

exploding *the myths*



Science Supporting PVC in the Environment

Volcanic eruptions and the iron and steel industry are amongst the largest continuing sources

of dioxins in our atmosphere. In fact, the whole question of where dioxins come from, how they are made and

the dangers they present are all so clouded in myth that anyone would be forgiven for getting it wrong. First of all, you may be surprised to know that if you drive a car or smoke a cigarette, have the occasional garden bonfire or even compost your garden refuse,

you will create dioxins. This Overview Note aims to help you understand why it is seriously misleading to focus on PVC materials as a source of dioxins in the environment.

A Historical Presence

Dioxins are ubiquitous and occur naturally in the environment. They were first identified about 100 years ago but were present in the environment long before. Dioxins have been found in historical sediments which are known to be more than 8000 years old.

Dioxins are not manufactured deliberately. They form during many natural processes and some industrial processes if the materials involved contain chlorine. All plant and animal matter contains

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chlorine as well as many synthetic materials. Bush fires, wood burning stoves and general domestic heating, cigarette smoking, cremation and car exhausts are some of the major non-industrial sources of dioxins.

Dioxins in Perspective

The term 'dioxin' is commonly used to refer to a family of compounds known as polychlorinated dibenzo-para-dioxins (PCDD's) of which there are around 135 related compounds called furans. Only 17 of these are recognised as being highly toxic.

They can be formed when carbon, hydrogen, oxygen and chlorine are burned and the gases produced are allowed to cool slowly.

The most recent tests indicate the level of dioxin in PVC is the same as occurs in the background environment. Recent tests in Europe found no dioxins present in PVC down to the level at which they can be measured, namely, below two parts per trillion. In weight terms, one part per trillion is equal to one gram in 1,000,000 tonnes.

An inventory of dioxin sources in the UK, 'A Review of Dioxin Emission in the UK', was published by Her Majesty's Inspectorate of Pollution (HMIP) in September 1995. The review found that municipal solid waste incineration, and activities such as iron, steel and non-ferrous metals production, are seen as the

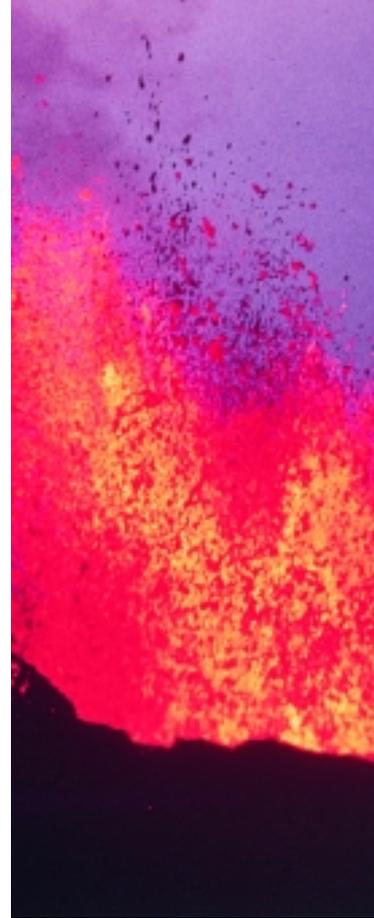
dominant contributors. According to the report, more dioxins are released to the atmosphere through sources involving the combustion of wood than are produced by the entire halogenated chemicals industry.

Changes in Levels

Studies on the trends in dioxin emissions carried out in the UK, USA and Germany have shown that, in these industrialised countries, dioxin emissions have actually fallen by over 50% since 1970. Over the same period, PVC production has more than doubled in these same countries. A UK



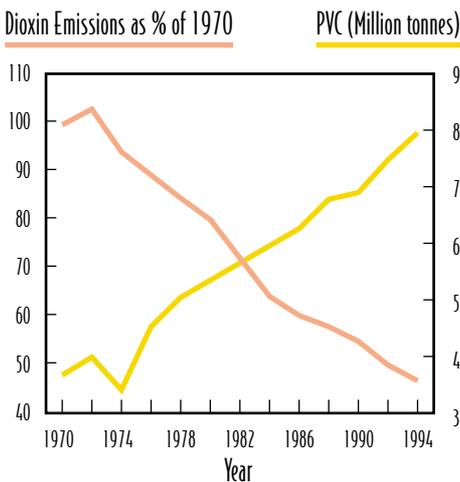
study commissioned by the Department of the Environment, and completed by Lancaster University in March 1996, actually shows that dioxin emission levels in the UK have now fallen back to 1940's levels, from their peak in 1972. In contrast, PVC production has steadily increased to meet market demand.



PVC Incineration

It has been consistently shown that the presence or absence of PVC in the incinerated municipal waste stream makes no difference to the quantities of dioxins which may be produced during the combustion of waste. Several trials of burning plastics in waste at Würzburg in Germany and at the South East London Combined Heat & Power (SELCHP) plant in the UK have demonstrated this. Furthermore, in the largest study of its kind, The American Society of Mechanical Engineers found that the operating conditions of an incineration plant formed the key factor in determining dioxin production and emissions, rather than the source of any chlorine entering the incinerator.

“ Over the past 20 years the level of dioxin in the environment has decreased by 50% while the manufacture and consumption of PVC has more than doubled. ”



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