November 19, 2012

Dear Amherst Town Meeting Member:

I am writing to you on behalf of Dart Container to ask for your opposition to Article 9 that will be addressed at the November 19, 2012 Amherst Special Town Meeting. Dart opposes Article 9 which seeks to ban disposable polystyrene foam* foodservice containers in the town of Amherst.

As a matter of introduction, Dart Container is a leading manufacturer and recycler of a broad range of high quality, cost-effective foam and solid polystyrene and other plastic single-use products for the foodservice industry. As a responsible corporate citizen that has been in business for more than half a century, Dart supports and shares in efforts to minimize the amount of packaging that is disposed of and its effect on the environment.

The issues before us are largely science-based and often technical in nature and it is vitally important that any efforts regarding these issues are based on credible, accurate, factual and comprehensive information.

However, because a tremendous amount of misinformation and misconception exist, as well as an overall lack of understanding about polystyrene packaging and the environment – particularly about the realities of solid waste and its management – Dart established a department almost 25 years ago specifically dedicated to environmental issues that works to provide current, well-documented, factual information on our products and the environment, and to develop environmental answers and solutions for our customers and the general public.

As a result of our efforts, Dart is nationally recognized as a leader in understanding and promoting the facts about polystyrene foodservice products and associated environmental issues, and has received special recognition for our environmental efforts from the United States Congress, the California State Legislature, the American River Parkway Foundation, McDonald's Corporation, the California Integrated Waste Management Board and others.

Dart urges you to consider the following realities regarding the environmental performance and safety of polystyrene foam foodservice containers.

Polystyrene foam foodservice products are safe and pose absolutely no harm to consumers

To begin, polystyrene foam food service products are safe and pose absolutely no harm to customers. Food packaging is carefully designed to be effective in preventing food spoilage and contamination while having limited transfer of its component substances to the food it contacts, and is subject to an extensive *premarket* approval process at U.S. Food and Drug Administration (FDA) that considers chemistry, toxicology, environmental impact and dietary exposure data as part of a detailed risk assessment.

Specifically, polystyrene food packaging has been used safely for more than a half of a century in food contact applications with no validated scientific evidence that it poses any human health concerns. Also, in that time, there has never been a documented case of someone being harmed from their use of polystyrene foodservice products.

** The brand name STYROFOAM™ often is misused as a generic term for foam foodservice products. STYROFOAM™ is a registered trademark of The Dow Chemical Company that represents its branded building material products, including rigid foam and structural insulated sheathing, and more.*

- Styrene in Context

Polystyrene is made from styrene, though polystyrene, a solid plastic, should not be confused with the chemical styrene, which is a liquid. As a polymerized form of styrene, polystyrene is not chemically the same substance as styrene.

Modern man has known about styrene for centuries, as it is a naturally occurring substance. Styrene is present in many foods and beverages, including wheat, beef, strawberries, peanuts and coffee beans. Also found in the spice cinnamon, its chemical structure is similar to cinnamic aldehyde, the chemical component that elicits cinnamon's flavor. It is naturally present to flavor foods, and is used as a flavoring additive to such food as baked goods, frozen dairy products, soft candy, and gelatins and puddings, with permission from the FDA.

Styrene is not harmful in the very small amounts we sometimes may encounter in air or food. Styrene is a clear, colorless liquid that is a component of materials used to make thousands of everyday products for home, school, work and play, providing strength, flexibility, and lightweight. Many products made from styrene contribute to increased personal health and safety. Probably the most recognizable material is polystyrene, which is often used in applications where hygiene is important, such as health care and foodservice products. Health organizations endorse the use of single-use foodservice products like polystyrene because they provide increased food safety and lessen bacteria/food-borne illness in hospitals, schools, nursing homes, cafeterias and foodservice establishments.

Most people are exposed to styrene every day in tiny amounts that may be present in the air, or that occur in food. These generally are trace amounts, which were difficult to detect until recent technological advances occurred. Any residual styrene present in a polystyrene foodservice container is so small that it does not cause negative health effects.

