I'll try to cut a bit more if possible. Any suggestions?

Abbe, here is the updated cost analysis as well.

Tomorrow will be good practice for Friday...

See you in the AM! Best, Julie

----- Forwarded Message -----

From: PWSCafe PWSCafe <PWSCafe@greenwich.k12.ct.us>
To: OGSCafe OGSCafe <ogs_cafe@greenwich.k12.ct.us>
Cc: Cafeterias <Cafeterias@greenwich.k12.ct.us>; David Nanarello <david_nanarello@greenwich.k12.ct.us>; EMSCafe EMSCafe <ems_cafe@greenwich.k12.ct.us>; JAYNE-MARIE LOCKETT <Jayne-Marie_Lockett@greenwich.k12.ct.us>; John Hopkins <john_hopkins@greenwich.k12.ct.us>; Julie des <juliechamps@yahoo.com>; LAURIE SMITH-CARBINO <Laurie_Carbino@greenwich.k12.ct.us>; Michael Casey <caseymichael@hotmail.com>

Sent: Tuesday, April 24, 2018, 3:55:30 PM EDT

Subject: Re: Trayless Tuesday - Debrief

I agree with April, exactly the same thing happened at PWS, they didn't not like it!
Especially putting milk or juice on top of food.

Maria Villao

On Tue, Apr 24, 2018 at 1:56 PM OGSCafe OGSCafe <ogs_cafe@greenwich.k12.ct.us> wrote:
OGS was 50/50

took longer to serve, the kids had to pile all their food choices and they did not like piling the items on top of each other, The little kids had a harder time. They wanted to know if we RAN OUT OF TRAYS-
Not sure how other items will go in these boats. , its almost like we needed a divider or some kind of tray-
. it was kinda nasty when the milks(can be dirty) on top of there food.

April

On Tue, Apr 24, 2018 at 1:33 PM, EMSCafe EMSCafe <ems_cafe@greenwich.k12.ct.us> wrote:
Easy to serve, no drops, portions look smaller (students), did we run out of trays? (teachers) students thought it was "cool".

On Tue, Apr 24, 2018 at 12:09 PM, John Hopkins <john_hopkins@greenwich.k12.ct.us> wrote:
All,

Thanks for getting through Day 1 of Trayless Tuesday. Now that we all feel better about decreasing our environmental foot print on this earth by eliminating 2700 polystyrene trays.....please share your feedback on how it went.

Was it a disaster?

How did the students react?

Did you innovate to make it easier?

Were there a lot of drops / over crowding of the tray?

Any teacher/administrator feedback.

My hope is that you will be able to share some secrets and advice with your peers that you thought of that they may not have.

Thanks.

John

--

John Hopkins
Food Service Director

[Greenwich Public Schools](#)
[290 Greenwich Avenue](#)
[Greenwich, CT 06830](#)
[Office \(203\) 625-7424](#)
Fax (203) 625-7455

We also tried Trayless Tuesdays at all the schools, substituting the Styrofoam trays with paper boats. I'll send more emails re. the program. This one is from John Hopkins, the Food Services manager.

----- Forwarded Message -----

From: John Hopkins <john_hopkins@greenwich.k12.ct.us>
To: Elementary Principals <ElementaryPrincipals@greenwich.k12.ct.us>; Secondary Principals <SecondaryPrincipals@greenwich.k12.ct.us>; Elem Principal AAs <ElemPrincipalAAs@greenwich.k12.ct.us>; Secondary Princ AAs <SecondaryPrincAAs@greenwich.k12.ct.us>
Cc: GreenSchools Greenwich <ptacgreenschools@gmail.com>; Michael Casey <caseymichael@hotmail.com>; Julie des <juliechamps@yahoo.com>; Large, Abbe <alarge@lenoxadvisors.com>; JAYNE-MARIE LOCKETT <Jayne-Marie_Lockett@greenwich.k12.ct.us>; David Nanarello <david_nanarello@greenwich.k12.ct.us>; Cafeterias <Cafeterias@greenwich.k12.ct.us>; LAURIE SMITH-CARBINO <Laurie_Carbino@greenwich.k12.ct.us>; Ann Carabillo <ann_carabillo@greenwich.k12.ct.us>; debra nielson <debra_nielson@greenwich.k12.ct.us>; KIM EVES <Kim_Eves@greenwich.k12.ct.us>
Sent: Tuesday, April 17, 2018, 10:47:29 AM EDT
Subject: Greenwich Food Services - Trayless Tuesday

Good Morning,

Partnering with PTAC Green Schools, the Food Service Department will be implementing "Trayless Tuesdays" beginning April 24, 2018. What began as a successful student initiative in Parkway School a few years back, the program will now be rolled out district-wide. Serving an average of 2700 meals a day, the district has a potential to reduce its use of polystyrene trays by 97,000 units. Developing menus that are paper boat friendly for Tuesdays will allow students to dine knowing they are taking positive steps to help the environment. Coordinating the roll-out with Earth Day this week is an ideal time to promote the reduction of the use of polystyrene products in our program and the effects these products have on the environment.

Students will be served their lunch in a large paper boat (9.5" x 6.5") that can accommodate a smaller paper boat if needed to separate wet items from dry items. They are sturdy with high walls and as easy to transport as our current trays.

Please feel free to communicate "Trayless Tuesday" to your parents and students as part of your Earth Day celebration and awareness.

One more note: our/your cafeteria staff will be working as hard as possible to make sure the student experience is as comfortable as possible. While we don't anticipate any major hiccups, it is something new that may require small adjustments as move forward and your comments/concerns are always welcomed. As always your support and encouragement is greatly appreciated.

Thank you.

