

TABLE OF CONTENTS

FOREWORD.....	1
1. EXECUTIVE SUMMARY.....	4
2. IDENTITY AND PHYSICAL/CHEMICAL PROPERTIES.....	6
3. ANALYTICAL METHODS.....	6
3.1 Air.....	6
3.2 Water.....	7
3.3 Solid materials.....	7
3.4 Human blood and plasma.....	7
4. SOURCES OF HUMAN AND ENVIRONMENTAL EXPOSURE.....	8
4.1 Natural sources.....	8
4.2 Estimated production.....	8
4.3 Uses.....	8
4.4 Emissions.....	8
5. ENVIRONMENTAL TRANSPORT, DISTRIBUTION, AND TRANSFORMATION.....	8
5.1 Environmental transport and distribution.....	8
5.2 Abiotic transformation.....	9
5.3 Biotransformation and biodegradation.....	9
6. ENVIRONMENTAL LEVELS AND HUMAN EXPOSURE.....	9
6.1 Environmental levels.....	9
6.1.1 Atmosphere.....	9
6.1.2 Hydrosphere.....	9
6.1.3 Sediment.....	10
6.1.4 Food.....	10
6.2 Human exposure.....	10
6.2.1 General population.....	10
6.2.2 Occupational exposure.....	11
6.2.3 Human plasma and urine.....	11
7. COMPARATIVE KINETICS AND METABOLISM IN LABORATORY ANIMALS AND HUMANS.....	11
7.1 Endogenous glyoxal.....	11
7.2 Absorption, distribution, and excretion.....	13
7.3 Biotransformation.....	13
7.4 Covalent binding.....	13
8. EFFECTS ON LABORATORY MAMMALS AND <i>IN VITRO</i> TEST SYSTEMS.....	14
8.1 Single exposure.....	14
8.2 Short-term exposure.....	15
8.3 Medium-term exposure.....	15
8.4 Long-term exposure and carcinogenicity.....	16
8.5 Genotoxicity and related end-points.....	17
8.6 Reproductive toxicity.....	18
8.6.1 Effects on fertility.....	18
8.6.2 Developmental toxicity.....	18

8.7	Irritation and sensitization	19
8.7.1	Skin irritation	19
8.7.2	Eye irritation	19
8.7.3	Sensitization	19
8.8	Mode of action	19
9.	EFFECTS ON HUMANS	20
10.	EFFECTS ON OTHER ORGANISMS IN THE LABORATORY AND FIELD	21
10.1	Aquatic environment	21
10.2	Terrestrial environment	22
11.	EFFECTS EVALUATION	22
11.1	Evaluation of health effects	22
11.1.1	Hazard identification and dose–response assessment	22
11.1.2	Criteria for setting tolerable intakes/concentrations	23
11.1.3	Sample risk characterization	23
11.1.4	Uncertainties in the evaluation of health risks and in the sample risk characterization	23
11.2	Evaluation of environmental effects	24
11.2.1	Aquatic environment	24
11.2.2	Terrestrial environment	24
11.2.3	Uncertainties in the evaluation of environmental effects	24
12.	PREVIOUS EVALUATIONS BY INTERNATIONAL BODIES	25
	REFERENCES	25
	APPENDIX 1 — SOURCE DOCUMENT	32
	APPENDIX 2 — CICAD PEER REVIEW	33
	APPENDIX 3 — CICAD FINAL REVIEW BOARD	33
	APPENDIX 4 — ABBREVIATIONS AND ACRONYMS	34
	APPENDIX 5 — AEROSOL EXPOSURE MODEL	35
	INTERNATIONAL CHEMICAL SAFETY CARD	36
	RÉSUMÉ D'ORIENTATION	38
	RESUMEN DE ORIENTACIÓN	41