- Human Health

The chemical industry is one of the most pervasively regulated industries in the country, and rightly so. If chemicals are not managed safely, they can have significant health and environmental consequences. Specifically, polystyrene and other plastics have been used safely for more than 50 years in food contact applications with no validated scientific evidence that they pose any human health concerns.

Polystyrene foodservice disposables meet stringent FDA standards for use in food-contact packaging and have been in use for over 50 years with a proven safety record. FDA, which regulates plastics used in food contact applications, the National Academy of Sciences (NAS), and other highly regarded federal authorities rely not on opinions, but on the weight of validated scientific evidence. The weight of scientific evidence overwhelmingly supports the safe use of polystyrene in food contact applications.

After an exhaustive assessment of styrene's possible health and environmental effects, an important decision was made in 1994 by the government agencies Health Canada and Environment Canada. These agencies concluded that styrene is "non-toxic" for regulatory purposes. Health Canada found that styrene "does not constitute a danger to human life and health" and "does not constitute a danger to the environment on which human life depends."

Moreover, according to the Harvard Center for Risk Analysis (HCRA) report "A Comprehensive Evaluation of the Potential Health Risks Associated with Occupational and Environmental Exposure to Styrene," which was published in the Journal of Toxicology and Environmental Health, Volume 5, Number 1-2 (Part B: Critical Reviews), January-June 2002, "The margins of exposure estimated for oral exposure to styrene from food, whether naturally occurring or as a result of migration from food packaging or other food contact items, indicate that risks are quite low and of no concern. The comparison dose used to derive the margins of exposure was

obtained from a study using newborn rats, so those margins of exposure are expected to be protective of children as well as adults."

The results of extensive health studies of workers in styrene-related industries collectively show that exposure to styrene does not increase the risk of developing cancer or any other health effect. Results of a two-year styrene inhalation study in rats exposed to high concentrations of styrene, completed in 1996, also showed no increased incidence of cancer.

- Regulatory Information

In 1989 the Occupational Safety and Health Administration (OSHA) and the U.S. Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health (NIOSH) reviewed the health data on styrene and concluded that styrene does not pose any cancer risk. An international panel of experts from the 12-nation European Community reached the same conclusion in 1988. Canada decided in 1994 that styrene posed no carcinogenic risk. A draft 1996 risk assessment of styrene by the Health & Safety Executive of the United Kingdom also concluded that styrene does not pose a carcinogenic threat.

The FDA, which regulates plastics used in food contact applications, the National Academy of Sciences (NAS) and other highly regarded federal authorities rely, not on opinions, but on the weight of validated scientific evidence. The weight of scientific evidence overwhelmingly supports the safe use of plastics in food contact applications. FDA also allows styrene as a food additive for flavoring.

In 1987, the International Agency for Research on Cancer (IARC) upgraded the classification of the chemical styrene from a Group 3 "not classifiable" to a Group 2B "possibly carcinogenic to humans." This reclassification resulted from revisions to IARC's classification scheme and considerations of styrene oxide, an intermediate formed during styrene metabolism. No new data from human epidemiology or long-term animal studies prompted the reclassification. In 1994 and 2002, IARC again considered styrene and kept it in Group 2B. This classification continues to be controversial among some scientists. It is important to note that IARC specifically states that its classifications are intended for hazard identification only, and should not be used for regulatory purposes.

The large body of validated scientific data on styrene does not suggest it is a human carcinogen. Major epidemiology studies of workers exposed to high levels of styrene have found no cancer or endocrine health effect concerns, therefore the public should not be concerned over minuscule exposures from natural sources or consumer products. Moreover, polystyrene provides the important benefits of preserving the freshness of food, reducing contamination and spoilage, and protecting against food borne illnesses.

- June 2011 National Toxicology Program Report

The safety of polystyrene foam foodservice products has been challenged by confusion surrounding the public release of the National Toxicology Program's (NTP), a division of the U.S. Department of Health and Human Services (HHS), 12th Report on Carcinogens (RoC). In that report released June 10, 2011 styrene was listed as "reasonably anticipated to be a human carcinogen."

