

TABLE OF CONTENTS

FOREWORD.....	1
1. EXECUTIVE SUMMARY	4
2. IDENTITY AND PHYSICAL/CHEMICAL PROPERTIES	6
3. ANALYTICAL METHODS	7
4. SOURCES OF HUMAN AND ENVIRONMENTAL EXPOSURE	9
4.1 Natural and anthropogenic sources.....	9
4.2 Production and use.....	10
5. ENVIRONMENTAL TRANSPORT, DISTRIBUTION, AND TRANSFORMATION	11
5.1 Environmental transport and distribution	11
5.1.1 Air.....	11
5.1.2 Water.....	11
5.1.3 Soils and sediments.....	12
5.1.4 Biota.....	12
5.2 Environmental transformation	12
5.3 Bioaccumulation.....	12
6. ENVIRONMENTAL LEVELS AND HUMAN EXPOSURE.....	12
6.1 Environmental levels	12
6.1.1 Air.....	12
6.1.2 Water.....	13
6.1.3 Sediment	13
6.1.4 Soil.....	13
6.1.5 Biota.....	14
6.1.6 Food.....	14
6.1.7 Indoor dust.....	15
6.2 Human exposure: environmental	15
6.3 Human exposure: occupational.....	16
7. COMPARATIVE KINETICS AND METABOLISM IN LABORATORY ANIMALS AND HUMANS.....	17
7.1 Absorption	17
7.2 Distribution.....	18
7.3 Biotransformation.....	20
7.4 Excretion.....	20
7.5 Biological monitoring.....	20
7.6 PBPK models.....	20
8. EFFECTS ON LABORATORY MAMMALS AND <i>IN VITRO</i> TEST SYSTEMS	21
8.1 Single exposure.....	21
8.2 Short-term exposure.....	21
8.3 Medium-term exposure.....	22
8.4 Long-term exposure and carcinogenicity.....	23
8.5 Genotoxicity and related end-points	25

8.6	Reproductive toxicity.....	27
8.6.1	Effects on fertility	27
8.6.2	Developmental toxicity	27
8.7	Other toxicity.....	28
8.7.1	Local tissue irritation	28
8.7.2	Other toxic effects.....	28
8.8	Mode of action.....	30
9.	EFFECTS ON HUMANS	30
10.	EFFECTS ON OTHER ORGANISMS IN THE LABORATORY AND FIELD	33
10.1	Aquatic environment	33
10.2	Terrestrial environment.....	33
11.	EFFECTS EVALUATION	33
11.1	Evaluation of health effects	33
11.1.1	Hazard identification and dose–response assessment	33
11.1.2	Criteria for setting tolerable intakes/concentrations.....	36
11.1.3	Sample risk characterization	36
11.1.3.1	Exposure of the sample population	36
11.1.3.2	Health risks in the sample population	36
11.1.4	Uncertainties in the evaluation of health risks	37
11.2	Evaluation of environmental effects	37
12.	PREVIOUS EVALUATIONS BY IOMC BODIES	38
	REFERENCES.....	39
	APPENDIX 1 — ABBREVIATIONS AND ACRONYMS	51
	APPENDIX 2 — SOURCE DOCUMENTS	52
	APPENDIX 3 — CICAD PEER REVIEW	53
	APPENDIX 4 — CICAD FINAL REVIEW BOARD	54
	INTERNATIONAL CHEMICAL SAFETY CARDS.....	55
	RÉSUMÉ D'ORIENTATION.....	67
	RESUMEN DE ORIENTACIÓN.....	70