John

--

John Hopkins
Food Service Director

----- Forwarded Message -----

From: GreenSchools Greenwich <ptacgreenschools@gmail.com>
To: John Hopkins <john_hopkins@greenwich.k12.ct.us>; Julie des <juliechamps@yahoo.com>
Cc: Abbe Large <alarge@lenoxadvisors.com>

Sent: Friday, March 16, 2018, 11:50:51 AM EDT
Subject: RE: foil, wax paper & paper boats

Thanks John. We updated our committee and the reps are very happy about all the plans moving forward. Have you made any determination with your team on when and how you are planning to roll this out? Is there anything you want the reps to do to help you out? If so, just let us know. Thanks.

Michael

From: [John Hopkins](#)
Sent: Friday, March 16, 2018 11:40 AM
To: [Julie des](#)
Cc: [GreenSchools Greenwich](#); [Abbe Large](#)
Subject: Re: foil, wax paper & paper boats

Julie,

I have received a sample of a 5# boat that is from the same manufacturer as the 3# boat, just larger. It will be the size we are going to use.

I have attached a picture of the manufactures information for you.

If you want to test the boat, then you can send the 3# you have from Tuesday's meeting.

Thanks.

JH

On Thu, Mar 15, 2018 at 3:12 PM, Julie des <juliechamps@yahoo.com> wrote:

Hi John,

Thank you for taking the time to discuss the pilot and options on Tuesday.

Yesterday, I met with Patrick Collins from Holly Hill and Mike Ferro of City Carting and asked them our foil vs. wax paper question. From a recycling perspective, they prefer the foil for its value and utility. The kids can give it a shake over the trash, ball it up and put it in the recycling, even with some food contamination.

Next, I asked Sue, who was not aware of any health issues with wax paper but she's double checking with her colleagues.

Re. the paper boats, Sue responded that they've only tested a limited number, but from those results, they don't expect there to be PFAS in them. She recommended avoiding the plastic-coated paper products if we plan to compost them (which we hope

to!). Once we settle on a product, let's send a sample for testing, just to be on the safe side.

I have an email inquiry to Clean Water Action about their criteria for the selecting the products they recommended in their report. I'm assuming that they vetted them well, but want to be sure.

Best, Julie

--

John Hopkins

Food Service Director

Greenwich Public Schools
290 Greenwich Avenue
Greenwich, CT 06830
Office (203) 625-7424
Fax (203) 625-7455

We worked with Sue Chiang from the Center for Environmental Health. She came to speak to us re. polystyrene and PFAS in disposable food service ware. CEH handled all the testing on the molded fiber trays and found all our samples to contain PFAS.

Sue put us in touch with Samantha Sommer from Clean Water Action, who made some other suggestions. CWA worked with Bishop O'Dowd to transition this private school from polystyrene to reusable baskets.

On Monday, March 19, 2018, 11:44:04 PM EDT, Samantha Sommer <ssommer@cleanwater.org> wrote:

Hello Julie- apologies that I took so long to get back to you. Would you like to set up some time to talk this Thursday or Friday AM PST? I can do 9am or 10am PST on either day. Sounds like a great project!
Thanks, Samantha

Samantha Sommer

Waste Prevention Program Manager
Clean Water Action | Clean Water Fund
[350 Frank H. Ogawa Plaza, Suite 200](#)
[Oakland, CA 94612 USA](#)
1 (415) 369- 9160 ext. 308
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www.rethinkdisposable.org



On Wed, Mar 14, 2018 at 5:41 PM, Julie des <juliechamps@yahoo.com> wrote:
Hi Samantha,

I'm sorry that we have not been able to chat yet, but I'm trying again. We just got approval to run a pilot program to replace styrofoam trays with reusable plastic baskets at one of our elementary schools. The pilot will be rolled out in April and run to the end of school in June. In the course of researching a plastic basket product, our Food Services Director discovered one with significant health warnings (specific to California). So, I referred him to the products listed in ReThink Disposable, *Reusable Foodservice Ware Guide*. However, I wanted to ask you what type of due diligence Clean Water Action has done on these products, so we can ensure we are not making a regrettable substitution. We will have considerable scrutiny by our community, so we want to make sure all our bases are covered....

Many thanks, Julie DesChamps

----- Forwarded Message -----

From: Julie des <juliechamps@yahoo.com>

To: Sue Chiang <sue@ceh.org>

Sent: Tuesday, March 6, 2018, 8:18:01 PM EST

Subject: THANK YOU!!

Hi Sue,

I can't thank you enough for joining Green Schools this morning. We've received such positive feedback from the attendees, who learned so much they can apply to this initiative and their daily lives (no more microwave popcorn for this bunch!). Your expertise on this topic and effective delivery of the material helped everyone better understand the issues around serviceware and the importance of making a change in our schools. Your visit has started the ball really rolling, and we are so appreciative of your support!

Did you suggest contacting Melissa Everett from Clean Water Action CT? I couldn't exactly remember the name you mentioned.

We also enjoyed meeting Janet. I hope you will make it to New Haven tomorrow - you have certainly had your share of bad weather during your homecoming. Be safe and take care!

Best, Julie

We worked with Sue Chiang from the Center for Environmental Health. She came to speak to us re. polystyrene and PFAS in disposable food service ware. CEH handled all the testing on the molded fiber trays and found all our samples to contain PFAS.

Sue put us in touch with Samantha Sommer from Clean Water Action, who made some other suggestions. CWA worked with Bishop O'Dowd to transition this private school from polystyrene to reusable baskets.

On Sunday, February 25, 2018 9:11 PM, Julie des <juliechamps@yahoo.com> wrote:
Hi Samantha,

My apologies! Your email response got completely lost in my inbox, and I just found it, as I searched for your name to reach out again.

I appreciate your willingness to help us find an alternative to polystyrene trays and spork packets in our school cafeterias. We are particularly interested in hearing more about reusable options, like plastic baskets, compartment trays and cutlery. Do you know of any schools that have installed new energy efficient dishwashers and switched to trays and cutlery? If so, do you have any cost analysis comparing before and after? This decision primarily will rest on the finances, and environmental/health benefits will unfortunately likely be secondary.

