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iapd

international association
of plastics distribution

Environmental Guidelines

Developed by the IAPD Environmental Committee

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IAPD Environmental Statement, Best Practices and Glossary

The IAPD Environmental Committee was formed in April 2008 to develop an association environmental position statement, provide a proactive industry response to the negative image of plastics as being environmentally unfriendly, institute programming into future conventions and develop training programs, develop "green" best practices for the association and membership, and forge partnerships and alliances with other organizations to further the association's environmental efforts. Committee members include Co-Chair Kevin Short, Laird Plastics; Co-Chair Russell Walters, Total Plastics, Inc.; Richard Rappaport, Business Answers International; Richard Frey, Quadrant Engineering Plastic Products; Bill Kistler, Sheffield Plastics Inc., A Bayer MaterialScience Company; Angela Hansen, Redwood Plastics Corporation; Mark Hense, Midland Plastics Inc.; and Joe Masters, Alcan Composites USA Inc.

IAPD Environmental Statement

The following statement is IAPD's official position and vision on environmental issues developed by the IAPD Environmental Committee and approved by the IAPD Board of Directors in July 2008. The association encourages member companies to embrace and commit to the vision for the industry and incorporate — or continue to incorporate — environmentally-friendly business practices and philosophies.

Our plastics association and its members are proud to operate in a broad and diverse marketplace. In so doing, our and all businesses create an environmental footprint. We believe plastics offer unique opportunities to reduce, reuse and recycle, thereby minimizing our environmental impact. We are committed to fully developing these benefits for the good of the environment, for the health of our people, and for the growth of our industry.

We commit to:

- *Training the channel and educating the public on the specific environmental benefits of plastics.*
- *Demonstrating environmental stewardship, both as individuals and businesses.*
- *Conducting recycling programs that will include the entire channel.*
- *Utilizing the safest and most proper disposal methods when the useful life of our products expires.*
- *Promoting research to develop new products and applications that offer positive environmental impacts.*

The guiding principles of our sustainability commitment are Conservation, Waste Minimization, Preservation, Cooperation and Education. In this spirit, with our fullest efforts and without undue stress on the environment, all members of our association, our companies, and the communities we call home will prosper.

IAPD Environmental Best Practices

IAPD has adopted "Best Practices" in regard to conservation and the environment. IAPD member companies are encouraged to adopt these practices in their business operations. The best practices pertain to three issues: 1) energy, 2) emissions and 3) recycling. Active involvement in these areas is meant to achieve the following goals while increasing the profitability of our businesses:

- Greater efficiencies
- Consumption of fewer natural resources
- Creation of less waste
- Lessen our environmental footprint

1) Energy

Lighting

Obvious actions include:

- Turn off lights, electronics, computers and machines when not in use.
- Maximize the use of natural light and skylights whenever possible.

Not so obvious actions include:

- Install motion detectors to automate the on/off switches.
- Utilize the new energy efficient light bulbs.
- Skylights and high "insulating" windows can save energy by reducing the need for using lights without losing heat energy.

Did you know?

- Only about 10 percent of the energy used by a bulb creates light, the other 90 percent only generates heat.

HVAC

Obvious actions include:

- Adjusting your room temperatures.
- Avoid heating and air conditioning vacant spaces.

Not so obvious actions include:

- Sealing dock doors and entryways to decrease heating and/or cooling loss.
- Adjusting air dampers and ducts.
- Install separate controls by zone.
- Utilize window covers such as blinds or shades.
- Evaluate your insulation requirements.

Did you know?

- One of the most important factors in being able to minimize energy use in a facility is to thoroughly understand how the facility uses energy and when and where it uses it.

2) Emissions

Automobiles, trucks and forklifts

Obvious actions include:

- Do not leave vehicles idling.
- Encourage carpooling and public transportation.
- Consider hybrid vehicles.

Not so obvious actions include:

- Enhance your warehouse layout to maximize efficiency.
- Encourage efficient driving plans for outside sales personnel.
- Telephone and/or video conference when possible.
- Consider electric forklifts.
- Efficiently route delivery trucks to maximize backhauls.
- Optimize trucking and reduce redundant freight movements.

