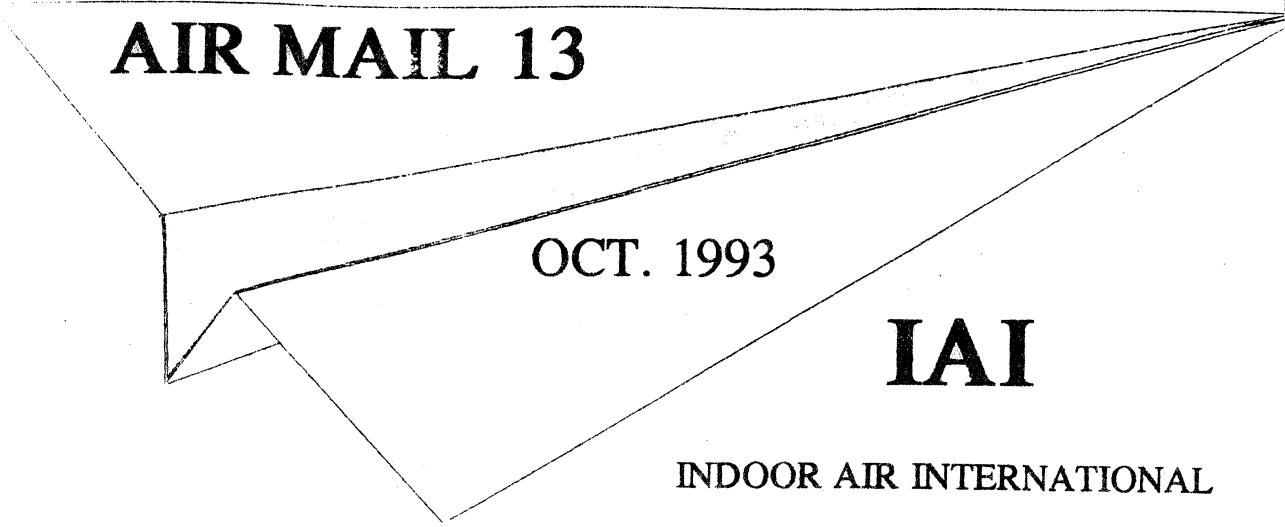



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OCT. 1993**IAI****INDOOR AIR INTERNATIONAL****IS THERE A CANCER RISK FROM EXPOSURE TO MISTS AND VAPOURS OF STRONG ACIDS?**

The 54th volume in the series of "IARC Monographs on the Evaluation of Carcinogenic Risks to Humans" is concerned, inter alia, with occupational exposure to mists and vapours from strong inorganic acids and other irritant chemicals.

Occupational exposure to mists, vapours and gases of strong inorganic acids - ie sulphuric, hydrochloric, nitric, phosphoric - occurs in many industries and most countries' hygienic regulations define the upper limits of permissible exposure. The question is "Do these limits protect the workers concerned from any cancer risk?" For all the usual reasons - inadequate long-term exposure data; unquantifiable occupational exposure to other chemicals that are or may be carcinogenic; inadequate information on life-style influences, including smoking habits and diet - this question is difficult to answer.

Excesses of nasal, larynx and lung cancer have been seen in well-designed cohort and case-control studies of workers exposed to sulphuric acid - the most commonly used of the strong inorganic acids. Chromosomal abnormalities have been reported in in vitro tests for genotoxicity, but no interpretable data from long-term animal studies have been reported. On the basis of particularly the human data, the Working Group responsible for preparing the IARC Monograph concluded: "Occupational exposure to strong - inorganic - acid mists containing sulphuric acid is carcinogenic to humans." In the cases of sulfur (sulphur) dioxide, sulfites, bisulfites, metasulfites and hydrochloric acid, however, the available data were considered to be inadequate to permit classification. Diethylsulfate, which is a strong alkylating agent and proven animal carcinogen, was considered to be probably carcinogenic to humans.

During the 21 years since the first volume in this series was published, the coverage of the topics reviewed and the

quality of the evaluation of the data have steadily improved and the position now is that the Monographs constitute reliable, fully-referenced state-of-the-art reviews of the available data concerning exposure, human health, effects and epidemiological and laboratory findings on each of the chemicals considered. However, the value of monographs is still hampered by the fact that the evaluations are only expressed in terms based on the quality of the available laboratory and epidemiological evidence. Consequently, solid evidence of weak risks or of risks that affect only very few people, can appear to be more important than weak evidence of widespread risks.

Another problem is that during recent years it has been increasingly recognised that cancers can arise simply as a consequence of disturbed physiological, hormonal or nutritional status, or secondarily to regenerative hyperplasia following tissue damage and that excessive exposure to otherwise harmless substances can lead non-specifically to increased risk of cancer development. Hence the term carcinogenicity needs to take into account not simply the structure of the chemical under consideration but also the circumstances of exposure (e.g. the route of exposure) and also - and most importantly - the exposure dose. Such cancer risk as there is from exposure to strong acids is most probably secondary to tissue damage which only occurs under conditions of very high exposure.

Therefore, the position with regard to cancer risks from strong acids today is that there is probably no measurable risk under conditions of compliance with current hygiene exposure limits. A fortiori, there is unlikely to be any risk from indoor air pollution in homes or non-industrial work places.

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Reference

IARC Monographs on Evaluation of Carcinogenic Risks to Humans "Occupational Exposure to Mists and Vapours from Strong Inorganic Acids : and Other Industrial Chemicals" Vol 54, 336pp 1992 WHO ISBN 92 832 1254-1