CONTENT

		Page
Foreword		1
Chapter 1	Principal Reasons for the Present Study and Choice of Its Objectives	3
	.1 The Problem of Industrial metal waste disposal into the marine environment	5
	.2 Definition of the terms of reference of the study	6
	3 Criteria used for the selection of metals and metal complexes studied	8
	4 Some comments on the reasons for excluding certain metals	14
Chapter 2	Origins, Forms and Characteristics of Chromium Pollution	19
_	.1 Sources and Production	21
	.2 A Summary of Production and utilization	23
	.3 Some applications	26
	4 An initial examination of the qualitative and quantitive wastes produced by	
	various industrial processes discussed previously	31
	.5 An examination of various known preventative techniques for waste products	
	containing chromium	35
Chapter 3	Origins, Forms and Characteristics of zinc and Cadmium Pollution	51
	.1 Sources and production	53
	.2 Summary of production and utilization	55
	.3 Utilization	65
	.4 A preliminary discuss on the qualitative and quantitative waste products by various	
	industries	69
	.5 Summary of the preventative techniques known for effluents containing zinc and/or	•
	cadmium	81
Chapter 4	Origins, Forms and Characteristics of Pollution by Cyano-Metal Compounds	87
-	.1 Summary of large-scale methods of production of cyanides and cyano-metal	
	compounds	89
	.2 Main industrial sectors concerned in the uses of cyanides and cyano-metallic	
	compounds	90
	.3 Census of various known prevention techniques for effluents containing cyanides	
	and cyano-metal compounds	93
Chapter 5	Measuring and Monitoring Systems of the Different Known forms of Pollution for	
	the Polluting Elements or compounds Concerned	103
	.1 Water Quality	105
	.2 Parameters of interest to water quality	109
	.3 Monitoring systems	111
	.4 Analytical techniques	119
	.5 General economic data	128
Chapter 6	The Eco-Toxicological Risks Involved	137
_	.1 Introduction	139
	.2 General considerations	139
	3 Supply routes and self-regulation of concentration in the marine environment	141
	.4 Transfer to the bios	143
	.5 Biological mechanisms (absorption-distribution-fixation)	150
	.6 Interaction parameters	152
	.7 Toxity of elements of compound pollutants under consideration in this report	154
	.8 Evolution variability – Phenomena of adaptation	157
	.9 Transfer to man	160

6.	10 Impact of marine pollution on man	165
6.	11 Research on the practical threshold of the marine environment	166
Chapter 7	Conclusion – Generation and specific recommendations	169
7.	1 General recommendations	171
7.	2 Specific recommendations	172
7.	3 Suggestions for pilot action plans	177
Annex 1	General Synoptic Diagram of Pollution Caused by the Production and the various u	ises of
	chromium	185
Annex 2	General synoptic diagram of pollution caused by the production and the various use	es of
	Cadmium and zinc	197
Bibliograp	hy 207	
List of Ind	ustrial Groups Members of the A.E.O. and persons who contributed to the study	215