Did you know?

- A 10-percent reduction of energy use from cars, trucks and buses would result in displacing nearly 1 million barrels of petroleum per day and would also reduce pre-mature deaths from air pollution.

3) Recycle

Paper, plastic, glass, cardboard, pallets, aluminum and electronic devices

Obvious actions include:

- Recycle everyday paper, plastic, glass and aluminum.
- Recycle trim cuts of plastic sheets whenever possible.
- Utilize reusable ceramic coffee mugs versus paper or foam cups.

Not so obvious actions include:

- Use scanners, not copiers.
- Establish an electronic faxing system.
- Enter orders electronically and avoid spiral notebooks.
- Encourage cut-to-size to ensure less waste downstream.

Did you know?

- Production of recycled paper uses 80 percent less water, 60 percent less energy and produces 95 percent less air pollution than producing paper from new trees.
- Recycling one glass bottle saves enough energy to light a 100-watt bulb for four hours.

Some additional ideas:

- Become active in your community conservation programs.
- Host an environmental initiatives open house.
- Develop energy efficient and environmentally friendly programs for your business.
- Encourage employee participation and enhance morale by establishing environmental improvements and cost savings.

IAPD Glossary of Sustainability Terms and Definitions

The following terms and definitions are provided to help IAPD member companies adhere and comprehend IAPD's Best Practices for Conservation and the Environment.

Aerobic Degradation

The breakdown of a molecule into smaller chemical entities in the presence of oxygen. (National Institutes of Health, Bethesda, MD) Aerobic degradation includes aerobic treatment which is a process by which microbes decompose complex organic compounds in the presence of oxygen and use the liberated energy for reproduction and growth. (Such processes include extended aeration, trickling filtration and rotating biological contactors.)

Anaerobic Degradation

The metabolism of substances by bacteria that do not require oxygen to live.

Air Permit

Legally-enforceable documents designed to improve compliance by clarifying what facilities (sources) must do to control air pollution.

Best Practice

Best practice is an effective, innovative solution, process or procedure that demonstrates a business' dedication to making progress in environmental and corporate social responsibility; sometimes shared with collaborators and competitors to shape standards for an industry.

Bio-Based Material

A bio-based material or "biomaterial" is any material made from renewable plant matter (as opposed to non-renewable prehistoric plant material, fossil fuels), including agricultural crops, residues and trees. Sustainable biomaterials are those that are (1) sourced from sustainably grown and harvested cropland or forests, (2) manufactured without hazardous inputs and impacts, (3) healthy and safe for the environment during use, and (4) designed to be reutilized at the end of their intended use such as via recycling or composting.

Biodegradable

Biodegradable materials can be degraded by microorganisms such as bacteria, enzymes and fungi. This degradation produces water, carbon dioxide and/or methane and in some cases residues non toxic to the environment. This term can be applied to both chemicals and substrates used in the printing industry. Specific test methods can be applied to determine biodegradability (ASTM Test Method 6400/6868). When the methane is not captured, it is released into the atmosphere where it significantly contributes to the "greenhouse effect" (20 times more harmful than CO_2).

Bioplastics

A form of plastic derived from renewable biomass sources, such as vegetable oil, corn starch, pea starch, micro biota, etc. Bioplastics are used either as a direct replacement for traditional, petroleum-based plastics or as blends with traditional plastics. Use of bioplastics does not automatically guarantee sustainability. Full product life cycle is necessary to assess all associated environmental impacts of a product from sourcing of raw materials through production, distribution and use to disposal.

Carbon Footprint

A carbon footprint is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide. It is meant to be a useful metric for individuals and organizations as they conceptualize their personal (or organizational) impact on global warming.

Carbon Neutral

Carbon neutral, or carbon neutrality, refers to a net zero carbon release, brought about by balancing the amount of carbon released with the amount sequestered or offset.

Carbon Offset

A carbon offset is the mitigation of greenhouse gas emissions by offsetting emissions generated in one location with emissions reductions or displacements in another where it is technically and/or economically more feasible to achieve those reductions. Carbon offsets are measured in metric tons of carbon dioxide-equivalent (CO_2e). One carbon offset represents the reduction of one metric ton of carbon dioxide, or its equivalent in other greenhouse gases. Carbon offsets can be purchased and traded through financial instruments representing greenhouse gas emission reductions.

