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TECHNICAL INFORMATION SERIES

Title Page

AUTHOR	SUBJECT CLASSIFICATION	NO.
A.L. Bridgman	1 Pyranol	56TP423
<i>A.L. Bridgman</i>	2 Bibliography	DATE
		3-27-56
TITLE The Physiological Hazards of Pyranol Components Bibliography and Review		
ABSTRACT A list of 43 published references on the physiological hazards of Pyranol components is presented. A brief review of the information gathered from these references is reported.		
G.E. CLASS	REPRODUCIBLE COPY FILED	NO. PAGES
III	TECHNICAL DOCUMENTS	
GOV. CLASS	Pittsfield Data Bureau	6
CONCLUSION		

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into a standard card file.

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INFORMATION PREPARED FOR Engineering and Manufacturing Information

Compilation MADE BY S. Sass, A. L. Bridgman

COUNTERSIGNED R. R. Ralston SECTION Analytical Chemistry Sub.

BUILDING and ROOM No. 8-1A LOCATION Pittsfield

737114

GENP 002366

INTRODUCTION

Some question has arisen on several occasions concerning the physiological hazards resulting from misuses of Pyranol. A search is now under way for information available on the toxicity of Pyranol components and decomposition products. This bibliography is presented as a survey of published literature on The Toxicity of Pyranol Components. A brief review of information gathered from these references is submitted.

REVIEW

The subject matter was of interest as far back as 1899 (20). Only one reference of the forty-three collected gives any information concerning the chlorinated benzenes (34); no authoritative sources are listed for this information. The remainder deal primarily with chlorinated naphthalenes - which are not a current component of Pyranols, secondarily with the chlorinated diphenyls.

Toxic quantities of the chlorinated aromatics can be ingested (1,6,29,41), although this is considered as a minor source of introduction. Inhalation (1,2,6,17,18,9,29,32,41) and absorption through the skin (2,17,18,29,32,41) are considered the major avenues of contamination.

Introduction of these materials into the system have been known to cause acute yellow atrophy of the liver (1,6,9,17,18,29,32,41). Exposure either to the fumes or to the bulk material has caused a characteristic dermatitis, frequently called chloracne (6,9,17,18,29,32). Fatal poisoning from exposure to chlorinated naphthalenes has been reported in seven cases (6,9,17), from exposure to chlorinated aromatics in several cases (17), and from exposure to chlorinated diphenyls (9,41). Frequent cases of dermatitic poisoning have been reported (17,37). One author claims that the chlorinated diphenyls are more toxic than the chlorinated naphthalenes (1).

Maximum allowable concentrations for exposure during an eight hour period are reported of 1 mgm per cubic meter for chlorinated diphenyls and chlorinated naphthalenes (2,9,34); of 0.5 mgm per cubic meter for chlorinated diphenyls (6,7,41,43); of 10 mgm per cubic meter for chlorinated diphenyl (7); and of 50-75 parts per million in air for chlorinated benzenes (34).

As a safety measure, it is recommended that these materials be transferred, handled and poured in the cold (17,18), and under conditions of adequate forced draft ventilation (43). One paper deals primarily with the design, construction and ventilation of wire impregnating tanks using chlorinated hydrocarbons (43).

Pre-employment and periodic physical examinations for all employees working with chlorinated aromatics is recommended (17,18,32), as is also direct medical supervision (9,28,32). Knowledge of and prevention of hazardous conditions is considered the responsibility of the foreman, under direct engineering control (17,18).

It appears to be generally agreed upon (3,7,17,18,32,35,41) that the following hygienic measures should be taken by personnel working with these materials: (a) regular daily change of work clothes; (b) shower and scrub down of exposed parts of body at the end of the working period; (c) use of a protective skin cream on all exposed body parts; and (d) regular periodic cleansing of the work area. A cleansing cream of equal parts of butyl stearate and sulfonated castor oil built up with a corn meal abrasive is recommended by one author (18).

Analysis of air samples by combustion over a platinum catalyst with determination of chlorine and chloride is described (9,29). Another method (29) suggests collection in amyl acetate, a lamp combustion and determination by argentometry or turbidimetry.

Of the forty-three references collected, only twenty-seven were abstracted; the other sixteen were not readily available to the William Stanley Library. Three textbooks (29,34,39) gave no source material for their information. Experimental work with rats and rabbits has been reported (1,6,33,40).

ACKNOWLEDGEMENTS

The author is indebted to Mr. S. Sass of the William Stanley Library for his aid in collecting the material. He is also indebted to Dr. F. G. McKerr for review of the paper.

10-31-55

Since the writing of this report, a new monograph by W. F. von Oettingen, U.S. Department of Health

"The Halogenated Hydrocarbons, Their Toxicity and Potential Dangers" Public Health Service Publication No. 414 (1955)

has been received by the William Stanley Library.

Chapter V, Halogenated Aromatic Hydrocarbons (pp 283-320) is of interest with respect to this paper, particularly the sections:

1-C: Polyhalogenated Benzene Derivatives (pp 297-299)

5-C: Polychlorinated Diphenyl Derivatives (pp 306-307)

6-B: Polyhalogenated Naphthalene Derivatives (pp 308-314)

A bibliography is given with each section.

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