

1. Contents

1.	Contents	3
2.	Recommendations	5
3.	Terms of reference	12
3.1.	Scientific Committee on Problems of the Environment (SCOPE)	12
3.1.1.	Origin	12
3.1.2.	Objectives	12
3.1.3.	Membership	13
3.2.	SCOPE Commission on Monitoring	14
3.2.1.	Origin	14
3.2.2.	Function	14
3.2.3.	Membership	15
3.3.	Request to SCOPE from the UN Conference on the Human Environment, Stockholm 1972	16
3.4.	SCOPE's acceptance of the UN request	16
4.	Monitoring – basic considerations	17
5.	Environmental problems	21
5.1.	Introduction	21
5.2.	Discussion of critical environmental problems	22
5.2.1.	Potentially adverse climatic change resulting from human activity	22
5.2.2.	Potentially adverse changes on biota and man from contamination by toxic substances including radionuclides	23
5.2.3.	Potentially adverse changes in biological productivity caused by improper land-use	24
5.2.4.	Potentially adverse changes in the growth, structure and distribution of the human population	25
5.2.5.	Changes in the subjective human perception of the environment	25
5.2.6.	Eutrophication of waters	26
5.2.7.	Decreasing freshwater resources	26
5.2.8.	Natural disasters	26
6.	Environmental variables appropriate for monitoring	27
6.1.	Introduction	27
6.2.	Physical and chemical data from the atmosphere pertinent to global climatic change	27
6.3.	Physical and chemical data from air, water, soils and biota pertinent to human health and welfare	29
6.3.1.	The media approach	29

6.3.2.	Atmosphere	31
6.3.3.	Water	32
6.3.4.	Soil	35
6.3.5.	Organisms	36
6.3.6.	Critical groups of substances	36
6.4.	Physical, chemical and biological data reflecting the state of human health	38
6.4.1.	The general problem	38
6.4.2.	The special problem	39
6.5.	Biological data reflecting the performance of biological systems	41
7.	The design of global environmental monitoring	48
7.1.	Introduction	48
7.2.	Reference areas	48
7.3.	High exposure areas	50
7.4.	Other monitoring systems (regional and global surveys)	51
7.4.1.	Variables in relation to climatic change	51
7.4.2.	Source monitoring	52
7.4.3.	Variables in relation to biological changes	52
7.4.4.	Short-lived phenomena	53
7.5.	Data handling	53
7.6.	Pilot studies to develop global monitoring	54
7.6.1.	General remarks	54
7.6.2.	Pilot studies in the non-marine areas	55
7.6.3.	Pilot studies in the marine area	56
7.7.	Activities to support and promote environmental monitoring	60
7.7.1.	Historical monitoring	60
7.7.2.	Environmental archives	60
7.7.3.	Training (scientific and technical) for monitoring	61
8.	Operational and institutional arrangements	62
8.1.	Functions	62
8.2.	Co-ordination	62
8.2.1.	Introduction	62
8.2.2.	The Monitoring Office	63
8.2.3.	A Central Monitoring Co-ordinating Unit	64
8.3.	Evaluation	65
8.4.	Monitoring and other UN activities	65
	Acknowledgements	66
	List of acronyms	67