While the classification dealt with *styrene*, there has been much confusion surrounding this report brought about by misinterpretation of the report through some media outlets which have called the safety of polystyrene into question. It is very important to note that polystyrene is not styrene, and that the NTP has also publicly stated, "Styrene should not be confused with polystyrene (Styrofoam). Although styrene, a liquid, is used to make polystyrene, which is a solid plastic, we do not believe that people are at risk from using polystyrene products."

Styrene is a clear, colorless liquid that is a component of materials used to make thousands of everyday products, including foodservice packaging. It also occurs naturally in foods such as cinnamon, coffee beans,

peanuts, strawberries, and wheat. Some people confuse styrene, which is a liquid, with polystyrene, which is a solid plastic made from polymerized styrene. Styrene and polystyrene are fundamentally different materials. Foam cups are made from polystyrene.

This styrene classification is untrue based on years of studies on the toxicity of styrene on humans. No other government agency outside the United States agrees with this decision as agencies from the European Union, Canada, Japan and Hong Kong have conducted similar studies on styrene and completely disagree with the NTP's conclusions as stated in the Report.

It is also important to note that NTP admits that its classifications, which are hazard assessments, do not determine the risk of a given substance and should not be used for regulatory purposes. The NTP report cautioned: "Listing in the report does not establish that such substances present a risk to persons in their daily lives."

Because it is a high-volume substance used in many important applications, styrene is one of the most widely studied substances. The research, conducted in Europe, the United States, and Japan, clearly supports the conclusion that it is safe to eat hot or cold foods packaged in polystyrene.

It is worth mentioning that all the scientific studies simulated highly exaggerated exposure conditions: The dose selected for one of the studies was equivalent to a daily intake of yogurt equivalent to eating 30 six-ounce cups of yogurt a day—far more than even the most fanatic enthusiast consumes.

The U.S. Food & Drug Administration (FDA), yet another division of HHS, has determined that the small amount of styrene found naturally in common foods and in foam products is safe for consumption. In 1997 and 2002, the FDA reviewed technical studies showing that the maximum amount of styrene that could migrate from polystyrene food-contact packaging is very small. The studies concluded that styrene presents no health and safety concerns. In 2002 a panel of international experts selected by the Harvard Center for Risk Analysis reported that the very low levels of styrene present in foods does not represent a concern to human health.

It is important to note that all food service packaging products - whether made from plastic, glass, aluminum, steel, ceramic or paper - contain trace amounts of substances that may transfer into foods and beverages. The U.S. Occupational Safety & Health Administration (OSHA) recommends a voluntary styrene exposure standard of 50,000 ppb in an eight-hour period. In the case of polystyrene food service packaging, 5-10 parts per billion (ppb) may transfer. In fact, people ingest styrene primarily (90 – 99 percent) from the air (auto exhaust and cigarette smoke), and from food (1 -10 percent).

The following chart shows the levels of naturally occurring styrene in a variety of foods:

• Food (with no packaging contact)	• Range of styrene exposure (ppb)
• Beef	• 5.3 – 6.4
• Beer	• 10 - 200
• Cinnamon	• 170 – 39,000
• Coffee beans	• 1.6 – 6.4
• *Foam cup*	• *5 - 10*
• Peanuts	• 1.2 - 2
• Strawberry (one)	• .37 – 3.1
• Wheat	• .4 - 2

As to suggested behavioral changes resulting from the styrene listing, the RoC's styrene summary suggests stopping smoking, limiting children's exposure to second hand cigarette smoke, and adhering to federal government regulations.