I was also interested in the plastic baskets used by Bishop O'Dowd, if you could share any more updated information on that program.

Please let me know if you are available to speak this week.

Many thanks!
Julie DesChamps
203-698-0434
juliechamps@yahoo.com

On Friday, February 9, 2018 4:17 PM, Julie des <juliechamps@yahoo.com> wrote:

Dear John,

Green Schools just received the official report on the disposable food service ware from the Center for Environmental Health (see below). Attached is a table of results specifically highlighting all of the tray samples tested for the report. Please note that in the three samples you provided to us, high levels of fluorine were detected, suggesting that fluorinated additives (or PFASs) were intentionally added, rather than occurring naturally or as background. PFASs are used in food services wares to impart resistance to moisture, oil and grease and more them

less prone to leaking and sticking. They are linked to numerous health problems, including cancer, thyroid disease, adverse developmental effects, decreased immune response and more. They are extremely persistent and break down very slowly in our bodies and the environment. For these reasons, they are not an acceptable alternative. You'll see that only one sample did not test positive for fluorine - a polylactic acid (PLA) product manufactured by Grow Plastics that is not yet available for purchase.

In light of these results, we would like to schedule a meeting with you to discuss this issue further and explore some solutions together. Green Schools has been investigating a number of options to replace the foam trays, both disposable and reusable, and would appreciate the opportunity to speak to you more about them. Please let us know your availability early in the week of February 27.

In addition, we have invited Sue Chiang, CEH's Pollution Prevention Director (and a GHS graduate), to present at our PTA Council Green School Committee meeting on Tuesday, March 6 at 9:30 am at the Garden Education Center. We hope that you will be able to join us.

Best,
Michael Casey
Meg McCauley Kaicher
Julie DesChamps

On Tuesday, February 6, 2018 8:17 PM, Sue Chiang <Sue@ceh.org> wrote:

Dear Webinar Attendee:

Thank you for your interest in the webinar that was recently hosted by the Center for Environmental Health (CEH) and the Responsible Purchasing Network (RPN), titled "*Toxic Chemicals in Disposable Food Service Ware: Emerging Concerns and How Safer Alternatives Stack Up.*" We hope it has been useful for you.



As we mentioned during the webinar, the Center for Environmental Health has been testing disposable foodware for the presence of harmful fluorinated "non-stick" chemicals known as "per- and polyfluoroalkyl substances" (PFAS). We are pleased to share with you CEH's newly released report, [*Avoiding Hidden Hazards: A Purchaser's Guide to Safer Foodware*](#), which includes test result findings.

The foodware report is designed to equip purchasers with the information, tools and other resources they need to procure healthier and environmentally preferable foodware options. Specifically, the report provides guidance on how to avoid foodware that contains PFAS. Accompanying the report is a searchable database with test results for 137 products that identifies which products do or do not contain these highly persistent and harmful fluorinated compounds. The report also explains why purchasers should be concerned about these chemicals in foodware and describes specific actions purchasers can take that will not only enable them to procure healthier products for their organization, but will also help shift the market towards safer products.

If you would like assistance on how to purchase non-fluorinated foodware, please contact CEH or RPN. If you have questions about [**CEH's report**](#), including the database, our findings, or

submitting additional products for testing, please reach out to Sue Chiang at the Center for Environmental Health (sue@ceh.org). The Responsible Purchasing Network also invites its members to contact Alicia Culver (alicia@responsiblepurchasing.org) and see [RPN's webpage](#) with additional resources on this topic.

Best,

Sue Chiang and Judy Levin, Center for Environmental Health (CEH)

Alicia Culver, Responsible Purchasing Network (RPN)

Sue Chiang, MPH, MPP | Pollution Prevention Director | Center for Environmental Health

On Thursday, January 25, 2018 8:05 PM, Samantha Sommer <ssommer@cleanwater.org> wrote:

Hi: thanks for circling back as I lost this in email space. I don't have anyone to recommend in CT nor do we have an active program on the east coast outside of NJ and RI. I am happy to hop on a call with you to discuss your campus's reusable pilot project. If you throw out a few days and times the week of Feb 5th, we will get something in the calendar. (I have looming grant reporting deadlines and work travel through Feb 2nd). Thanks for reaching out and I look forward to learning more about your efforts to reduce single use packaging in campus food service,
Samantha

Samantha Sommer

Waste Prevention Program Manager

Clean Water Action | Clean Water Fund

[350 Frank H. Ogawa Plaza, Suite 200](#)

[Oakland, CA 94612 USA](#)

1 (415) 369- 9160 ext. 308

www.cleanwater.org/ca

www.rethinkdisposable.org



On Thu, Jan 25, 2018 at 4:46 PM, Sue Chiang <Sue@ceh.org> wrote:

Hi Samantha-

I just left you a voicemail message and thought it might be good to follow-up with an email as well.

Would you be able to either assist Julie directly or refer her to someone? (I think you mentioned starting to enlist some CWA colleagues on the east coast recently but wasn't sure whether they are available and/or if you thought that would be a better match since Julie is in CT?)

Many thanks for any support that you can provide,
-Sue



Sue Chiang, MPH, MPP | Pollution Prevention Director | Center for Environmental Health
[2201 Broadway, Suite 302 Oakland, CA 94612](https://www.ceh.org/) T: 510.740.9389

From: Julie des [mailto:juliechamps@yahoo.com]
Sent: Monday, January 22, 2018 2:32 PM
To: ssommer@cleanwater.org
Cc: Sue Chiang <Sue@ceh.org>
Subject: Reusables in school cafeteria

Dear Suzanne,

As Sue Chiang mentioned, the Green Schools committee in Greenwich, CT is researching options for compartmentalized trays for our school cafeterias, as a replacement for the polystyrene trays we currently use. We were hoping to use a compostable molded fiber tray made from 100% recyclable material. However, the three samples we were given by our Food Services Manager recently tested positive for perfluorinated compounds, so now we are turning our attention to reusables.

