INDUSTRY NEWS UPDATE
Keeping You Informed About Industry Issues

THE ISSUE: RETAILERS' CONCERN ABOUT VINYL

A number of major retailers have announced their intentions to reduce or eliminate the use of vinyl in their packaging and in the products they sell. These actions are unnecessary, and any concerns about vinyl are being repeatedly refuted by good science and common sense. We at PolyOne Corporation want to make sure you have accurate information by providing you with this "Industry News Update" related to vinyl.

HEALTH & SAFETY FACTS

Vinyl is Safe for Plant Workers & Area Residents
Vinyl manufacturing plants are designed, regulated and operated to protect workers and plant communities. In the mid-1970's, OSHA and EPA issued regulations reducing workplace exposure and environmental emissions related to vinyl chloride monomer (VCM), which is a feedstock to vinyl. In response, the entire vinyl industry completely re-engineered its production operations. There have been no documented cases of cancer among vinyl workers whose careers began after these regulations took effect.

Vinyl has Numerous Government & Agency Approvals
Government agencies and certifying bodies have extensively studied the use of products made from vinyl and have approved its use in many applications.

- U.S. Food and Drug Administration (FDA) has approved the use of vinyl in medical blood bags, IV containers, tubing and gloves. They have also approved the use of vinyl in packaging for food and healthcare products.
- NSF International has approved the use of vinyl in piping for drinking water.
- American Council on Science & Health (ACSH) convened a panel of leading physicians and scientists, chaired by former U.S. Surgeon General Dr. C. Everett Koop. They reviewed scientific literature concerning phthalate plasticizers commonly employed in vinyl materials when used to make toys and medical devices. The panel concluded that phthalate plasticizers are not harmful to humans.
- National Fire Protection Association (NFPA) is an authority on fire, electrical and building safety. As a material that resists combustion, vinyl is one of the few materials meeting the stringent NFPA requirements for insulating electrical and data transmission cables.
- Underwriters Laboratories (UL) is an agency globally recognized for testing and certifying product safety. They have approved products made from vinyl for wire & cable coatings and housings that protect consumers from the hazards of electrical connections.

ENVIRONMENTAL FACTS

The Vinyl Manufacturing Process

Raw Materials – Vinyl's primary raw material – nearly 60% - is chlorine, which is derived from common salt. The other raw material is ethylene, which comes from natural gas or crude oil. Because of the significant amount of chlorine in vinyl's chemistry, vinyl uses less oil and gas than most other plastics. Production of vinyl accounts for 0.3% of all oil and gas consumed.

Energy to Produce – Vinyl uses 20% less energy to produce than most other plastics. A 1993 Franklin & Associates study found that vinyl consumes less energy and raw materials than other plastics such as polypropylene (PP), polyethylene (HDPE), ABS, polystyrene (PS), nylon, and polycarbonate (PC). When comparing packaging materials, vinyl saves an equivalent of 2 million barrels of oil per year compared to a common competing material.

Dioxin – Dioxin is a toxic substance that is not produced intentionally, but is rather a by-product formed when anything containing chlorine burns. Because chlorine is so pervasive in our environment, dioxin is a by-product of natural events like forest fires, lightning and volcanoes. It also occurs in man-made activities such as burning wood and backyard trash, diesel vehicle emissions and various manufacturing processes. In 1999, EPA found that vinyl manufacturing contributed far less than 1% of all dioxin emissions. In fact, according to EPA, dioxin emissions in the U.S. have decreased by more than 90% since 1987. During this time, vinyl production has more than tripled.

Vapors During Processing – Virtually all thermoplastic materials emit vapors when heated to processing temperatures. Under normal conditions, vinyl releases less than 100 parts per million of volatile organic compounds (VOCs). None of the gases emitted from vinyl processing are hazardous air pollutants. OSHA-approved ventilation normally associated with plastics processing can be used for vinyl processing.

Vinyl in Use

Long Service Life – Because vinyl is durable, it goes into applications that have a long service life, such as pipe, siding, electrical wiring and windows. This long service life means less maintenance and replacement – hence less raw materials and energy consumed – than shorter-life materials.

Less Fuel Consumption – Vinyl products weigh less than metal or glass so they require less fuel to transport.

Efficient Thermal Insulation – The use of vinyl windows has grown dramatically in recent years, accounting for about 58% of all residential units installed in 2005. Vinyl is an efficient insulating material for hot and cold weather, which means energy is conserved because HVAC systems do not need to work as hard to maintain the desired indoor temperature.