- Health Experts and Agencies Views

The Director of the very agency that issued the report, as well as others, state that polystyrene foam foodservice products are safe:

U.S. National Toxicology Program (NTP): Dr. Linda Birnbaum, Ph.D., Director, U.S. National Toxicology Program was quoted widely in Associated Press reports in June 2011: "Let me put your mind at ease right away about polystyrene foam*" … [the levels of styrene from polystyrene containers] "are hundreds if not thousands of times lower than have occurred in the occupational setting...In finished products, certainly styrene is not an issue." *Source: news reports of Associated Press story, June 2011*

U.S. National Institutes of Environmental Health Sciences (NIEHS): NIEHS in June 2011 noted: "Styrene should not be confused with polystyrene (foam)*. Although styrene, a liquid, is used to make polystyrene, which is a solid plastic, we do not believe that people are at risk from using polystyrene products." *Source: NIEHS web site*

John Bucher, associate director of the National Toxicology Program: Mr. Bucher was quoted in Associated Press reports in August 2011: "The risks, in my estimation, from polystyrene are not very great," he said. "It's not worth being concerned about." *Source: news reports of Associated Press story, August 2011*

Otis Brawley, Chief Medical Officer, American Cancer Society: Bloomberg News in June 2011 reported that Brawley said, "Consumers don't need to worry about polystyrene cups and food containers..." Quote: "I see no problems with polystyrene foam* cups." *Source: Bloomberg News, June 2011*

The U.S. Food & Drug Administration: Based on scientific tests over five decades, FDA has determined that polystyrene is safe for use in foodservice products. Polystyrene meets the FDA's stringent standards for use in packaging both to store and to serve food.

Harvard Center for Risk Analysis: A twelve-member panel of international experts selected by the Harvard Center for Risk Analysis reported in 2002 that the very low levels of styrene present in foods – whether naturally occurring or from polystyrene foodservice products – does not represent a concern to human health.

Solid waste realities

According to the U.S. EPA and other credible sources, all polystyrene foodservice (foam and non-foam) cups and containers account for less than 1.0 percent by weight and volume of the municipal solid waste stream. The largest contributor to total municipal waste is organics (food scraps/yard trimmings) at 20 percent.

In addition, contrary to popular public belief, waste materials do not readily biodegrade in modern landfills. Modern landfills are regulated under strict federal and state regulations to ensure protection of human health and the environment. Today's modern MSW landfills are not like compost piles, where the purpose is to process materials in such a way that they will decompose quickly. Modern landfills are actually designed to keep waste from the environment and to minimize biodegradation.

The reality is that very little waste biodegrades in a landfill. Highly regulated and highly engineered modern landfills are designed to discourage biodegradation by removing oxygen, sunlight (heat), and water. Also, because biodegradation can lead to the release of harmful methane gas or leachate, which can contaminate air and groundwater, it is actually preferable to place non-biodegradable rather than biodegradable products in landfills.

Polystyrene Foam Foodservice Products Comprise a Very Small Portion of Litter

Commonly used polystyrene foam food service products make up 1.5 percent of litter, according to a new report that surveys recent studies on litter. The May 2012 report by environmental consulting firm Environmental Resources Planning "examined a variety of litter surveys to determine the extent to which polystyrene foam food service products contribute to litter."

ER Planning compiled information from nineteen litter surveys conducted in the U.S. and Canada from 1994 to 2009, including a 2008 national survey of 240 sites. The firm reviewed surveys that used statistically valid quantification and characterization methodologies. The report finds that polystyrene foam food service products "consistently constitute a small portion of litter (1.5 percent). Evaluating just the surveys conducted since 2000 yields an even lower median value of 1.1 percent."

Surveys included in this review met the following criteria:

- Statistically valid quantification and characterization methodologies were used.
- Polystyrene foam food service products were specifically quantified.
- Littered items were quantified by count. Counts are much more precise and have lower variability between measurements than either volume or weight, which are both useful measures, but only when recorded along with a tally of littered items.
- No survey conducted before 1994 was included, because the information might be considered outdated.

Product bans do not effectively reduce waste and litter

There exists a widely-held misconception that litter is a problem caused by one particular material or one particular type of packaging rather than irresponsible consumer behavior, which is the true cause. The reality is that some people improperly dispose of materials by littering. Littering is a matter of behavior; people who discard materials into the environment usually do so because they don't think or don't care.