Clean Production

Clean production is a concept developed under the Kyoto Protocol in which manufacturing processes reduce environmental impact and decrease ecological problems by minimizing energy and raw materials use, and making sure emissions and waste are as minimal and as non-toxic to environmental and human health as possible.

Closed-Loop Recycling

It is a process of utilizing a recycled product in the manufacturing of a similar product or the remanufacturing of the same product.

Closed-Loop Supply Chain

This is an ideal in which a supply chain completely reuses, recycles or composts all wastes generated during production; at minimum "closed-loop supply chain" indicates that the company which produces a good is also responsible for its disposal.

Compostable

The term compostable verifies that a material or mix of materials can be decomposed in a composting system within one composting cycle (ASTM Method 6400/6868). Composting is the controlled biological decomposition of organic material in the presence of air to form a humus-like material. Controlled methods of composting include mechanical mixing and aerating, ventilating the materials by dropping them through a vertical series of aerated chambers, or placing the compost in piles out in the open air and mixing it or turning it periodically. *continued*

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Cradle-to-Cradle
A system by which materials are maintained in closed loops to maximize material value without damaging ecosystems. Cradle-to-cradle protocols minimize waste through recycling and reuse, rather than disposal.

Cradle-to-Grave
A system for controlling hazardous waste from the time it is generated until its ultimate disposal — in effect, from "cradle to grave."

Ecological Footprint
It is the total amount of land, food, water and other resources used by, or the total ecological impact of, a person or organization's subsistence; usually measured in acres or hectares of productive land.

Effluent Guidelines
National standards based on the performance of treatment and control technologies, for wastewater discharges to surface waters and municipal sewage treatment plants. Effluent guidelines are issued for categories of existing and new sources.

Energy Recovery
Obtaining energy from waste through a variety of processes (e.g. combustion).

Environmental Audit
An independent assessment of the current status of a party's compliance with applicable environmental requirements or of a party's environmental compliance policies, practices and controls.

Environmental Impact
Any change to the environment, good or bad, that wholly or partially results from industrial/manufacturing activities, products or services.

Environmental Management System (EMS)
An EMS is a set of processes and practices that enable an organization to reduce its environmental impacts and increase its operating efficiency.

Environmentally Sound Technologies
Techniques and technologies capable of reducing environmental damage through processes and materials that generate fewer potentially damaging substances, recover such substances from emissions prior to discharge, or utilize and recycle production residues. The assessment of these technologies should account for their interaction with the socio-economic and cultural conditions under which they are implemented.

Green Design
It is the design of products, services, buildings or experiences that are sensitive to environmental issues and achieve greater efficiency and effectiveness in terms of energy and materials use.

Green Product
A green product has limited negative impact on the environment and society while delivering the same utility to the customer (quality, performance, features, fabrication, application, durability) at the same or slightly higher price as a standard product.

Greenhouse Effect
Greenhouse effect is the trapping of heat within the Earth's atmosphere by greenhouse gases such as CO_2, which is necessary to keep the planet at a temperature warm enough to sustain life, but becomes dangerous when greenhouse gases produced by humans cause the effect to intensify and push the global temperature to too high a level.

Greenhouse Gas
A gas, such as carbon dioxide or methane, which contributes to potential climate change. The greenhouse effect is a process that raises the temperature of air in the lower atmosphere due to heat trapped by greenhouse gases.

Greenwashing
The unjustified appropriation of environmental virtue by a company, industry, government, politician, or even a non-government organization, to create a pro-environmental image, sell a product or a policy. Greenwashing is the process by which a company publicly and misleadingly declares itself to be environmentally-friendly but internally participates in environmentally- or socially-unfriendly practices.

Hazardous Air Pollutant (HAP)
Toxic air pollutants, also known as HAPs, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. U.S. EPA is working with state, local and tribal governments to reduce air toxic releases of 188 pollutants to the environment. Examples of toxic air pollutants include benzene, which is found in gasoline; perchlorethlyene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. Examples of other listed air toxics include dioxin, asbestos, toluene and metals such as cadmium, mercury, chromium and lead compounds. U.S. EPA specifies Method 311 in the Printing and Publishing MACT standard for determination of hazardous air pollutants in publication rotogravure and wide web flexographic ink systems.

