

FAQs re PVC – 1 Toxics

Dioxins

Dioxins are a class of compounds produced whenever organic material and chlorine compounds e.g. common salt are burned together. For example; straw burning, forest fires, fireworks, bonfires, crematoria, car exhausts, foot and mouth cattle burning will all produce dioxins. The Environment Agency inventory of pollutants from industry can be seen on web site address http://www.environment-agency.gov.uk/commondata/103601/pi_sum_proc.xls. This shows that most dioxins come from power stations (from burning coal, oil or natural gas, all of which contain chlorine). The second largest amount comes from steel making. A longer report (for DTLR) at: <http://www.research.dtlr.gov.uk/rep9496/dioxin.htm>. Dioxin levels are falling. PVC production going up.

QUESTION: dioxins are formed in PVC manufacture – In the entire production sequence the only point at which dioxins could potentially be formed is in the conversion of ethylene dichloride (EDC) to vinyl chloride monomer (VCM). If dioxins are produced they are trace quantities which are captured inside the process and destroyed. Only a minute quantity can potentially enter the environment.

QUESTION: PVC gives off dioxins in incinerators. So does food and animal remains. Incinerators operate at high temperatures, which break down dioxins as they form.

Vinyl chloride monomer

QUESTION: PVC is manufactured from vinyl chloride monomer which is carcinogenic Because the danger is known, personnel health and safety is protected and an enclosed system is used for manufacturing PVC. Outside the plant, The Environment Agency very, very closely monitors the emissions of VCM. The hazard of VCM to workers in PVC factories was first identified and addressed almost 30 years ago. VCM was identified as the cause of an increased risk of contracting a very rare form of cancer (cancer of the blood vessels of the liver known as angiosarcoma) among people who worked in polymerisation plants and who were exposed to high concentrations of this substance over sustained periods. Once industry discovered the link, major action was taken to reduce the level of exposure.

QUESTION: PVC contains some Vinyl chloride monomer, which is carcinogenic, The amount will be very, very small. We are talking about parts per million levels, which is the residual amount after washing and drying and processing. PVC is approved for food contact applications and for drinking water pipes. There is no cause for concern with the very small amounts involved. This is backed up by tests from independent toxicologists. In 1993 a five-year-long Italian study, led by Professor Cesare Maltoni, Director of Bologna's Institute of Oncology, looked at the health effects on rats given mineral water from bottles made of PVC (which contained low levels of VCM) compared with water from glass bottles. There were no noticeable differences concerning the animals' survival, weight and health conditions during the tests and, especially, the effect on tumours.

Heavy metals

QUESTION: PVC contains lead. Lead compounds are used as stabilisers used for PVC. 5-7% by weight solid lead salts are incorporated which do not easily migrate from the polymer matrix. However because of political, not health and safety or scientific, pressure the PVC industry has voluntarily agreed to phase out lead stabilisers by 2015. PVC products containing lead stabilisers are widely used throughout the world for the manufacture of potable water pipe. OECD conducted a risk assessment and concluded that there were no problems foreseen with the use of lead heat stabilisers in PVC. The migration of lead from

PVC water pipe has been comprehensively studied over many years and all the data show that the levels of lead extraction fall well within the recently revised limits of 10 ppb set by the World Health Organisation and the OECD Workshop (1994),. Most regulatory authorities and standardisation bodies in Europe including the UK Drinking Water Inspectorate, the Swedish Environmental Protection Agency, the Swedish Water and Waste Waterworks Association, the Nordic Pipes Federation and the Austrian Plastics Institute have approved lead compounds as stabilisers in PVC potable water pipe.

Phthalates

Phthalates are used as plasticisers. Windows are made from PVC-U – unplasticised PVC and thus do not contain phthalates