The fact is that eliminating polystyrene foodservice products (or any other product or material) would simply change the composition of waste that is generated and the litter that is found on our streets and waterways not reduce the quantity or eliminate the negative effects of the irresponsible human behavior that put it there in the first place. All products must be packaged in some type of packaging. There is no environmentally acceptable form of litter, and focusing on one specific packaging type falls short of a comprehensive policy that is needed to address litter.

Legislative initiatives which ban or severely limit the use of products in the marketplace – especially bans on polystyrene foam foodservice products – are misguided attempts to address the issues of solid waste and litter. Bans on specific products simply do not reduce solid waste or litter as litter is the result of human behavior, not a product or material itself. Often, emotional responses to these issues are pursued with a willful disregard of principles of sound science, evidence and logic, rather than practical solid waste management solutions.

Dart is aware of the following evidence and testimonials that polystyrene bans do not work:

- Data from a recently completed litter re-audit done for the City of San Francisco confirms that eliminating all food-related polystyrene would simply change the type of litter found. Specifically, all paper cups observed (hot, cold, and other), increased to 2.41 percent of total litter in 2008 from 1.82 percent in 2007, while polystyrene cups decreased to 0.78 percent from 1.13 percent during the same period.
- The Santa Barbara, CA City Council directed staff to evaluate the merits of banning polystyrene foodservice products. Staff found through their research that a ban on polystyrene would only be effective and have a net benefit to the environment if the foodservice ware was made from compostable material and that any benefits could only be realized with a citywide organics collection and composting program – which the city does not have.

- Carmel, CA City staff confirmed in a June 3, 2008 staff report that since the inception of its 1989 ordinance to ban polystyrene foodservice, "…the problem of food packaging waste litter has not improved…"
- In a December 2005 opinion-editorial to the Ventura County Star, Jean-Michel Cousteau, the founder of the California-based Oceans Future Society and son of famed ocean explorer, Jacques Cousteau, wrote:

  California's beaches are a natural treasure and we need the public's help to protect them. But history teaches an important lesson: ***bans don't work*** *[emphasis added.] If a community bans Styrofoam and plastic carry-out containers, coffee cups, picnic ware and similar items, we know what will happen: individuals and businesses will switch to other disposable products, such as glass, aluminum, and wax-covered cardboard. The amount of litter will not change, only its composition. That's why bans are overly simplistic and don't get to the real cause of the problem…*

  Public education and stricter enforcement of existing litter laws, with appropriate penalties, would help remind both our fellow Californians and the thousands of visitors who come here each year that it is their personal responsibility and civic duty to keep California clean. Unfortunately, there will always be litterbugs among us. Bans have no effect at all on such people. Irresponsible human behavior cannot be addressed by eliminating products in society.

Polystyrene is recyclable

Polystyrene is a thermoplastic, which means that it can be completely recycled. Foam (and non-foam) polystyrene foodservice products are technically very easy to recycle, and can be recycled as part of an integrated solid waste management strategy.

Though the challenge to recycling polystyrene foam is in the efficient and economical collection of clean material and transportation to a recycling facility, at this time, single-use polystyrene foam foodservice products are not only recyclable, they are the most recycled of all foodservice materials today – paper or plastic – and are recycled in select locations in North America.

However, due to unfavorable economics associated with transportation and contamination issues, no disposable foodservice products (e.g., plastic, paperboard, other), including post-consumer polystyrene foam, are widely recycled currently.

And, in contrast to polystyrene foodservice products, the reality is that single-use paperboard foodservice products are not recycled because most paper foodservice products are made from multiple materials. Most of these products are coated with polyethylene plastic or wax that enable them to safely hold foods and liquids, but makes them very difficult to successfully recycle.

As evidence of Dart's efforts to minimize the amount of packaging that is disposed of and its effect on the environment, we have been a proactive and positive partner with our customers and the public in developing and promoting innovative polystyrene foam foodservice packaging recycling programs. Currently, Dart is capable of reprocessing 12 million pounds of both pre- and post-consumer foam products annually, and encourages the recycling of post-consumer polystyrene foam products by offering these options:

- Dart currently operates polystyrene foam recycling drop-off locations (15) at our North American production plants (U.S., Canada and Mexico) and one in the UK for anyone who wishes to recycle foam products. These plants receive foam from individuals, local schools, community recyclers, commercial businesses, hospitals and manufacturing plants. Dart sells its recycled polystyrene foam to manufacturers who reprocess it into useful products.