We would greatly appreciate any advice you can provide. On the Rethink Disposable website, I watched the case study on Bishop O'Dowd High School. As most of our schools lack dishwashers, this would be an option for us. However, we could only use these for certain foods, and younger students may have difficulty handling them.

In addition, we are planning to ask the Board of Education to consider reusable trays and to conduct a survey and cost analysis. However, we anticipate considerable push back regarding the investment in the necessary infrastructure and the associated labor, so we need to make a convincing argument that encompasses the health, environmental and long-term economic benefits.

I found another study of two Minnesota middle schools that switched from disposables to reusables. They did a very interesting overall lifecycle environmental footprint change, including carbon emissions, water consumption and air emissions, using the Carnegie University EIO-LCA (<https://www.pca.state.mn.us/sites/default/files/p-p2s6-16.pdf>). Do you have any similar studies or a guide to cost analysis?

We look forward to hearing from you and working together to help our public schools become greener.

Best, Julie DesChamps

[Sue Chiang <Sue@ceh.org>](mailto:Sue@ceh.org)

To

[Julie des](#)

CC

[Samantha Sommer](#)

Jan 19 at 8:10 PM

Hi Julie-

Sorry for the delay in responding!

I am writing to connect you with Samantha Sommer, who is with Clean Water Action's Rethink Disposable program.

Samantha, Julie is a parent on the Green Team of a school district in Connecticut who is interested in investigating reusables. The district has been using Styrofoam lunch trays and she has been actively searching for more sustainable options. I know that you have been operating in California but it sounds like your program has been expanding to other parts of the country (which is terrific news).

By the way, I am happy to assist in whatever way I can as I actually attended the schools in Greenwich and still have family in the area.

Best, -Sue



Sue Chiang, MPH, MPP | Pollution Prevention Director | Center for Environmental Health
[2201 Broadway, Suite 302 Oakland, CA 94612](#) T: 510.740.9389

Check out CEH's recent efforts to protect families from toxic chemicals [here](#).

--

Samantha Sommer

Waste Prevention Program Manager
Clean Water Action | Clean Water Fund
350 Frank H. Ogawa Plaza, Suite 200
Oakland, CA 94612 USA
1 (415) 369- 9160 ext. 308

www.cleanwater.org/ca

www.rethinkdisposable.org



Who participated in this action:

Julie DesChamps, Green Schools

Michael Casey, Green Schools

Meg Kaicher, Green Schools

Abbe Large, Greenwich Public Schools, PTA Council

John Hopkins, Food Service Director, Greenwich Public Schools

Sue Chaing and Judy Levin, Center for Environmental Health (CEH)

Alicia Culver, Responsible Purchasing Network (RPN)

Samantha Sommer, Clean Water Action

Alexandra Moch, Greenwich Conservation Commission

Cos Cob Elementary School Staff:

Gene Schmidt, Principal

Dale Ginise and Elizabeth Mills, Custodians

Deb and April, Monitors

Mirjana Abramoviz and Heather Pagni, Food Services

Patrick Collins, Holly Hill Transfer Station

Mike Ferro, City Carting



**Presentation & Discussion:
“Avoiding Hidden Hazards: Guidance for Safer Foodware”**

SUE CHIANG

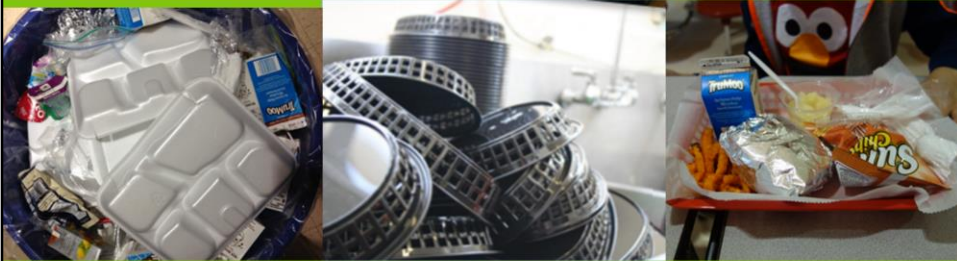
Pollution Prevention Director, Center for Environmental Health



**TUESDAY, MARCH 2nd at 9:30 am
GARDEN EDUCATION CENTER
130 Bible Street, Cos Cob**

FOAM-FREE SCHOOL LUNCH:

promoting children's health, environmental stewardship & waste reduction



Julie DesChamps

Greenwich Public Schools, PTAC Green Schools

March 25, 2018

Today, I'd like to share Green School's journey to achieve a foam-free school lunch by promoting children's health, environmental stewardship & waste reduction. While Green Schools has led efforts in cafeteria recycling and composting, we still have numerous challenges to further reduce waste.

FOAM-FREE SCHOOL LUNCH:

promoting children's health, environmental stewardship & waste reduction

- Goal: To replace current polystyrene trays with a safer, more sustainable reusable food serviceware



Our goal is to find a safer, more sustainable reusable foodware, to replace the single-use, disposable polystyrene – or Styrofoam - trays currently in use at Greenwich Public Schools. I'll discuss the issues with foam trays, the benefits and considerations of other disposables like paper boats and reusables like plastic baskets to demonstrate why Green Schools advocates for a transition to reusable wares.

Polystyrene Trays: Concerns

- **Student Health:** Styrene “reasonably anticipated to be a human carcinogen” (2011 National Toxicology Program) & classified as a neurotoxin (EPA)
- **Negative Environmental Impact**
- **Waste Management:** incineration & recycling challenges

**GOVERNMENT SAYS
2 MATERIALS POSE
A RISK OF CANCER**
USED DAILY BY MILLIONS
Formaldehyde, Styrene
and 6 Others Named,
Despite Lobbying
By GARDINER HARRIS

WASHINGTON — The government issued warnings on Friday about two materials used daily by millions of Americans, saying that one causes cancer and the other might.