Hazardous Waste
Hazardous waste is a waste with properties that make it dangerous or potentially harmful to human health or the environment. The universe of hazardous wastes is large and diverse. Hazardous wastes can be liquids, solids, contained gases or sludges. They can be the by-products of manufacturing processes or simply discarded commercial products, like cleaning fluids or pesticides.

Incineration
Also known as combustion, incineration is a controlled burning process to reduce waste volume. In addition to reducing volume, incineration can convert water into steam to fuel heating systems or generate electricity. Incineration facilities can also remove materials for recycling.

Landfill (Bioreactor Landfill)
Landfill is the final placement of waste in or on the land in a controlled or uncontrolled way according to different sanitary, environmental protection and other safety requirements. Bioreactor landfill is a special type of landfill that is constructed in a way that allows for air circulation and circulation of liquid leachate in order to enable anaerobic degradation while capturing and utilizing methane that is released during the degradation.

Lean Manufacturing (Lean)
An overall methodology that seeks to minimize the resources required for production by eliminating waste (non-value added activities) that inflate costs, lead times and inventory requirements, and emphasizing the use of preventive maintenance, quality improvement programs, pull systems and flexible work forces and production facilities.

Life Cycle Assessment (LCA)
A technique for assessing the potential environmental impacts of a product by examining all the material, resources, water and energy inputs and outputs at each life cycle stage.

Non-Renewable Resource
This is a natural resource that is unable to be regenerated or renewed fully and without loss of quality once it is used, i.e., fossil fuels or minerals.

Open-Loop Recycling
Open-loop recycling is a recycling process in which materials from old products are made into new products in a manner that changes the inherent properties of the materials, often via a degradation in quality, such as recycling white writing paper into cardboard rather than more premium writing paper; often used for steel, paper and plastic, open-loop recycling is also known as downcycling or reprocessing.

Permissible Exposure Limit
Also referred to as PEL, federal limits for workplace exposure to contaminants as established by OSHA.

Post-Consumer Materials/Waste
Materials or finished products that have served their intended use and have been diverted or recovered from waste destined for disposal, having completed their lives as consumer items. Post-consumer materials are part of the broader category of recovered materials.

Post-Consumer Recycling
Use of materials generated from residential and consumer waste for new or similar purposes; e.g. converting wastepaper from offices into corrugated boxes or newsprint.

Pollution Prevention (P2)
Pollution prevention is the reduction or elimination of waste at the source by modifying production processes, promoting the use of non-toxic or less-toxic substances, implementing conservation techniques, and re-using materials rather than putting them into the waste stream.

Recyclable
Includes the reuse, reconditioning and remanufacturing of products or parts in another product.

Recycled Content
Refers to the percentage of recycled materials in a product. "Recycled content" includes products and packages that contain reused, reconditioned or remanufactured materials, as well as recycled raw material.

Recycling
The reprocessing of old materials into new products, with the aims of preventing the waste of potentially useful materials, reducing the consumption of fresh raw materials, reducing energy usage, reducing air (from incineration) and water (from landfilling) pollution by reducing the need for "conventional" waste disposal, and lowering greenhouse gas emissions as compared to virgin production. Recycling is a key concept of modern waste management and is the third component of the "Reduce, Reuse, Recycle" waste hierarchy, though colloquial usage of "recycling" can also include "reuse."

Renewable Resource
A natural resource qualifies as a renewable resource if it is replenished by natural processes at a rate comparable or faster than its rate of consumption by humans or other users. Resources such as solar radiation, tides and winds are perpetual resources that are in no danger of being used in excess of their long-term availability. Natural resources that qualify as renewable resources include oxygen, fresh water, timber and biomass. However, they can become non-renewable resources if used at a rate greater than the regeneration of new materials.

Stakeholder
Stakeholder is an individual or group potentially affected by the activities of a company or organization; in sustainable business models the term includes financial shareholders as well as those affected by environmental or social factors such as suppliers, consumers, employees, the local community and the natural environment.