In addition, back in 1990, Dart instituted two portable, off-site recycling programs for our customers:

- The first program, CARE (Cups Are REcyclable), provides larger institutional users of foam products (and municipalities) with an integrated, efficient method of recycling. The customer leases a densifier on the premises to crush all postconsumer foam foodservice products (e.g., cups, plates, bowls, and clam shell containers) into a cylinder for convenient storage and transportation. The cylinder is then backhauled on a Dart truck for reprocessing at a Dart recycling facility.
- The second effort, Recycla-Pak, is a mail-back program designed for beverage service on a smaller scale. The program allows businesses such as delis or coffee shops to collect and return used foam cups only in specially-designed Dart Recycla-Pak cartons, shipping prepaid. The cups are then recycled at a Dart recycling facility.

These off-site programs warranted recognition from the EPA's Office of Solid Waste in a 1992 letter, stating: "Dart's initiatives to foster recycling of its products are precisely the sort of actions that we would like to see adopted throughout corporate America."

Dart has also been a proactive and positive partner with local governments, primarily in California and Michigan, and now on the east coast of the United States, in developing, implementing and promoting innovative recycling programs, including:

- Curbside Recycling
  - In the U.S., 20 percent of the population of the state of CA has access to curbside foam recycling (57% of the population of L.A. County)
  - Los Angeles, Long Beach, Torrance, Pasadena and Thousand Oaks California are a few of the approximately 40 cities that collect and recycle post-consumer polystyrene foam foodservice products in their residential blue box collection programs (for a list of cities that offer curbside recycling, go to www.dart.biz/recycleCA)
  - Other: In Ontario, Canada, approximately 90 municipalities, including the City of Toronto, representing over 50 percent of all households in the province of Ontario, have access to curbside and/or drop-off recycling programs that collect post-consumer foam cups and containers.

- Drop-Off Programs
  - In Michigan, Dart has established more than 40 polystyrene drop-off locations in over 30 counties.
  - In the mid-Atlantic area of the U.S., a growing number of municipalities have recently partnered with Dart on a program to collect postconsumer foam from designated drop-off sites. Local residents, businesses and organizations can bring their used foam products to these sites where it will be collected and transported to Dart's nearby manufacturing facilities for processing. Since July of 2011, Dart has implemented these recycling programs with the state of Delaware, the cities of Philadelphia and Baltimore, Dauphin County (Harrisburg), Pa., and Carroll, Howard and Cecil Counties in Md.
  - Dart has partnered with the City of Roseville, CA on a foam recycling program by assisting them with the purchase of a commercial grade densifier, and with Stockton Recycling through PFPG for a public drop-off location in Stockton, CA.

- School Lunch Tray Recycling
  - Polystyrene foam lunch trays have been recycled in the Boston School system since 2000 and Cambridge's school trays are also being recycled currently.
  - Dart works with hundreds of public schools, five state universities, and the State of Michigan to recycle all types of foam polystyrene products.
  - The following CA schools are now recycling their foam lunch trays: El Segundo USD, Torrance USD, Manhattan Beach USD, Chula Vista USD, Lodi USD, Culver City USD, Los Alamitos USD, Monrovia USD, Ontario USD, Pasadena USD, Santee USD, South Bay USD, and Valley Center USD.
  - The following non-CA schools are now recycling their foam lunch trays at Dart drop-off locations: Arlington Heights USD #25, Chicago, IL, Freeman Elementary, Aurora, IL, Hope D. Wall School, Aurora, IL, Wake County Schools, NC, Ann Arbor Public, Ann Arbor, MI, Essexville Hampton, Essexville, MI, Rosedale Elementary, Livonia, MI, Marie Elementary, Grosse Pointe, MI, Post Oak

Elementary, Lansing, MI, U of Michigan, Ann Arbor, MI, Western Michigan, Kalamazoo, MI, Kalamazoo Collage, Kalamazoo, MI, Central Michigan, and Mt. Pleasant, MI.

