



# Life cycle assessment and plastic piping

LIFE CYCLE  
OF PLASTICS

by David A. Chasis

**M**ore than most industries, the plastics industry uses acronyms galore. For example acrylonitrile-butadiene-styrene is very rarely stated as such but instead ABS is commonly used — or how about saying the tongue twister polychlorotrifluoroethylene when PCTFE would suffice. There is however a fairly new acronym that all in our industry should become familiar with ... LCA. No, it's not a polymer but a very important process called Life Cycle Assessment.

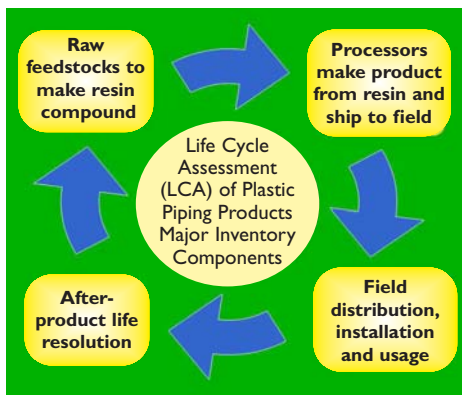
Plastic critics, usually funded by special interest groups with focused agendas, are attempting to produce a groundswell to limit or ban halogen containing products such as vinyls and fluoropolymers. The eventual goal of these critics is to completely deselect the use of all plastics from our environment. But are replacements for plastics really better for the environment? This question is where LCA can offer a clearer picture.

Life Cycle Assessment is a scientific, unbiased analysis of a selected product examining the product's total environmental footprint on our planet. The process does not have any preconceived agenda and follows the similar approach of Jack Webb's TV persona, Joe Friday, who on the old TV series "Dragnet" used to say when trying to solve a crime, "All we want are the facts, ma'am."

It doesn't matter what product is under scrutiny — the process for a full LCA is the same and is governed by the requirements of the international standard, ISO 14040. Generally, step one of the assessment process determines the quantity of energy used and the environmental impacts that occur for the initial stage of processing raw materials to a final product to be shipped to processors. In the case of plastic piping, the first part includes the processing of feedstock into resin or compound shipments. Step two analyzes the impacts of processing the received raw material to the shipment of the finished product. Step three would entail the installation and use phase, which

follows the process from shipment to the sales channel, to the installer, to the end-user, to the life of the product. The last step of the process analyzes the final disposition of the product after the product's useful life. The plastic industry's stance is that plastics and their material competitors should be judged not in a vacuum but scientifically with proven methodologies such as LCA.

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Attempting to address building construction concerns and the desire for Green Building ratings, the U.S. Green Building Council (USGBC), a non-government association has created a building rating system called LEED (another acronym standing for Leadership in Energy and Environmental Design). The USGBC is presently in the midst of assigning credits to environmentally friendly building features and practices. There is one proposal being presented to the LEED committee to credit the elimination of all halogenated products from health care construction. If this proposal was to be adopted by LEED and later carried over into legislation for health care facilities,

there most likely would be a tendency to limit or prevent the use of PVC, CPVC or fluoropolymers in new health care facilities and, in the future, other commercial building projects. This proposed deselection credit goes against the findings of the USGBC's own Technical and Scientific Advisory Committee (TSAC) report on PVC products. The finding of the report was that giving a credit for the avoidance of a material could result in the selection of products that actually do worse. Obviously, an LCA would have been a better path forward.

The Plastic Pipe and Fittings Association together with the Vinyl Institute and the American Chemical Council, are vigorously fighting this prescriptive proposal which doesn't use any recognized scientific process. One of the strategies that is being forwarded by the plastics industry is for any green and sustainable building ratings or standards system to use LCA whenever possible to determine the effectiveness and environmental soundness of any building product or material.

Plastics have become the material of choice in many industries due to their durability, ease of installation and cost effectiveness. Now using the LCA process, preliminary reports are giving conclusive proof that most plastic piping products, when compared to other piping materials, cause less negative impacts to people and the environment. The distinct possibility of plastics being generated from renewable feedstocks in the near future is expected to further improve the benefits of thermoplastic piping.

Join the movement to promote products that benefit our world now and in the future ... PLASTICS. ■

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