

# Sustainability and plastic pipe by David A. Chasis

**W**hen assessing the sustainability of a product, an industry must take a broad view, considering multiple facets from how a product fits into the lives of the people who will use it, whether it is economically sustainable and what its potential impact on future generations will be. This is in addition to assessing the environmental impact of the production, use and disposal of the product. The United Nations defines sustainable development as that which “meets the needs of the present without compromising the ability of future generations to meet their own needs.” Let’s apply this idea as we look at thermoplastic piping systems.

Most plastics are created from feedstocks of hydrocarbons. The hydrocarbon feedstocks used for the production of plastics can be extracted from oil, natural gas, coal, and more recently biomass (plant) materials. Currently, plant-based hydrocarbons are being used in limited plastic production. Having the benefit of being an endlessly renewable resource, plant-based biofuels will certainly come to play an expanding role in future plastic piping production. And in the case of the most

popular piping material in the world, polyvinyl chloride (PVC), 57 percent by weight of this polymer is chlorine which is created from salt, one of the most plentiful materials on earth.

A significant conclusion is clear: plastics have the most sustainable production reserves today and for the foreseeable future compared to those of other piping materials.

But having a readily available base for resin production is just one part of a complex equation. What about the economic, energy use and environmental effects of plastic piping? Fortunately, these impacts are measurable and not subjected solely to the howls of hysterical activists with an agenda that excludes scientific practices.

Plastic piping has been evaluated using life cycle assessment (LCA), a scientifically-grounded framework to examine and evaluate such factors as economic, environmental and energy impacts. A comparative LCA analysis of piping from beginning to end, going from raw materials through resin production, to pipe manufacture, field use, and finally to final distribution, can determine which piping material makes the best sustainable choice. The international piping industry, both plastic and non-plastic, has utilized and is continuing to utilize LCA in examining the environmental impact of their products. The completed studies as well as preliminary results of ongoing ones place plastic piping in a very favorable light compared to other piping materials.

Does plastic piping meet the UN definition of sustainability? Absolutely! The production of plastic pipe is a very clean process that uses less energy than manufacturing processes associated with other types of piping materials. The material is light in weight. It’s resistant to most chemical and corrosive environments. It’s safe and easy to install. And it’s durable and cost effective.

What about recycling? In the process of manufacturing plastic piping, almost all product wastes are reground and re-used. If installed properly, plastic piping lasts for many decades. It’s basically inert and accounts for less than 1 percent by weight of construction materials. However for plastic piping products that



Pallets of PVC purple piping for reclaimed and gray water applications.

have been installed but must be discarded due to building remodeling or demolition, there are several recyclers that can process the scrap for reuse in a variety of useful products.

Living sustainably is a matter of concern for everyone. As consumers, we must strive to consider sustainability in all aspects of our lives: in the cars we drive, the houses we live in, the vacations we take, the products we buy, and in the hobbies that relax us. For future generations and the health of our planet, we need to make the choices today that will lead to a better tomorrow. The use of plastic piping is a sustainable choice now and will continue to be in the future. ■

*Photos courtesy of the Plastic Pipe & Fittings Association.*

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PVC industrial process piping including actuated butterfly valves.



Installer carrying a 20-foot length of 10-inch PVC water main piping.



CPVC piping handling chemical process wastes.