

News

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Plastic Pallets: From Fire Hazard to Toxic Platform?

When plastic pallets were first introduced to the market, they created a fire hazard which led insurance companies and fire regulators to require a two-class upgrade for warehouse sprinkler systems in plants using plastic pallets. Some plastic pallet manufacturers have added the chemical fire retardant deca-bromine to the petroleum-based polymer pallets. According to a lifecycle analysis by Intelligent Global Pooling Systems (iGPS) who purchases its pallets from Schoeller Arca System, its deca-bromine infused plastic pallets contain as much as **3.4 pounds** of the chemical; that volume is necessary for the company to advertise its pallets as equivalent to wood pallets which are the benchmark for pallet fire safety.

Penta-bromine has long been banned as dangerous to health and the environment; bans on octa-bromine soon followed. Deca-bromine was originally thought to be safer than penta- or octabromines because deca-bromine is a heavy compound and toxicity decreases as the number of bromines increase. But according to a lengthy, scholarly article published by the American Chemical Society, many researchers and environmental groups began to believe that in the environment, deca-bromine can decompose into its more toxic derivatives (octa or penta). Of even more concern, researchers believe the chemical tends to “bleed” so flame retardancy is lost and the toxins can leach.

“Both treated and non-treated plastic pallets remain in the supply chain, and there is no way to easily recognize which pallets contain deca-bromine from those that are a two-class upgrade fire hazard,” warns Bruce Scholnick, president of the National Wooden Pallet and Container Association. “Some may have a UL marking to indicate they contain fire retardant chemicals, but forklift drivers moving stacks of pallets or employees on the loading dock are unlikely to identify high fire risk plastic pallets from their deca-bromine treated counterparts.”

As a result of the grave concerns surrounding deca-bromine by researchers, environmental groups and fire fighters (who come into contact with the chemical in its gaseous form), lawmakers are beginning to ban the use of deca-bromine. The states of Maine and Washington have already passed legislation and ten other states have introduced bills that would ban the dangerous chemical. Various countries around the world have also banned deca-bromine in the electronic, furniture, toy and clothing industries. Officials may be unaware that deca-bromine is being used in these quantities in plastic pallets.

Flame retardants are showing up in some very unlikely places. In a report issued in early April 2009 by the National Oceanic and Atmospheric Administration (NOAA), flame retardants are now in all U.S. coastal waters and the Great Lakes in increasing concentrations. “Based on data from NOAA’s Mussel Watch Program, which has been monitoring coastal water contaminants for 24 years, the nationwide survey found that New York’s Hudson Raritan Estuary had the highest overall concentrations of PBDEs [fire retardant], both in sediments and shellfish. Individual sites with the highest PBDE measurements were found in shellfish taken from Anaheim Bay, Calif., and four sites in the Hudson Raritan Estuary.” In a NOAA press release, John H. Dunnigan, NOAA assistant administrator of the National Ocean Service said: “Scientific evidence strongly documents that these contaminants impact the food web and action is needed to reduce the threats posed to aquatic resources and human health.”

These flame retardants have also been found in mothers' breast milk. When the Environmental Working Group (EWG) conducted a study similar to one done in Sweden, they found that PBDEs were in the breast milk of U.S. women at levels much higher than those found in European women, and more than 50 times higher than the average of those in the Swedish study.

The Clean Production Action (CPA) group with the Computer Take-Back Campaign surveyed dust swiped from computers with brominated flame retardants and found "neurotoxic chemicals on every computer sampled." CPA says PBDEs and related compounds are turning up "up and down the food chain, in sediments, beluga whales, seals, bird eggs, and human milk, serum and adipose issue."

There are effective alternatives to deca-bromin, but according to a University of Massachusetts examination, the cost of bromine flame retardants is far less expensive than their alternatives. "Typically, non-halogen flame retardants cost in the \$3.00/lb range whereas the price of bromine is roughly \$1.10/lb. Since bromine is a more efficient flame retardant than most nonhalogen systems, less is required for a bromine system to meet [the Underwriters Laboratory vertical ignition test baseline]."

What Deca-Bromine Use Means to the Supply Chain

- For decades, the wood pallet has been, and remains, the benchmark for fire safety. Plastic pallets require the infusion of substantial amounts of potentially harmful chemicals to reach the same fire safety level.
- Some in the grocery industry have begun to favor plastic pallets, but the fact that studies indicate products with the chemical can leach deca-bromine renders them potentially unsafe for food products.
- As retailers learn about the risks surrounding pallets containing deca-bromine, those that have been moving toward using plastic pallets as a display platform may reconsider that use. The fire hazard posed in non-fire retardant pallets may make them similarly unusable for that purpose.

"We recognize that alternative materials each have their place, and competition breeds innovation and quality improvements." said Scholnick. "But if new technologies prove to be harmful or risky, it needs to be excluded from use. There are alternative fire retardants. Let's face it, they may be more expensive, but what price does one put on human health and our environment?"

Wood pallets are a byproduct using wood that is strong and durable, but discarded by furniture and home builders for cosmetic purposes. More than 1.2 billion wood pallets are in service each day in the United States. When these wood pallets can no longer be repaired to a standard that ensures protection of the goods being shipped and safety of workers handling the load, the pallets are recycled into new products such as landscape mulch, animal bedding, boiler fuel, firewood and wood stove pellets. The nails from ground pallet chips are removed through a variety of collection technologies and sold as scrap metal to be used again – from cradle to grave wood pallets are the sustainable choice for those in the supply chain who are concerned about preserving our environment by using natural products like wood.