Sustainability and/or Sustainable Development
Meeting the social, economic and environmental needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development).

Sustainable Design
Sustainable design is a process of product, service or organizational design that complies with the principles of social, economic and environmental sustainability.

Waste
Hazardous waste is a waste with properties that make it dangerous or potentially harmful to human health or the environment. The universe of hazardous wastes is large and diverse. Hazardous wastes can be liquids, solids, contained gases or sludges. They can be the by-products of manufacturing processes or simply discarded commercial products, like cleaning fluids or pesticides. Non-hazardous waste includes all solid waste that does not meet the definition of hazardous waste.

Waste Management
The collection, transport, processing, recycling or disposal of waste materials. The term usually relates to materials produced by human activity, and is generally undertaken to reduce their effect on health, aesthetics or amenity. Waste management is also carried out to reduce the materials' effect on the environment and to recover resources from them. Waste management can involve solid, liquid or gaseous substances, with different methods and fields of expertise for each.

Waste-to-Energy
W2E is a recovery process in which waste is incinerated or otherwise turned into steam or electricity, and used to generate heat, light or power through the process of combustion.

Waste-to-Profit
W2P is the process of using one company's waste or by-product as the input or raw material for another company, thereby increasing business profits and decreasing waste; also referred to as byproduct synergy.

Zero Waste
Zero waste is a production system aiming to eliminate the volume and toxicity of waste and materials by conserving or recovering all resources.

IAPD Environmental Guidelines are available for download on IAPD's web site at www.iapd.org/green.html.

Results of IAPD's Sustainability Survey

The IAPD Environmental Committee recently concluded the online sustainability survey which had been open to the IAPD membership at large for over two months. The committee attempted to draw certain conclusions that best represent where the plastics stock shapes and pipe, valves and fittings distribution channel stands industry-wide on environmental practices and programs. It should be noted while there are several members who significantly outpace the general population, this summary is designed to identify our industry's collective areas of strength and weakness on the environmental front.

This data is pulled from 68 survey respondents, nearly half of whom fall in the distributor category. Only one response per company was allowed. Following is a summary of the results, as well as its interpretation by members of the IAPD Environmental Committee.

82% of all respondents have a program in place to minimize waste

- This is clearly an area of strength for IAPD member companies. In the current economic environment, we expect this number to increase as companies seek ways to reduce wastefulness in their processes.