This initiative was motivated by concerns over the use of polystyrene, as well as the large amount of waste generated in the cafeterias. One component of the foam trays – styrene – which is classified as a possible carcinogen and neurotoxin, can leach into hot or acidic foods or be ingested directly.

Foam wares have a negative impact on our environment due to the natural resources consumed and toxic chemicals used in its production.

Disposables, like polystyrene trays, also generate huge amounts of waste. In Greenwich the trash is incinerated in Peekskill, NY at a cost to taxpayers and our environment. While energy is produced during this process, harmful byproducts of incineration include air pollutants and ash. Waste disposal is not free – it is a burden on our wallets, the environment and our health.

But can't polystyrene be recycled? Currently in Greenwich, only clean foam trays without food contamination can be recycled. As a result, about 75% - or over 350 thousand trays enter our waste stream each year. That is over 3 million trays in the past decade. In addition, our town recycling guidelines will change this summer to exclude styrofoam, so shortly, all polystyrene trays will need to be tossed in the trash to be incinerated.

DISPOSABLES : Molded fiber trays

- Samples of molded fiber trays tested positive for fluorinated additives
- Per- & polyfluoroalkyl substances, or PFAS, added to food ware for water & grease resistance
- Associated with negative human health effects
- Very persistent in environment & our bodies
- Center for Environmental Health, *Avoiding Hidden Hazards* (www.ceh.org)



Because of our concerns over the foam trays, in fall Green Schools in coordination with Food Services investigated disposable molded fiber trays as a replacement... Through testing facilitated by the Center for Environmental Health - we discovered these wares contained high levels of per- or poly – fluoro -alkyl substances, or PFAS. These persistent PFAS – which are added to some foodware for water and grease resistance - are associated with serious human health conditions and adverse developmental effects in children. The CEH recently released a report on their research which is available online.

DISPOSABLES: Paper boats

Benefits

- Safer than polystyrene & disposables containing PFAS for student health & environment
- CEH testing for fluorinated additives: low or no PFAS
- Possibly compostable
 - Testing necessary for on-site composting



After learning about the PFAS in these wares, we looked for other disposable tray options. However, an inexpensive, multi-compartment tray that is safe and sustainable does not currently exist on the market – to our knowledge. So, Green Schools explored paper boats, which were piloted at Parkway School in 2011. One benefit of paper boats is that they are a safer option for student health & the environment, as tested samples contained either no PFAS or low levels. And they may be compostable in our onsite composting bins though we would have to test this.

DISPOSABLES: Paper boats

Considerations

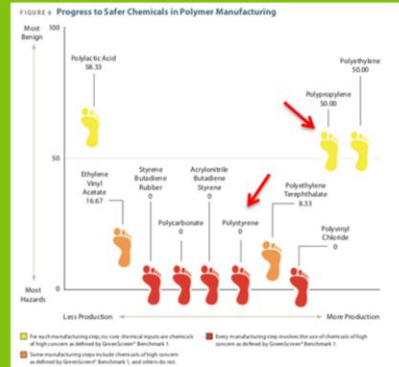
- Generate considerable waste
- Problems with recycling
- Same price as foam trays
- May be harder for youngest students to handle
- Useful for only particular foods
- No segregation of foods



However, if they cannot be composted, the paper boats will generate waste because they are not recyclable due to food contamination. These products are as expensive as foam trays (at 3 cents). They can be difficult for the youngest students to handle and are not good for saucy foods, and there is no separation of foods. For these reasons, we do not consider them a long term solution, although they could be used for Trayless Tuesdays.

Benefits

- 



It is also important to think beyond the initial cost of the item. While disposables seem inexpensive, the supply must be continually replenished. These ongoing costs add up fast.

On the other hand, reusables cost more upfront but will be used over and over again, and these cost savings accrue with every use. So our district can achieve considerable savings by investing in reusable serviceware.

REUSABLES: Plastic Baskets

Cost Savings for GPS

OF UPFRONT COST
FOAM TRAYS v. PLASTIC BASKETS*

	Foam Trays	Plastic Baskets**	Drying Racks
Cos Cob	\$1,083	\$392	\$200
GPS	\$14,993	\$5,649	TBD

*Based on 180 school days

**\$1.56 per reusable plastic basket (or 18.71/dozen)



We anticipate significant cost savings for our district by switching to reusable baskets, even in the first year. Here are the upfront costs for the initial purchase of the plastic baskets and drying racks versus the annual purchasing costs for foam trays in just one year. As you see, the disposable foam trays are approximately double the price of the reusables.

REUSABLES: Plastic Baskets

Cost Savings for GPS

NET CUMULATIVE ANNUAL SAVINGS AFTER 10 YEARS

	Cos Cob	GPS
Year 1*	\$631	\$8,488
Year 5**	\$4,739	\$65,043
Year 10**	\$9,874	\$135,748

*Savings after Return on Investment & replacement cost for 15% basket loss/damage; does not include purchase of drying racks.

** Includes a replacement cost for 15% basket loss/damage

The savings are magnified with time. Over a five year period – even accounting for replacement costs of plastic baskets – the anticipated savings at Cos Cob School total over \$4,700 and district wide over \$65,000. These figures double by year 10. I want to note that this is just the savings from disposable purchases. It does not include possible savings from reduced hauling fees due to the substantial reduction in volume and tonnage.

In light of these benefits – cost savings, student health, environmental footprint and waste reduction - Green Schools is advocating for the use of reusable plastic baskets in all district schools, and in partnership with Food Services is piloting a program at Cos Cob School, which Michael will now speak about.

