

What's wrong with PVC?

The science behind a phase-out of polyvinyl chloride plastics



1. Summary

Polyvinyl chloride (PVC) is one of today's most common plastics. Around 20 million tonnes were produced in 1995, making it second only to polyethylene in terms of volume produced.

PVC production involves the creation of many toxic chemicals, as feedstocks, as

Most people are aware that plastics cause environmental problems. Their low

Figure 2: The PVC production process

Emissions to the environment from the PVC production process

natural gas/oil

salt water

Immunotoxicity. Numerous animal studies have shown that dioxins attack the immune system. Low exposures to TCDD result in increased susceptibility to

Phthalates are a group of chemicals that are added to flexible PVC as softeners. The most commonly used is di(2-ethylhexyl) phthalate (DEHP) which accounts for 50% of all phthalate production. Some phthalates are known hormone disrupters (see Annex), others are under suspicion⁴⁷. Others are thought to be carcinogenic⁴⁸. Phthalate production in the EU is estimated at 1.5 million tonnes per year. Phthalates are also found in the environment, particularly in air and water, and in food and consumer products.

them out of the atmosphere or when the particles to which they attach themselves settle.⁶³

Leaching. Additives to PVC do not form a chemical bond with the plastic but exist

polymers in the car interior.⁷⁹ In the United States vinyl chloride has been found in concentrations as high as 380 $\sigma\text{g/l}$ in ground water and 10 $\sigma\text{g/l}$ in drinking water.⁸⁰

Inhalation of fumes or dust of cadmium compounds affects the respiratory tract and kidneys. Brief exposure to high concentrations may result in pulmonary edema and death.⁹⁴ (Such high concentrations are not likely to be encountered as a result of using

alternatives and the inclusion of toxic chemicals and heavy metals like cadmium, lead

conclusive evidence of a causal relationship between the inputs and effects;

b) the polluter pays principle, by virtue of which the costs of pollution prevention, control and reduction measures are to be borne by the polluter

These principles should not only be applied to the marine environment. They should

9. Annex. Hormone disruption and reproductive problems.

For many years now researchers have been noting aberrant behaviour and reproductive problems in a variety of wildlife populations. Decreased fertility in birds, fish and mammals, decreased hatching success and birth deformities in birds, fish and turtles, metabolic abnormalities in birds, fish and mammals, behavioural



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- ⁵⁸ Colborn et al (1996). *Our Stolen Future* (Little Brown) give a good overview of this. pp50-51, 62, 169-70.
- ⁵⁹ Soto A.M., Chung K.L., and Sonnenschein C. (1994). The pesticides endosulfan, toxaphene and