71% of all respondents recycle internally generated plastic scrap

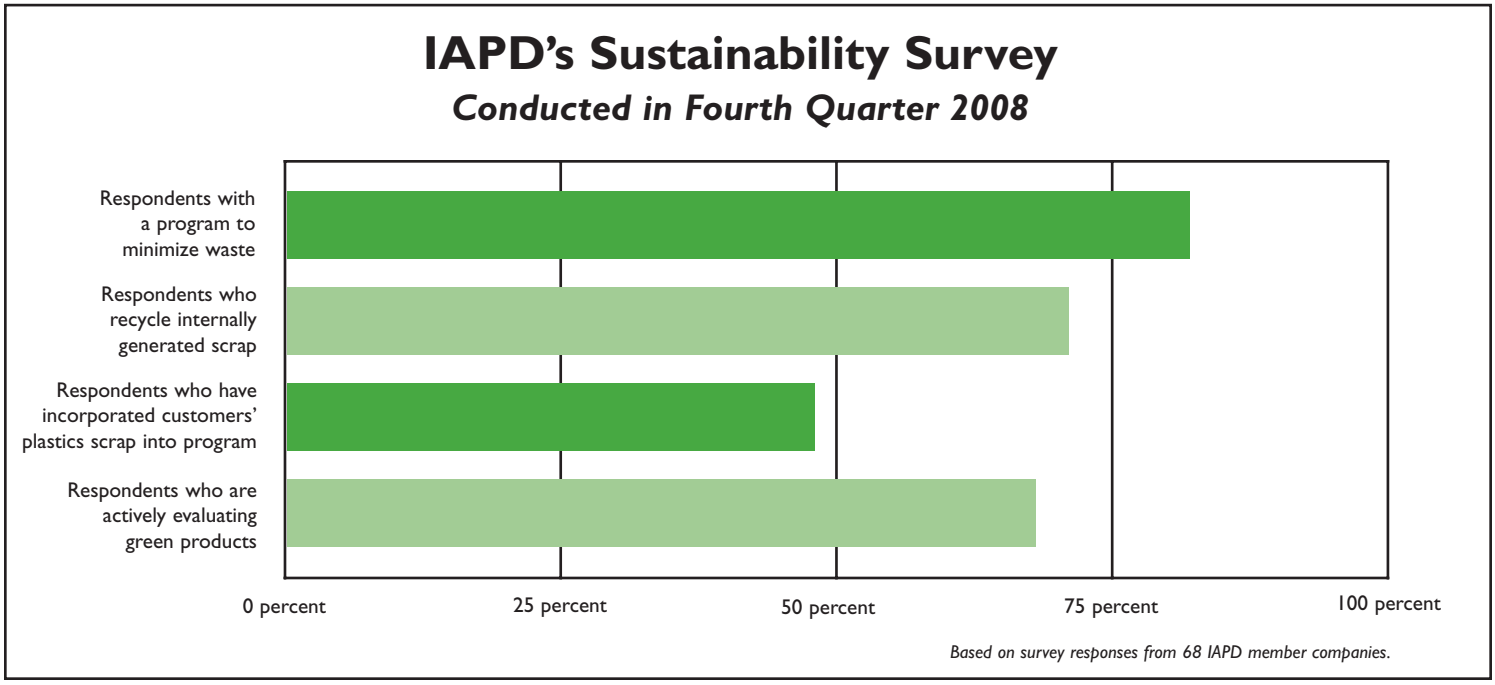
- Another area of strength but one also ripe with opportunity. Not only should we encourage the other 29 percent to participate, but we need to show them how.
- We assume the No. 1 reason companies do not recycle their own scrap is a lack of space, velocity and/or awareness. We think this may most apply to the smaller, single location distributor and IAPD can be a vehicle to educate and enable these companies.
- Measurement of pounds must take place in order to track our progress and be able to tell a collectively compelling public story.

48% of all respondents have incorporated customers' plastics scrap into their program

- This is a big opportunity. As the IAPD evolves to become an inclusive channel organization, this must be a part of the solution. Reducing the waste across the various forms our plastics take during their life cycle is smart as is a more concerted, collective effort to divert plastics from landfills.
- The common European practice of "take back" is one better adopted while it is still optional. Implementation of mandated (legislated) business practices is typically more costly and difficult to accomplish without a running start. Of course, robust channel-inclusive participation will make this concept more economically viable.

62% of all respondents encourage their employees to recycle at home

- Yet only 38 percent educate their employees on the environmental benefits of plastics. If our people can't articulate why plastics are the smart environmental choice for business, how



can we ever sway public perception (much less market share) in our favor?
- A "did you know" document will be developed in conjunction with the IAPD Marketing and Education Committees due to this response.

13% of all respondents educate the public on the benefits of plastics
- If not us, whom? If not now, when?
- There is ample opportunity for our industry to recruit future talent if we take our positive messages to the public-at-large.

49% of all respondents market green plastic products and/or services
- Our committee believes this will be a growing trend as the big box retailers, catering to the demands of the public for post-consumer content in the products they buy, will require more recycled elements in their purchases.
- These products should carry higher margins for our industry as they are addressing a specific need and the supply versus demand curve is clearly in our favor. Legitimately green products are by definition more expensive and should be.

68% of all respondents are actively evaluating green products
- The IAPD Environmental Committee believes this response is moving us in the right overall direction.
- One serious concern: the risks associated with being "greenwashed." An important part of product evaluation is identifying which products to move away from. According to the survey results, 24 percent of the IAPD members limit the sale of certain items due to their environmental impact. What is unclear is how many companies recognize that distributing products with unsubstantiated claims will do damage to the entire supply chain and further degrade public perception of plastics. Distributing plastics without fully vetting their claims is dangerous. We believe that there are many more products out there that should be quarantined than adopted due to weak or suspect data. This is especially true in the biodegradable arena.

