

CONTENTS

ENVIRONMENTAL HEALTH CRITERIA FOR 1,2-DICHLOROETHANE

Preamble	7
1. SUMMARY	19
1.1 Identity, physical and chemical properties, and analytical methods	19
1.2 Sources of human and environmental exposure	19
1.3 Environmental transport, distribution and transformation	19
1.4 Environmental levels and human exposure	20
1.5 Kinetics and metabolism in laboratory animals	20
1.6 Effects on laboratory mammals and <i>in vitro</i> test systems	21
1.7 Effects on humans	23
1.8 Effects on non-target organisms in the laboratory and field	23
2. IDENTITY, PHYSICAL AND CHEMICAL PROPERTIES, AND ANALYTICAL METHODS	24
2.1 Identity	24
2.2 Physical and chemical properties	24
2.3 Conversion factors	24
2.4 Analytical methods	25
3. SOURCES OF HUMAN AND ENVIRONMENTAL EXPOSURE	30
3.1 Natural occurrence	30
3.2 Anthropogenic sources	30
3.2.1 Production levels and processes	30
3.2.2 Uses	31
4. ENVIRONMENTAL TRANSPORT, DISTRIBUTION, AND TRANSFORMATION	32
4.1 Transport and fate in the environment	32

5.	ENVIRONMENTAL LEVELS AND POPULATION EXPOSURE	35
5.1	Environmental levels	35
5.1.1	Ambient air	35
5.1.2	Indoor air	36
5.1.3	Drinking-water	37
5.1.4	Surface water	38
5.1.5	Food	39
5.1.6	Soils and sediments	40
5.1.7	Consumer products	41
5.2	General population exposure	42
5.2.1	Ambient air	42
5.2.2	Indoor air	42
5.2.3	Drinking-water	42
5.2.4	Food	43
5.2.5	Other media	43
5.3	Occupational exposure during manufacture, formulation or use	43
6.	KINETICS AND METABOLISM IN LABORATORY ANIMALS AND HUMANS	45
6.1	Absorption	45
6.2	Distribution	46
6.3	Metabolic transformation	48
6.4	Elimination and excretion	52
6.5	Retention and bioaccumulation	53
7.	EFFECTS ON LABORATORY MAMMALS AND <i>IN VITRO</i> TEST SYSTEMS	55
7.1	Single exposure	55
7.2	Skin and eye irritation	58
7.3	Short-term exposure	58
7.4	Subchronic exposure	59
7.4.1	Inhalation	59
7.4.2	Ingestion	68
7.5	Chronic exposure and carcinogenicity	70
7.5.1	Inhalation	70
7.5.2	Ingestion	78
7.5.3	Other routes of administration	80
7.5.4	Initiation/promotion bioassays	81
7.6	Mutagenicity and related end-points	82
7.7	Reproductive toxicity, embryotoxicity and teratogenicity	90

7.8	Immunological effects	96
7.9	Toxicological interactions with other agents	97
8.	EFFECTS ON HUMANS	100
8.1	Case reports	100
8.2	Epidemiological studies	100
9.	EFFECTS ON OTHER ORGANISMS IN THE LABORATORY AND FIELD	104
9.1	Aquatic organisms	104
9.1.1	Microorganisms	104
9.1.2	Invertebrates	105
9.1.3	Vertebrates	106
9.2	Terrestrial organisms	107
9.2.1	Invertebrates	107
9.2.2	Vertebrates	108
9.2.3	Plants	108
10.	EVALUATION OF HUMAN HEALTH RISKS AND EFFECTS ON THE ENVIRONMENT	109
10.1	Evaluation of human health risks	109
10.2	Environmental assessment	109
11.	CONCLUSIONS AND RECOMMENDATIONS FOR PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	111
12.	FURTHER RESEARCH	112
13.	PREVIOUS EVALUATIONS BY INTERNATIONAL BODIES	113
	REFERENCES	115
	RESUME	137
	RESUMEN	143