Finally, regarding recycling, Dart is very willing to work with Amherst officials to realize recycling solutions for post-consumer polystyrene foodservice containers.

Currently "biobased" foodservice products made from renewable resources are not the answer

Biobased products, products made from renewable resources, are currently generating a lot of interest, and given this high level of interest, it is important to have a clear understanding of the facts regarding the availability and performance of bioplastic foodservice packaging.

Presently, the bioplastic foodservice packaging industry is very small, and there are very few *commercially-viable* bioplastics foodservice packaging products in existence today. There have been many claims made for both performance and product growth that have not been realized. At this time, products made from bioplastics are capable of displacing about 2.0 percent of the total annual pounds of polystyrene currently produced for foodservice applications in North America.

Regarding performance, NatureWorks, generally recognized as the world's largest producer of bioplastics, states on its website that their products are biodegradable only in an industrial composting facility with proper moisture levels and temperatures:

> "Ingeo biopolymer should be composted in industrial compost facilities, which contain the right managed combination of temperature and moisture. Therefore, it is not recommended for use in typical backyard composting due to the lack of high temperature and inconsistent conditions." **http://www.natureworksllc.com/faqs.aspx#degrade**

However, that reality is that there are very few of these facilities available in the U.S. Although greater amounts of municipal solid waste (MSW) have been recycled and composted in the last forty years, the majority of MSW generated in the United States is still safely disposed of in landfills.

There is also a concern that degradable packaging may lead to an increase in the amount of litter by giving the public a lessened sense of responsibility for properly disposing of waste. In addition, when considering the compostability of paper foodservice products, because most paper foodservice products are coated with polyethylene plastic, wax, or other nonbiodegradable materials, the fact is that they are essentially no more degradable than polystyrene products.

Regarding whether or not these materials biodegrade in landfills, according the Biodegradable Plastics Institute, there is no scientific data available which shows that "biodegradable" plastics will fulfill consumer's expectations under landfill conditions (i.e., breaks down completely into nothing in 12 months or less).

These products may become more main stream in the future, but at this time, the reality is that single-use foodservice products made from bioplastics are not viable as a replacement for single-use polystyrene foodservice products. Still, Dart is actively working on developing bioplastic products. We currently have a database of almost 200 companies and individuals working with new, green materials, have nondisclosure agreements with over a dozen companies to investigate and test their products, and have the following materials currently under consideration: materials from renewable resources; biodegradable materials; additives to improve performance of biodegradable materials; materials that lower emissions or energy usage; and additives to lower environmental impacts of polystyrene.

It is Dart's intention to ensure that any new process or material we adopt as a sustainable alternative is truly beneficial to the environment, and we consider it our duty to use sound science to evaluate the total environmental impact of all options and make the choice that is best for the earth on an overall basis.

Total environmental impacts and life cycle inventories

In order to truly evaluate sustainability, the total environmental impact of a product over its life span must be analyzed. Life Cycle Inventory (LCI) measures the environmental performance of products and services. It measures how much impact a product has both directly and indirectly, and is holistic because it covers all phases of the product's life cycle and all significant environmental impacts. LCI offers a cradle-to-grave picture of a product's environmental attributes, from raw material extraction and manufacturing to post-use recovery or disposal

A February, 2011 peer reviewed study by Franklin Associates, one of the most highly regarded LCI practitioners in North America, found that commonly used cups, plates and sandwich containers made of polystyrene foam use significantly less energy and water than comparable paper-based or corn-based (polylactic: PLA) alternatives, primarily due to polystyrene foam's much lower weight.

The polystyrene foam products create less, similar or more solid waste by volume than alternatives depending on the product and its weight, according to the study, and greenhouse gas emission comparisons vary widely, based on uncertainties over whether paper-based products degrade after disposal.