29% of all respondents are managing their carbon footprint
- The IAPD Enviromental Committee sees this as another opportunity that becomes especially relevant in depressed economic times. Some surveys say that up to 30 percent of a company's energy consumption is wasteful. As the adage goes — you manage what you measure. A comprehensive sustainable business model will measure and reduce its carbon footprint. The good news here is there are direct bottom line savings for those companies that do so.

Conclusion
The IAPD Environmental Committee sees tremendous opportunity woven into these numbers. There are member companies that have demonstrated environmental leadership and helped develop a path forward. There are clearly needs for education and communication. To add credibility to our message, we must begin to measure our individual activities and roll-up our collective results. We must be aware of and avoid falling prey to greenwashing.

The IAPD can, and must, play a pivotal role in helping the industry move forward — one company, even one employee at a time.

RESOURCES TO HELP YOUR COMPANY IN ITS EFFORTS TO "GO GREEN"

By the IAPD Environmental Committee

There is a vast amount of information that can be found on the Internet in regard to plastics, sustainability and recycling. Here are some web site links that provide tips to help your company get started or move forward in its "Going Green" program. This list will be continually updated on IAPD's web site at www.iapd.org.

www.americanchemistry.com
The American Chemistry Council represents the companies that make the products that make modern life possible, while working to protect the environment and public health. Founded in 1872, its support for research and initiatives that serve our communities and customers continues to this day.

www.bisphenol-a.org
A comprehensive resource for environmental, health and safety information about bisphenol A (BPA), an industrial chemical used primarily to make polycarbonate plastic and epoxy resins.

www.eco-advantage.com
Site offers a wealth of information on "how business is catching the green wave." Includes links to books like "Green to Gold," the best-selling guide to what works — and what doesn't — when companies go green.

www.gbci.org and www.usgbc.org/leed
The Green Building Certification Institute (GBCI) was established as a separately incorporated entity with the support of the U.S. Green Building Council. GBCI administers credentialing programs related to green building practice. These programs support the application of proven strategies for increasing and measuring the performance of buildings and communities as defined by the industry systems such as the Leadership in Energy and Environmental Design (LEED®) Green Building Rating Systems™.

www.greenbuildingsolutions.org
Sustainable or "green building" design and construction is the opportunity to use our resources more efficiently while creating healthier and more energy-efficient homes. This site offers green building guiding principles to find the delicate balance between homebuilding and the sustainable environment.

www.opcleansweep.org
The plastics industry is committed to its role as an environmental steward. Operation Clean Sweep was developed to prevent the release of resin pellets into the environment.

www.polyurethane.org
The Center for the Polyurethanes Industry of the American Chemistry Council promotes the sustainable growth of the polyurethane industry, in accordance with the principles of Responsible Care®, by identifying and managing issues that could impact the industry, in cooperation with user groups.

www.plasticsindustry.org
Headquartered in Washington, D.C., SPI promotes business development via a suite of commercial services and trade shows, fosters the sustainable growth of plastics in the global marketplace, provides industry representation in the public policy arena and communicates the industry's contributions to society and the benefits of its products.

www.sperecycling.org
The Plastics Environmental Division of the Society of Plastics Engineers is concerned with all aspects of the recycling, sustainability, bio-degradable, non-petroleum based polymers, reclamation, resource recovery and disposal of plastic materials.

www.vinylinfo.org
The Vinyl Institute, founded in 1982, is a U.S. trade association representing the leading manufacturers of vinyl, vinyl chloride monomer, vinyl additives and modifiers and vinyl packaging materials. Its mission is to advocate the responsible manufacture of vinyl resins, life cycle management of vinyl products and promotion of the value of vinyl to society.

Fast Facts on Plastics and the Environment

The plastics industry is proud and committed to contributing to a cleaner, more sustainable world. Here are some fast facts from the SPI on how plastics contribute to energy efficiency, resource conservation and waste reduction.

Plastics and Energy Efficiency: Did You Know?

