

CONTENTS

ENVIRONMENTAL HEALTH CRITERIA FOR DEMETON-S-METHYL

PREAMBLE	viii
ABBREVIATIONS	xviii
1. SUMMARY AND EVALUATION, CONCLUSIONS AND RECOMMENDATIONS	1
1.1 Summary and evaluation	1
1.1.1 Identity, physical and chemical properties, and analytical methods	1
1.1.2 Sources of human and environmental exposure	1
1.1.3 Environmental transport, distribution and transformation	1
1.1.4 Environmental levels and human exposure	2
1.1.5 Kinetics and metabolism	2
1.1.6 Effects on laboratory animals and <i>in vitro</i> test systems	3
1.1.6.1 Single exposure	3
1.1.6.2 Short-term exposure	3
1.1.6.3 Long-term exposure	3
1.1.6.4 Skin and eye irritation and sensitization	3
1.1.6.5 Reproduction, embryotoxicity and teratogenicity	4
1.1.6.6 Mutagenicity and related end-points	4
1.1.6.7 Delayed neurotoxicity	4
1.1.6.8 Toxicity of metabolites	4
1.1.7 Mechanism of toxicity - mode of action	4
1.1.8 Effects on humans	5
1.1.9 Effects on other organisms in the laboratory and field	5
1.2 Conclusions	5
1.3 Recommendations	6

2.	IDENTITY, PHYSICAL AND CHEMICAL PROPERTIES, ANALYTICAL METHODS	7
2.1	Identity	7
2.2	Physical and chemical properties	9
2.3	Conversion factors	10
2.4	Analytical methods	10
2.5	Formation of derivatives during storage	11
3.	SOURCES OF HUMAN AND ENVIRONMENTAL EXPOSURE	12
3.1	Natural occurrences	12
3.2	Man-made sources	12
3.2.1	Production	12
3.2.2	Uses	12
4.	ENVIRONMENTAL TRANSPORT, DISTRIBUTION AND TRANSFORMATION	13
4.1	Transport and distribution between media	13
4.2	Abiotic and biotic transformation	13
4.2.1	Hydrolytic degradation	13
4.2.2	Photodegradation	13
4.2.3	Degradation in soil	14
4.2.4	Biodegradation in plants	16
5.	ENVIRONMENTAL LEVELS AND HUMAN EXPOSURE	17
5.1	General population exposure	17
5.2	Occupational exposure during manufacture, formulation or use	17
6.	KINETICS AND METABOLISM IN LABORATORY ANIMALS AND HUMANS	18
6.1	Absorption, distribution and excretion	18
6.2	Metabolic transformation	19

7.	EFFECTS ON EXPERIMENTAL ANIMALS AND <i>IN VITRO</i> TEST SYSTEMS	21
7.1	Single exposure	21
7.1.1	Oral	21
7.1.2	Inhalation	25
7.1.3	Dermal	25
7.2	Short-term exposure	25
7.2.1	Rat	25
7.2.2	Dog	26
7.3	Long-term exposure	27
7.3.1	Mouse	27
7.3.2	Rat	28
7.4	Skin and eye irritation and sensitization	29
7.4.1	Skin and eye irritation	29
7.4.2	Skin sensitization	29
7.5	Reproduction, embryotoxicity and teratogenicity	30
7.5.1	Reproduction	30
7.5.2	Embryotoxicity and teratogenicity	31
7.5.2.1	Rat	31
7.5.2.2	Rabbit	32
7.6	Mutagenicity and related end-points	32
7.6.1	DNA damage and repair	32
7.6.2	Mutation	32
7.6.3	Chromosomal effects	32
7.7	Delayed neurotoxicity	35
7.8	Toxicity of metabolites	36
7.9	Mechanism of toxicity - mode of action	36
7.10	Potentiation	36
8.	EFFECTS ON HUMANS	38
8.1	General population exposure	38
8.2	Occupational exposure	39
8.2.1	Acute poisoning	39
8.2.2	Effects of short- and long-term exposure	40
9.	EFFECTS ON OTHER ORGANISMS IN THE LABORATORY AND FIELD	43
9.1	Aquatic organisms	43
9.1.1	Algae	43

9.1.2	Invertebrates	43
9.1.3	Fish	43
9.2	Terrestrial organisms	43
9.2.1	Soil microorganisms	43
9.2.2	Invertebrates	47
9.2.3	Birds	48
9.2.4	Effects in field	48
10.	EVALUATION OF HUMAN HEALTH RISKS AND EFFECTS ON THE ENVIRONMENT	50
10.1	Evaluation of human health risks	50
10.2	Evaluation of effects on the environment	51
10.2.1	Aquatic organisms	51
10.2.1.1	Acute risk	52
10.2.1.2	Chronic risk	54
10.2.2	Terrestrial organisms	54
10.2.2.1	Birds	56
10.2.2.2	Mammals	57
10.2.2.3	Bees	59
10.2.2.4	Earthworms	59
11.	CONCLUSIONS AND RECOMMENDATIONS FOR PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT	60
12.	PREVIOUS EVALUATIONS BY INTERNATIONAL BODIES	61
	REFERENCES	63
	RÉSUMÉ ET ÉVALUATION, CONCLUSIONS ET RECOMMANDATIONS	70
	RÉSUMEN Y EVALUACIÓN, CONCLUSIONES Y RECOMENDACIONES	77