Greening our Cafeterias: The Cos Cob School Pilot Program



Michael Casey
PTAC Green School Co-chair

The pilot program started on April 16th and will run through the end of the school year. This coordinated effort between Green Schools, John Hopkins and Food Services, Principal Gene Schmidt and the CCS staff, particularly lunch monitors, cafeteria staff and custodians made this possible. Green Schools took the lead on organizing the sorting center and the training and education of students with lunch monitors, while John and his staff worked with the cafeteria staff on new serving and cleaning procedures.

Advantages:



- Lightweight
- Easy to carry for all grades
- Similar size to styrofoam trays
- Able to hold complete meals
- Can be lined with either wax paper sheets or aluminum foil sheets
- Kid friendly
- Reusable

Reusable plastic trays have many advantages. Kindergarteners tested different size and shape baskets using wooden blocks to find the best fit.

New Sorting Center



Previously bins were placed in the center of the cafeteria and lunch monitors collected waste from the students. The new sorting center, where students line up and move through stations, allows students to take responsibility for waste disposal, learn how to properly recycle and reinforces the importance of composting and reducing food waste.

Station 1: Unwanted Foods

- Students leave unwanted and unopened food.
- Food is used by staff.
- Working to set up arrangement with non-profit for weekly collection.
- Practice of share tables encouraged by USDA Food & Nutrition Service



Food allowed in this basket includes unopened, commercially pre-packaged items such as cereal packs, yogurt, crackers, and cheese sticks, whole pieces of fruit and unopened milk or dairy products. This practice follows the USDA's Food & Nutrition Service guidelines for Child Nutrition Programs along with local and State health and food safety codes. As items cannot be resold, students can take any item at no additional cost, or items can be served during another meal service, like after school programs, provided to staff, or donated to a non-profit 501c3.
<https://www.fns.usda.gov/use-share-tables-child-nutrition-programs>

Station 2: Composting

- Students add leftover fruits and vegetables to the compost bucket.
- Students carry the bucket to the compost bin, dump it in and cover it with leaves.
- Lunch monitors rinse out the buckets after lunch.



We encourage students to take a reduce-first attitude by emphasizing that they should eat their lunches, save them for later or take them home. Otherwise, we use diversion strategies - the food collection basket and composting - to fight food waste and promote environmental stewardship.

Station 3: Liquids

- Students pour liquids into a bucket.
- Bucket is emptied in kitchen sinks by lunch monitors after each shift.
- Bucket is washed by lunch monitors after lunch.



Previously liquids were poured into the trash so that drink containers could be recycled making the trash bags heavy and vulnerable to leaking. Now leftover liquids are poured into the bucket before recycling container.

Station 4: Recycling Bins

- Teaching new town guidelines.
- Instructional posters.
- Bin only emptied after lunch.



Because of new town guidelines, the students needed to be retrained on proper recycling procedures. For 9 school days, Green School reps along with the lunch monitors guided students at this sorting station. We also created new posters for recycling and trash to aid in proper sorting. The main items being recycled include foil, empty drink containers, plastic containers like clamshells, and plastic utensils (basically all hard, clean plastics). With this system and the elimination of the foam trays, the recycling is cleaner and the volume of recycling is reduced.

Station 5: Trash

- Everything remaining disposed in trash
- Changes due to new town recycling guidelines:
 - Ziploc
 - Wrappers
- Remaining food and food-contaminated items



After properly sorting, whatever is left will be thrown in the trash. Again, Because of the changes in town recycling guidelines, resealable plastic bags and food wrappers - basically all soft plastic - must now be thrown in the trash along side everything else remaining. Despite more items being diverted to trash, the volume is down because of the use of reusable trays.

Station 6: Basket Return

- Students stack the baskets.
- Kitchen staff cleans the baskets according to town regulations.



Food Services purchased 250 baskets for the The Pilot Program and CCS serves approximately 188 meals a day allowing for each basket to be properly cleaned and dried after each use.

Daily Results:

Bags are based on volume

	Recycling (bags)	Trash (bags)	Composting (gallons)	Liquids (gallons)
Before*	4	5	0	0
After	1.6	1.6	4	4

*Estimate from custodians

With reusable trays and the sorting center, recycling has dropped 60% and trash dropped 68% by volume. The custodial staff now only empties the trash and recycling containers at the end of the 3 hour lunch period instead of 2-3 times during that period.

A waste audit was conducted prior to the sorting station with each students total waste being weighed. Another waste audit will be conducted soon for comparison. However a gallon of milk weighs 8.6 pounds. Sorting reduces the amount and weight of waste being hauled away saving the district money.

Annual Results:

Bags are based on volume

	Recycling (bags)	Trash (bags)	Composting (gallons)	Liquids (gallons)
Before*	720	900	0	0
After	288	288	720	720

*Estimate from custodians

Not only have we achieved a significant reduction of waste, the custodial staff reported that the floors are much cleaner.

Next Steps:

- Follow-up waste audit with CCS students in cafeteria
- Classroom educational material
- Continued student training
- GHS Innovation Lab program: fall 2018
- Professional development workshop
- Roll-out of plastic baskets throughout GPS: fall 2018

We are designing two PowerPoint presentations for use in the classroom to reinforce waste reduction behaviors. Green Schools is collaborating with Innovation Lab teachers for the fall semester, during which sophomores will learn about waste reduction and design sorting station prototypes that we hope can be used district wide. We also hope to organize a professional development workshop and staff training to encourage further waste reduction in our schools.

What can you do:

- Work with your Green School reps.
- Speak to your school's administration about recycling and composting opportunities throughout your school.
- Consider where and how to set up a sorting center.
- Enlist parents to help with cafeteria transition in the fall.
- Encourage parents to send in lunchboxes and snacks in reusable containers.
- Encourage parents to work with students at home on composting and recycling
- Educate and encourage your student as this is a learning process for all.