Helps With Water Conservation – Vinyl has become the leading material for pipe in the U.S., accounting for more than 70% of all water and sewer pipe installed. Properly designed and installed vinyl pipe has an estimated life span of 100 years with little or no loss of strength. The National Research Council of Canada found the "break rate" for vinyl pipe was 0.5 breaks per 100 km per year as compared with 33 breaks per 100 km per year for cast iron and 8 breaks per 100 km per year for ductile iron. Fewer breaks mean less water loss and improved conservation of an important natural resource. According to the American Water Works Association, about 15% of treated water - 2.2 trillion gallons - is lost due to line breaks and leaks.

End of Product Life Cycle

Vinyl is Recyclable – About 99% of vinyl manufacturing waste is reprocessed back into useable products. Combining this with the millions of pounds of post-consumer vinyl that is recycled means more than 1 billion pounds of vinyl are recycled each year.

Vinyl Can Be Landfilled – If recycling is not feasible and vinyl scrap needs to be landfilled, it can be trusted to remain safely inert under normal landfill conditions. In fact, vinyl is so stable that landfills are often lined with vinyl films to prevent groundwater contamination that arises from other materials contained in the landfill. Vinyl makes up less than 0.5% of municipal waste by weight.

Vinyl Can Be Incinerated – Vinyl can be safely incinerated and its energy recaptured and reused. A large-scale study by the American Society of Mechanical Engineers found no link between the chlorine content of waste and dioxin emissions from controlled combustion processes.

Life Cycle Analysis – Recent studies have shown that vinyl products are as safe and environmentally acceptable throughout their life (from extraction of materials to recycling/disposal) as other commonly used materials. In fact, vinyl was seen as better than some alternatives. In 2004, the European Commission concluded a comprehensive review of 250 life-cycle assessments of vinyl and competing materials and found that vinyl products offer environmental benefits equal to or better than those of other materials. The U.S. Green Building Council PVC Task Force reached similar conclusions in its draft report in 2004 and in an update in February 2007.

VINYL IS A VERSATILE MATERIAL

Vinyl is a versatile material that can be made rigid or flexible, clear or colored. Additives are combined with vinyl resin to make vinyl compounds that can be processed into a multitude of applications. Vinyl is strong, durable, and moisture resistant. It withstands rust and corrosion and is not electrically conductive. Other key attributes are:

- Weather Resistant – Products made from vinyl will not fade or lose toughness outdoors
- Chemical Resistant – Products made from vinyl resist harsh chemicals, such as automotive fuel additives
- Fire Resistant – Vinyl is inherently fire resistant so there is often no need to add potentially harmful
- fire-retardant chemicals
- Cost Effective – Vinyl products are affordable to consumers

Vinyl has many attributes that make it a safe, responsible and efficient choice for many markets and applications. Uses include:

Building & Construction
- Piping for drinking water
- Siding for homes
- Electrical wire insulation
- Windows
- Flooring
- Wall covering
- Fencing, railing, and decking

Consumer Products
- Shower curtains
- Toys
- Automotive interiors

Packaging
- Blister pack
- Film
- Bottles

Medical
- Blood bags
- IV containers
- Tubing
- Sanitary clothing (gloves, hats, etc.)

ADDITIONAL INFORMATION & INDUSTRY RESOURCES

PolyOne and other companies in the vinyl industry will continue to respond to legislative, agency and commercial actions which encourage the de-selection of vinyl based on unfounded allegations. A key resource leading this effort is The Vinyl Institute, a U.S.-based trade association representing the leading manufacturers of the vinyl manufacturing chain. Its mission is to advocate the responsible manufacture and life cycle management of vinyl as a raw material and as used to make vinyl-based products, and to promote the value of vinyl to society. PolyOne believes The Vinyl Institute represents and advocates for the interests of all members of the vinyl value chain – from raw material producers to resin manufacturers and compounders to vinyl users.

The Vinyl Institute	www.vinylinfo.com
Vinyl News Service	www.vinylnewsservice.net
Vinyl by Design	www.vinylbydesign.com
Vinyl Council of Canada	www.plastics.ca/vinyl or www.cpia.ca/vinyl

In summary, vinyl is not a toxic material. There is no agency that has labeled it as harmful in any way. Vinyl has been extensively tested and used for decades, and numerous government agencies have studied and confirmed its safety. Vinyl is the versatile, high-performance, safe, environmentally responsible material of choice for a wide range of applications.

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