

File: Vinyl Chloride

Reproductive Hazards of Industrial Chemicals

An evaluation of animal and human data

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U.K. Any conclusions drawn are those of the authors.*

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Preface

Reproductive hazards from industrial chemical exposure is one of the fastest growing areas of concern in toxicology today. This is not yet matched however, by any substantial body of reliable evidence that would permit some assessment of the extent of the potential problem. This information gap extends from inadequate or non-existent animal toxicology studies right through to the absence of epidemiological studies on humans exposed to the majority of industrial chemicals. Most human evidence has come as a result of industrial or environmental accidents with gross over-exposure. Thus, even with chemicals such as lead, organic mercury, chlordecone, dibromochloropropane (DBCP), and organo-chlorine compounds known to affect human reproduction, the evidence is inadequate to assess the effects of low levels of exposure.

We were invited by the U.K. Health and Safety Executive to collect and review the available evidence on the reproductive toxicity of approximately 50 industrial chemicals chosen from the Threshold Limit Values (TLV) list because of their general interest or widespread use. It was hoped that such a review would show the range and types of information available on industrial chemicals and possibly indicate the size of the potential reproductive hazard. We took it upon ourselves to exclude a few substances such as inorganic lead about which a great deal of easily obtained information is already available. We also added some others such as DBCP which we knew had already presented a reproductive hazard to exposed workers. This was to illustrate the value and limitations of animal studies for prediction of human hazards and to demonstrate the value of epidemiological studies in workers exposed not only in the production of such substances but also in their subsequent use. This book therefore obviously cannot be regarded as a catalogue of all of the potentially hazardous chemicals, but is a detailed review of all the available evidence on some out of many thousands of such chemicals. However, it includes many substances with widespread use as solvents and intermediates and with environmental impact as pollutants, and we hope will be of interest and value to those concerned with industrial health and hygiene and environmental pollution in its widest sense.

Each chemical has been reviewed using the same general format. First animal studies on relevant pharmacology and toxicology, endocrine and gonadal effects have been described. This is followed by animal data on fertility and pregnancy including teratogenicity, multigeneration, postnatal and

behavioural teratology studies where available. In the mutagenicity sections only studies on mammalian cells *in vitro* and *in vivo* have been reviewed. Carcinogenicity studies have only been very briefly covered by reference to the excellent International Agency for Research on Cancer (I.A.R.C.) World Health Organization (W.H.O.) monographs unless specific data on transplacental carcinogenicity studies were found. The animal studies are followed by reports of human studies following the same general format where possible. Each review ends with a brief summary and our evaluation of the potential hazard to reproduction. A section on reproductive outcome by occupational groups has also been included. In this, the individual chemical or chemicals responsible for the effects may not have been identified, but they indicate the need for further work to attempt to do so.

We are grateful to our numerous colleagues, library assistants and secretarial friends for their help in producing this book and to the Health and Safety Executive for funding the project which turned out to be a much bigger job than any of us had imagined.

June 1982

S. M. BARLOW
F. M. SULLIVAN

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