With continued success with the pilot, we plan to roll out the plastic baskets and sorting centers district wide starting in fall. We will need all of you to promote this initiative to your principals, teachers, staff, students and their families, emphasizing the importance of waste reduction in school cafeterias and its benefits - student health, cost savings, waste reduction and environmental protection.

Special Thanks to our Partners:

- John Hopkins and the Food Services Staff.
- Gene Schmidt, Principal of Cos Cob School and the administration of Cos Cob School.
- Cos Cob School PTA
- Cos Cob School lunch monitors, cafeteria workers, and custodial staff.
- Aleksandra Moch, Environmental Analyst, Conservation Commission.
- Patrick Collins, Environmental Operations Manager, Holly Hill Resource Recovery Facility.

Thank you.



FOAM-FREE SCHOOL LUNCH:

promoting children's health, environmental stewardship & waste reduction



Julie DesChamps
Greenwich Public Schools, PTAC Green Schools
March 25, 2018

FOAM-FREE SCHOOL LUNCH:

promoting children's health, environmental stewardship & waste reduction

- Goal: To replace current polystyrene trays with a safer, more sustainable reusable food serveware



Today, I'd like to share Green School's journey to achieve a foam-free school lunch by promoting children's health, environmental stewardship & waste reduction. While Green Schools has lead efforts in cafeteria recycling and composting, we still have numerous challenges to further reduce waste.

Our goal is to find a safer, more sustainable reusable foodware, to replace the single-use, disposable polystyrene – or Styrofoam - trays currently in use at Greenwich Public Schools.

Polystyrene Trays: Concerns

- **Student Health:** Styrene “reasonably anticipated to be a human carcinogen” (2011 National Toxicology Program) & classified as a neurotoxin (EPA)
- **Negative Environmental Impact**
- **Waste Management: Incineration & Recycling**

**GOVERNMENT SAYS
2 MATERIALS POSE
A RISK OF CANCER**
USED DAILY BY MILLIONS
Formaldehyde, Styrene
and 6 Others Named,
Despite Lobbying
By GARDINER HARRIS
WASHINGTON — The govern-
ment issued warnings on Friday
about two materials used daily by
millions of Americans, saying
that one causes cancer and the
other might.



This initiative was motivated by concerns over the use of polystyrene, as well as the large amount of waste generated in the cafeterias. One component of the foam trays – styrene – which is classified as a possible carcinogen and neurotoxin, can leach into hot or acidic foods or be ingested directly.

Foam wares have a negative impact on our environment due to the natural resources consumed and toxic chemicals used in its production.

Disposables, like polystyrene trays, also generate huge amounts of waste. In Greenwich the trash is incinerated in Peekskill, NY at a cost to taxpayers and our environment. While energy is produced during this process, harmful byproducts of incineration include air pollutants and ash. Waste disposal is not free – it is a burden on our wallets, the environment and our health.

But can't polystyrene be recycled? Currently in Greenwich, only clean foam trays without food contamination can be recycled. As a result, about 75% - or over 350 thousand trays enter our waste stream each year. That is over 3 million trays in the past decade. In addition, our town recycling guidelines will change this summer to exclude styrofoam, so shortly, all polystyrene trays will need to be tossed in the trash to be incinerated.

DISPOSABLES : Molded fiber trays

- Samples of molded fiber trays tested positive for fluorinated additives
- Per- & polyfluoroalkyl substances, or PFAS, added to food ware for water & grease resistance
- Associated with negative human health effects
- Very persistent in environment & our bodies
- Center for Environmental Health, *Avoiding Hidden Hazards* (www.ceh.org)



Avoiding Hidden Hazards
A Purchaser's Guide to Safer Foodware

Because of our concerns over the foam trays, in fall Green Schools in coordination with Food Services investigated disposable molded fiber trays as a replacement... Through testing facilitated by the Center for Environmental Health - we discovered these wares contained high levels of per- or poly – fluoro -alkyl substances, or PFAS. These PFAS – which are added to some foodware for water and grease resistance - are associated with serious human health conditions and adverse developmental effects in children. The CEH recently released a report on their research which is available online.

DISPOSABLES: Paper boats

Benefits

- Safer than polystyrene & disposables containing PFAS for student health & environment
- CEH testing for fluorinated additives: low or no PFAS
- Possibly compostable
 - Testing necessary for on-site composting



After learning about the PFAS in these wares, we looked for other disposable tray options. However, an inexpensive, multi-compartment tray that is safe and sustainable does not currently exist on the market – to our knowledge. So, Green Schools explored paper boats, which were piloted at Parkway School in 2011. One benefit of paper boats is that they are a safer option for student health & the environment, as tested samples contained either no PFAS or low levels. And they may be compostable in our onsite composting bins though we would have to test this.

DISPOSABLES: Paper boats

Considerations

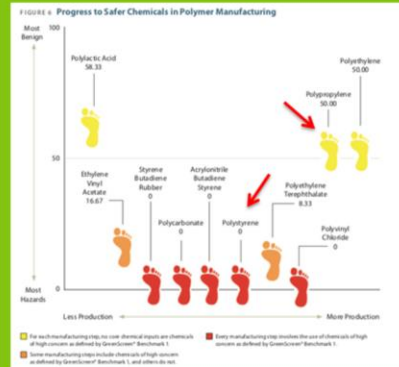
- Generate considerable waste
- Problems with recycling
- Same price as foam trays
- May be harder for youngest students to handle
- No segregation of foods



However, if they cannot be composted, the paper boats will generate waste because they are not acceptable recyclables due to food contamination. These products are as expensive as foam trays (at 3 cents). They can be difficult for the youngest students to handle, and there is no separation of foods. For these reasons, we do not consider them a long term solution.