The LCI and greenhouse gas emissions study compared average-weight polystyrene foam, paperboard and PLA cups used for hot (16 ounce) and cold (32 ounce) drinks, 9-inch dinner plates and "clamshell" sandwich containers. Researchers modeled energy consumption, water use, solid waste (by weight and volume) and greenhouse gas emissions for each product resulting from production, transportation and disposal. The peer-reviewed paper updates a 2006 study and incorporates additional data, most notably on greenhouse gas emissions following disposal.

Some key findings include:

- Energy use: Polystyrene foam products consume significantly less energy than the alternatives—half as much as wax-coated paperboard cups and one-third as much as PLA clamshells.
- Water use: Polystyrene foam products use significantly less water than the alternatives—up to four times less than PLA clamshells.
- Solid waste: Polystyrene foam products create significantly less solid waste by weight than the alternatives-up to five times less than paperboard and PLA products. Comparisons by volume vary widely:
  - Polystyrene foam cups for hot drinks create less waste by volume than the alternatives – significantly less than paperboard cups with corrugated sleeves used for insulation.
  - Polystyrene foam cups for cold drinks create similar waste by volume as plastic coated paperboard cups and significantly less than wax coated paperboard and PLA cups.
  - Heavy duty polystyrene foam plates produce more solid waste by volume than the alternatives, while lighter duty polystyrene foam plates create similar waste by volume as the paperboard counterparts.
  - Polystyrene foam clamshells create slightly more waste by volume than paperboard clamshells and half the waste by volume of PLA clamshells.

- Greenhouse gases: Polystyrene foam products generate slightly more greenhouse gas emissions than PLA products, expressed as net CO2 equivalents. If paperboard products do not degrade after disposal, they store carbon and generate fewer greenhouse gas emissions than polystyrene foam products; however, if paperboard products degrade to the maximum extent, they generate more greenhouse gas emissions than polystyrene foam products, so comparisons of greenhouse gas emissions vary widely depending on assumptions about the degradation of paperboard products.

The study's authors found that lower weight products with similar functionality—such as polystyrene foam products composed of more than 90% air—generally produce smaller environmental burdens. Although PLA is corn-based, the study notes: "According to the [PLA producer] NatureWorks LLC website, PLA does not biodegrade in landfills."

In general, because paperboard foodservice packaging products are generally heavier than foam products, in most cases they have environmental burdens that are higher than or comparable to corresponding polystyrene foam products. An average weight 16 oz. plastic-coated paper cup hot beverage cup weighs almost 3X more than an average-weight 16 oz. polystyrene foam hot beverage cup (air comprises approximately 90 -95% of a foam cup or container, while about 89-95% of a plastic-lined paper cup or container is paper). And, because of foam cups' and containers' superior insulation and strength, wasteful practices such as "double-cupping" plastic-lined paper cups or using an additional corrugated cup sleeve are eliminated, significantly reducing the number of cups and corresponding resources used.

Conclusion

In conclusion, as a responsible corporate citizen that has been manufacturing polystyrene foam foodservice products for more than 50 years, Dart supports and shares in efforts to minimize the amount of packaging that is disposed of and its effect on the environment.

Dart also appreciates the opportunity to be part of this process and respectfully request that, along with other members of our industry and other stakeholders, we be provided the opportunity to work cooperatively with Amherst officials to address reasonable, achievable, fair and balanced solutions to overcoming waste reduction challenges.

Again, it is vitally important that any efforts regarding these or any other issues be formulated by collecting and basing recommendations on comprehensive, accurate and meaningful information. Additional factual information on polystyrene foodservice products and the environment and health and safety issues can be found on the following websites:

http://www.dart.biz/web/environ.nsf/pages/menu
http://youknowstyrene.org/
http://www.niehs.nih.gov/news/media/questions/sya-roc.cfm#s8
http://www.hhs.gov
http://styrene.org/faq.html
www.plasticfoodservicefacts.com

Sincerely,

Ray Ehrlich
Regional Manager
Government Affairs and the Environment
Dart Container Corporation
Tele: 410-593-9501 Email: ray_ehrlich@dart.biz