- The raw materials that go into the production of plastics account for only 1.5 percent of total U.S. energy consumption. In addition, it often takes less energy to convert plastics from a raw material into a finished product than comparable products made of other materials.
- Plastics help conserve resources. Using lightweight, durable, formable plastics, manufacturers can minimize raw materials used, energy consumed and waste generated.
- During their life cycle, plastic bags require about one-third less energy to make than paper bags.
- Foam polystyrene containers take 30 percent less total energy to make than paperboard containers.
- 53 billion kilowatt hours of electricity are saved annually by improvements in major appliance energy made possible by plastic applications. Without the benefits provided by plastics insulation, these appliances would use up to 30 percent more energy.
- Without plastics, the energy used to produce packaging would double. By using plastics rather than its alternatives, American manufacturers save more than 330 Btu. This is a difference equivalent to 58 million barrels of oil, 325 billion cubic feet of natural gas or 32 billion pounds of coal.
- Plastics are lighter than many alternative materials. They have consistently reduced the weight of truck payloads and allowed companies to ship more product in fewer trucks — saving energy. For instance, 2.8 million plastic grocery bags can be delivered in one truck; the same truck can hold only 500,000 paper grocery bags.
- Over the lifetime of the average car, plastic parts save 650 gallons of gas as a result of their lighter weight.
- The energy saved by recycling a one-gallon plastic milk jug will keep a 100-watt bulb burning for 11 hours.
- By using plastics in their packaging, product manufacturers save enough energy every year to power a city of 1 million homes for 3-1/2 years.

Plastics in the Waste Stream: Did You Know?

- Without plastics, the total volume of packaging waste would increase by around 160 percent.
- Because plastics are lightweight, durable and versatile, manufacturers can minimize the material used and the waste generated by using plastic products and packaging.
- Without plastics' resistance to corrosion, the product life of some major appliances would be reduced by nearly 40 percent. By helping them last longer, plastics keep appliances and other durable goods out of the waste stream.
- You could carry home 1,000 oz. of soda in 2 lbs. of plastic packaging, but it would take 27 lbs. of glass, 8 lbs. of steel and 3 lbs. of aluminum to do the same job.
- It takes 4.3 lbs. of glass to package one gallon of milk or juice, but less than 1/4 lb. of plastic to do the same job.
- Some plastics can be recycled. Hundreds of quality products made with or packaged in post-consumer recycled plastic now are commercially available. Two soft drink bottles can make a baseball cap, when recycled into polyester fiber. And artificial lumber made of recycled plastic is used in sea walls, fence posts and park benches. Plastic bags and stretch wrap are finding their way into decking material that is unsurpassed for its durability. It does not decay or crack, resists damage from termites and ants and requires no protective sealants.
- Plastic packaging, which makes up less than 6 percent (by weight) of discarded products in the municipal waste stream, can be disposed of safely in landfills.
- When incinerated, plastics —with their high energy content — help the entire mix to burn more efficiently, enhancing waste-to-energy conversion and leaving less ash.

Plastics in Medicine: Did you know?

- In the past few decades, plastics have made health care simpler and less painful and made new techniques and prostheses possible. They have reduced contamination, relieved pain and cut medical costs. They have prolonged, improved and saved lives.
- The United States has the lowest rate of cross-staph infection in the world as a result of its use of plastic medical disposables.
- Plastics are key components of modern prosthetic devices, providing comfort, flexibility, mobility and a life-like appearance.
- Artificial hips and knees use plastics to help provide smoothly working, trouble-free joints.
- Not too long ago, almost no medical packaging had tamper-evident seals. Today, nearly 100 percent of all pharmaceutical packaging does. In addition, child-resistant caps help keep medicines away from little hands.
- Surgical gloves made of soft pliable plastic help preserve the sterile environment of hospital operating rooms.
- Plastics permeate medicine. From the smallest tubing to the open MRI machine, plastics deliver when lives are on the line.
- Many of today's most innovative medical procedures are dependent on the use of plastics.
- From the machinery housing to petri dishes, plastics serve health-care needs both large and small.
- As the need for home health care continues to increase, plastics will play a major role in creating simple, portable and effective medical devices.
- Plastics have helped reduce the weight of eyeglass frames and lenses, while improving their strength and shatter resistance. Plastics also provide vision-impaired consumers with another option: contact lenses.

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