CONTENTS

ENVIRONMENTAL HEALTH CRITERIA FOR HEXACHLOROBUTADIENE

1.	SUMMARY					
	1.1	Identi	ty, physical and chemical properties,			
		analyt	ical methods	11		
	1.2	Sources of human and environmental exposure				
	1.3	Environmental transport, distribution and				
		transformation				
	1.4	Environmental levels and human exposure				
	1.5	Kinetics and metabolism				
	1.6	Effects on organisms in the environment				
	1.7	Effects on experimental animals and				
		in vitre	o test systems	13		
		1.7.1	General toxicity	13		
		1.7.2	Reproduction, embryotoxicity and			
-			teratogenicity	14		
		1.7.3	Genotoxicity and carcinogenicity	15		
			Mechanisms of toxicity	15		
	1.8		ts on humans	15		
	1.9	Evaluation of human health risks and				
		effects on the environment				
		1.9.1	Evaluation of human health risks	16		
		1.9.2	Evaluation of effects on the			
			environment	17		
2.	IDE	IDENTITY, PHYSICAL AND CHEMICAL				
	PRO	OPERT	IES, ANALYTICAL METHODS	18		
	2.1	Identi	ty	18		
	2.2	Physic	cal and chemical properties	18		
	2.3	Conversion factors				
	2.4	Analy	tical methods	19		
3.	SOU	OURCES OF HUMAN AND ENVIRONMENTAL				
	EXPOSURE					
	3.1	Natural occurrence				
	3.2	Anthr	opogenic sources	25		
		3.2.1	Production levels and processes	25		
		3.2.2	Uses	26		
		3.2.3	Waste disposal	26		

4.	ENVIRONMENTAL TRANSPORT, DISTRIBUTION						
	AND TRANSFORMATION						
	4.1	.1 Transport and distribution between media					
		.2 Abiotic degradation					
	1.2		Photolysis	28			
			Photooxidation	29			
		123	Hydrolysis	29			
				30			
		4.3 Biodegradation 4.4 Bioaccumulation					
_			MENTAL LEVELS AND HUMAN EXPOSURE	32			
5.	EN	VIKON	MENTAL LEVELS AND HUMAN EXPOSURE	32			
	5.1		onmental levels	32			
		5.1.1		32			
		5.1.2	Water Soil and sediment	32			
				32			
			Biota	32			
			al population exposure	32			
	5.3	Occupational exposure 50					
6.	KIN	KINETICS AND METABOLISM					
	6.1	Absor	ption and distribution	51			
	6.2	Metab	polism	51			
		6.2.1	In vitro studies	55			
		6.2.2	In vivo studies	56 58			
	6.3	Reaction with body components					
		Excretion					
7.	EFI	FECTS	ON ORGANISMS IN THE				
	EN	VIRON	MENT	61			
	7.1	Aquat	tic organisms	61			
			Short-term toxicity	61			
		7.1.2	Long-term toxicity	65			
	7.2		strial organisms	66			
			Short-term toxicity	66			
8.	EF	FECTS	ON EXPERIMENTAL ANIMALS				
		AND IN VITRO TEST SYSTEMS					
	8.1	Single	exposure	67			
	0.1		Inhalation exposure	67			
			8 1 1 1 Mortality	67			

		8.1.1.2 Systemic effects	67				
	8.1.2	Oral exposure	67				
		8.1.2.1 Mortality	67				
		8.1.2.2 Systemic effects	67				
	8.1.3		70				
		8.1.3.1 Mortality	70				
		8.1.3.2 Systemic effects	70				
	8.1.4	Other routes of exposure	70				
8.2							
		Inhalation exposure	71				
		Oral exposure	71				
		8.2.2.1 Rats	71				
		8.2.2.2 Mice	73				
8.3	Long-	term exposure	74				
		and eye irritation; sensitization	75				
		Irritation	75				
	8.4.2	Sensitization	75				
8.5	Reproduction, embryotoxicity and						
		genicity	76				
	8.5.1	Reproduction	76				
	8.5.2	Embryotoxicity and teratogenicity	77				
8.6	Mutagenicity and related end-points						
	8.6.1	In vitro effects	78				
	8.6.2	In vivo effects	85				
8.7	Carcinogenicity/long-term toxicity						
	8.7.1	Inhalation exposure	85				
	8.7.2	Oral exposure	86				
	8.7.3	Dermal exposure	86				
	8.7.4	Exposure by other routes	87				
8.8							
		Effects on the nervous system	88				
	8.8.2	Effects on the liver	88				
		8.8.2.1 Acute effects	88				
		8.8.2.2 Short-term effects	89				
	8.8.3		89				
		8.8.3.1 Acute effects	89				
		8.8.3.2 Short- and long-term effects	91				
8.9	, , , , , , , , , , , , , , , , , , , ,						
	metabolites						
	8.9.1	Factors modifying toxicity	92				
		8.9.1.1 Surgery	92				
		8.9.1.2 Inhibitors and inducers of					
		mixed-function oxidases (MFO)	92				
		8.9.1.3 Inhibitors of γ -glutamyltrans-					
		peptidase (EC 2.3.2.2)	92				

			8.9.1.4	Inhibitors of cysteine conjugate		
				β-lyase	94	
			8.9.1.5	Inhibitors of organic anion		
				transport	94	
			8.9.1.6	Non-protein sylfhydryl scavengers	94	
		8.9.2	Toxicit	y of metabolites	95	
			8.9.2.1	In vitro studies	95	
				In vivo studies	96	
	8.10			toxicity - mode of action	97	
				nisms of toxicity	97	
		8.10.2	Mode o	of action	98	
9.	EFFECTS ON HUMANS					
				ation exposure	99	
			ational e		99	
				olism studies	99	
	9.4 Extrapolation of NOAEL from animals to					
		human	IS		100	
10.	EVALUATION OF HUMAN HEALTH RISKS					
	AND EFFECTS ON THE ENVIRONMENT					
	10.1			human health risks	101	
				identification	101	
			Exposu		102	
	10.1.3 Hazard evaluation					
	10.2 Evaluation of effects on the environment					
				identification	103	
			Exposu		104	
		10.2.3	Hazard	evaluation	104	
11.	FU	RTHER	RESEA	ARCH	105	
12.			SEVAL	UATIONS BY INTERNATIONAL	104	
	BO	DIES			106	
RE	FER	ENCES			107	
RE	SUM	E			121	
RE	SUM	EN			129	