REUSABLES: Plastic Baskets

- Student Health
- Environmental Impact
- Waste Reduction
- Dishwasher not needed
- Cost Savings



The overall impact on the environment is considerably less for reusable plastic baskets than disposables. According to the Clean Production Action's Plastic Scorecard shown, there are no core chemical inputs of high concern to human or environmental health in polypropylene manufacture, unlike polystyrene.

One of the greatest benefits of the reusable baskets is the reduction of waste.

Another benefit of plastic baskets is that a dishwasher is not necessary and they can be washed in a three-step system by hand. Greenwich Public Schools has only one

school with a dishwasher, and the costs, labor and space requirements to install new equipment may be prohibitive.

It is also important to think beyond the initial cost of the item. While disposables are relatively inexpensive to buy, the supply must be continually replenished. These ongoing costs add up fast. On the other hand, reusables cost more upfront but will be used over and over again. Eventually there is a breakeven point – or Return on Investment. As soon as this is reached, the schools will save money. These cost savings accrue with every use. So our district can achieve considerable savings by investing in reusable serviceware.

REUSABLES: Plastic Baskets

Cost Savings for GPS

OF UPFRONT COST
FOAM TRAYS v. PLASTIC BASKETS*

	Foam Trays	Plastic Baskets**	Drying Racks
Cos Cob	\$1,083	\$392	\$200
GPS	\$14,993	\$5,649	TBD

*Based on 180 school days

**\$1.56 per reusable plastic basket (or 18.71/dozen)



We anticipate significant cost savings for our district by switching to reusable baskets, even in the first year. Here are the upfront costs for the initial purchase of the plastic baskets and drying racks versus the annual purchasing costs for foam trays in just one year. As you see, the disposable foam trays are approximately double the price of the reusables.

REUSABLES: Plastic Baskets

Cost Savings for GPS

NET CUMULATIVE ANNUAL SAVINGS AFTER 5 YEARS

	Cos Cob	GPS
Year 1*	\$631	\$8,488
Year 5**	\$4,739	\$65,043
Year 10**	\$9,874	\$135,748

*Savings after Return on Investment & replacement cost for 15% basket loss/damage; does not include purchase of drying racks.

** Includes a replacement cost for 15% basket loss/damage

The savings are magnified with time. Over a five year period – even accounting for replacement costs of plastic baskets – the anticipated savings at Cos Cob School total over \$4,700 and district wide over \$65,000. These figures double by year 10. I want to note that this is just the savings from disposable purchases. It does not include possible savings from reduced hauling fees due to the substantial reduction in volume and tonnage.

Green Schools is advocating for the use of plastic baskets in all district schools, and in partnership with Food Services is piloting a program at Cos Cob School, which Michael will now speak about.



Figure 1: Recycling Bin



Figure 2: Plastic Trays with liner



Figure 3: Liquids and Compost bins



Figure 4: Recycling, liquids, and compost bins



Figure 5: Recycling bin with poster



Figure 6: Kitchen cleaning area



Figure 7: Students using the bins



Figure 8: Students composting



Figure 9: Kitchen staff cleaning baskets



Figure 10: Students with compost bin



Figure 11: Unopened food basket



FOAM-FREE SCHOOL LUNCH

promoting children's health, environmental stewardship & waste reduction



What are the issues with the foam trays in Greenwich Public Schools (GPS) cafeterias?

Our children's lunches are served on a tray made of a foam product, also known as Styrofoam or polystyrene. While this foodware is cheap, polystyrene is a harmful material with respect to the health of our children & the environment. At approximately 3 cents per tray, an affordable & safe disposable alternative seems challenging to find. Yet the long-term health & environmental impacts of foam trays are not reflected in that cost.

What are the health hazards of foam trays?

Cafeteria foam trays contain styrene, a chemical classified as a possible human carcinogen & a neurotoxin (IARC & HHS). Chronic exposure to styrene also increases risk for depression, headache, fatigue & kidney dysfunction (EPA). Styrene can leach into hot & acidic foods from foam serveware & can be ingested when students scrape the trays with utensils.

What is the impact of foam tray manufacture on health & the environment?

Styrofoam is made from petroleum, a non-renewable resource. Every step of its production involves chemicals of high concern to the environment & human health (Clean Production Action). Styrofoam production was rated as the 5th largest source of hazardous waste (EPA). It creates a trail of harmful pollution & waste for just minutes of use!

How much waste do foam trays generate in our schools & why does this matter?

Due to food contamination, the majority of trays are thrown in the trash instead of recycled. With new town recycling guidelines, these trays will no longer be acceptable recyclables. Each year about 75%, or over 350,000, cafeteria trays enter the waste stream. That's over 3.5 million foam trays in the past decade tossed in the trash to be incinerated at a cost to taxpayers. The byproducts of incineration include air pollutants and ash that must be landfilled. Waste disposal is not free; it is a burden to our health, our environment and our wallets.

Why not switch to a safer disposable?

While other disposables are available, they generate considerable waste, cannot be recycled due to food contamination, & are an ongoing expense. In addition, recent research reveals that some disposable foodware contains fluorinated additives (PFAS) to provide grease, oil & water resistance. PFAS are associated with serious health problems, & children are especially at risk because their developing bodies are more vulnerable to these persistent toxic chemicals. A safer, affordable, single-use tray does not currently exist on the market. Paper boats are a safer option but they are difficult to handle, cannot be used for all foods and must be thrown in the trash, so they are not a long-term solution in our cafeterias.

Why are reusable trays the best option for GPS schools?

The most responsible way to reduce the health & environmental impact of foam trays is to switch to reusable wares, like plastic baskets. There are numerous benefits of durable plastic baskets, as demonstrated by the GPS pilot program:

- Safer for student health
- Smaller environmental footprint
- Significant reduction of waste
- Dishwasher not required
- Considerable cost savings, both short & long term

What are the next steps?

- District-wide roll out starting fall 2018
- Continued student training
- Classroom educational materials
- Professional development & training workshops
- Collaboration with GHS Innovation Lab
- Community support

