

CONTENTS

ENVIRONMENTAL HEALTH CRITERIA FOR PHOSGENE

PREAMBLE	vii
ABBREVIATIONS	xvii
1. SUMMARY	1
1.1 Identity, physical and chemical properties, and analytical methods	1
1.2 Uses and sources of human and environmental exposure	1
1.3 Environmental transport, distribution and transformation	1
1.4 Environmental levels and human exposure	2
1.5 Kinetics and metabolism	2
1.6 Effects on experimental animals and <i>in vitro</i> test systems	3
1.6.1 Single and short-term exposures	3
1.6.2 Non-pulmonary effects	4
1.7 Effects on humans	4
1.8 Effects on organisms in the environment	5
2. IDENTITY, PHYSICAL AND CHEMICAL PROPERTIES, AND ANALYTICAL METHODS	6
2.1 Identity	6
2.2 Physical and chemical properties	6
2.3 Analytical methods	7
2.4 Conversion factors	8
3. SOURCES OF HUMAN AND ENVIRONMENTAL EXPOSURE	11
3.1 Natural occurrence	11
3.2 Anthropogenic sources	11

3.2.1	Production levels and processes	11
3.2.2	Environmental processes	11
3.2.3	Uses	12
4.	ENVIRONMENTAL TRANSPORT, DISTRIBUTION AND TRANSFORMATION	13
4.1	Transport and distribution between media	13
4.2	Abiotic degradation	13
5.	ENVIRONMENTAL LEVELS AND HUMAN EXPOSURE	15
5.1	Environmental levels	15
5.1.1	Air	15
5.1.2	Water	15
5.1.3	Soil	15
5.1.4	Food and feed	15
5.2	General population exposure	16
5.3	Occupational exposure	16
5.3.1	Manufacture and use	16
5.3.2	Non-manufacturing occupations	17
6.	KINETICS AND METABOLISM	18
6.1	Absorption	18
6.2	Distribution	18
7.	EFFECTS ON EXPERIMENTAL ANIMALS AND <i>IN VITRO</i> TEST SYSTEMS	19
7.1	Single and short-term inhalation exposures	19
7.2	Skin and eye irritation; sensitization	27
7.3	Long-term exposure	29
7.4	Reproductive and developmental toxicity	29
7.5	Mutagenicity and related end-points	30
7.6	Carcinogenicity	30
7.7	Immunotoxicity	30
7.8	Mechanism of toxicity.	32

8.	EFFECTS ON HUMANS	36
8.1	General population and occupational exposure	36
8.2	Case reports - individual accidents	38
8.3	Epidemiological studies	40
9.	EFFECTS ON OTHER ORGANISMS IN THE LABORATORY AND FIELD	43
10.	EVALUATION OF HUMAN HEALTH RISKS AND EFFECTS ON THE ENVIRONMENT	44
10.1	Evaluation of human health risks	44
10.1.1	Exposure	44
10.1.2	Health effects	44
10.1.2.1	Evaluation of animal data	45
10.1.2.2	Evaluation of human data	46
10.1.3	Guidance value	47
10.2	Evaluation of effects on the environment	47
11.	CONCLUSIONS AND RECOMMENDATIONS FOR PROTECTION OF HUMAN HEALTH	48
11.1	Conclusions	48
11.2	Recommendations for protection of human health	49
12.	FURTHER RESEARCH	50
13.	PREVIOUS EVALUATIONS BY INTERNATIONAL BODIES	51
	REFERENCES	52
	RESUME ET CONCLUSIONS	60
	RESUMEN Y CONCLUSIONES	66