

UNITED NATIONS GENERAL ASSEMBLY



Distr. GENERAL

A/7575 and Rev. 1 1 July 1969

ORIGINAL: ENGLISH

Twenty-fourth session

QUESTION OF GENERAL AND COMPLETE DISARMAMENT

Report of the Secretary-General on chemical and bacteriological (biological) weapons and the effects of their possible use

Pursuant to General Assembly resolution 2454 A (XXIII) of 20 December 1968, the Secretary-General has the honour to transmit herewith to the General Assembly the report on chemical and bacteriological (biological) weapons and the effects of their possible use, prepared with the assistance of qualified consultant experts.

In accordance with paragraph 4 of the resolution, the report is also being transmitted to the Security Council (S/9292) and the Conference of the Eighteen-Nation Committee on Disarmament $\frac{1}{2}$ as well as to the Governments of Member States.

^{1/} By a letter dated 1 July 1969 from the Secretary-General to the Co-Chairmen of the Conference.

TABLE OF CONTENTS

		Page					
FOREWORD	Ε¥	THE SECRETARY-GENERAL					
LETTER O	F TR	ANSMITTAL					
INTRODUC	PION						
CHAPTER		THE BASIC CHARACTERISTICS OF CHEMICAL AND BACTERIOLOGICAL (BIOLOGICAL) MEANS OF WARFARE					
Α.		RACTERISTICS OF CHEMICAL AND BACTERIOLOGICAL (BIOLOGICAL)					
		PONS					
	1.	Differences between chemical and bacteriological (biological) warfare					
		Potential toxicity					
		Speed of action					
		Duration of effect					
		Specificity					
		Controllability					
		Residual effects					
	2.	Technology of chemical and bacteriological (biological) warfare					
	3.	Chemical and bacteriological (biological) weapon systems 11					
В•		CONCEPTS OF THE USE OF CHEMICAL AND BACTERIOLOGICAL (BIOLOGICAL) WEAPONS IN WAR					
	1.	Chemical weapons					
	2.	Bacteriological (biological) weapons					
C.		MICAL AND BACTERIOLOGICAL (BIOLOGICAL) AGENTS					
	1.	Chemical agents					
		Agents affecting man and animals					
		Agents affecting plants					
		Methods of delivery					
	2.	Bacteriological (biological) agents					
		The selection of agents for use in warfare					
		Agents affecting man					
		Agents affecting animals					
		Agents affecting plants					
		Methods of delivery					

TABLE OF CONTENTS (continued)

			Page
		Annex A: Chemical Properties, Formulations and Toxicities of Lethal Chemical Agents	66
		Annex B: Tear and Harassing Gases	68
		Annex C: Some Biological Agents that May be Used to Attack Man	69
CHAPTER	III:	ENVIRONMENTAL FACTORS AFFECTING THE USE OF CHEMICAL AND BACTERIOLOGICAL (BIOLOGICAL) WEAFONS	71
Α.	GEN.	ERAL CONSIDERATIONS	71
	1.	Phenomena associated with the dispersal of chemical and bacteriological (biological) agents	71
В•		INFLUENCE OF ATMOSPHERIC FACTORS ON CLOUDS OF AEROSOLS OR CURS	73
	1.	State of the atmosphere	74
	2.	<u>Urban areas</u>	76
	3.	Effect of wind and topography	78
	4.	Example of combined effects of wind and the state of the atmosphere on a cloud	79
•	5.	Special features of bacteriological (biological) aerosols	81
С.	INF	LUENCE OF ATMOSPHERIC FACTORS ON CHEMICAL AGENTS	83
	l.	Influence of temperature	83
	2.	Influence of humidity	84
	3.	Influence of atmospheric precipitation	84
	4.	Influence of wind	85
	5•	Influence of soil-dependent factors	85
		Nature of the soil	85
		Vegetation	85
		Urban areas	86
D•		TUENCE OF ATMOSPHERIC FACTORS ON BACTERIOLOGICAL (BIOLOGICAL)	86
	1.	Influence of temperature	87
	2.	Influence of humidity	87
	3.	Influence of solar radiation	88
	4.	Influence of atmospheric precipitation	89
	5.	Influence of the chemical composition of the atmosphere	89
	6.	General effects of climate	89

TABLE OF CONTENTS (continued)

		<u> </u>	Page		
CHAFTER	IV:	POSSIBLE LONG-TERM EFFECTS OF CHEMICAL AND BACTERIOLOGICAL (BIOLOGICAL) WARFARE ON HUMAN HEALTH AND ECOLOGY	90		
Α,	INTE	RODUCTION	90		
В.	CONS	SEQUENCES TO MAN OF UPSETTING THE ECOLOGICAL EQUILIBRIUM	91		
C.		SIBLE LONG-TERM EFFECTS OF CHEMICAL AND BACTERIOLOGICAL DLOGICAL) MEANS OF WARFARE ON MAN AND HIS ENVIRONMENT	93		
	1.	Chemical weapons	93		
	2.	Bacteriological (Biological) Weapons	95		
	- - •	Against man	95		
		Against domestic animals	98		
		Against crops	99		
	۲.		101		
	_				
CHAPTER	۷:	ECONOMIC AND SECURITY IMPLICATIONS OF THE DEVELOPMENT, ACQUISITION AND POSSIBLE USE OF CHEMICAL AND BACTERIOLOGICAL	٠		
			102		
Α.	INT	RODUCTION	102		
В.	PROI	EUCTION	102		
	1.	Chemical weapons	102		
	2.	Bacteriological (biological) weapons	104		
C.	DEL	IVERY SYSTEMS	105		
D.	PRO	PECTION	106		
E.	COSI	T TO SOCIETY	107		
P.		RELEVANCE OF CHEMICAL AND PACTERIOLOGICAL (BIOLOGICAL) WEAPONS			
	TO I	MILITARY AND CIVIL SECURITY	110		
	Anne	ex A: Economic Loss from Possible Use of Chemical and Bacteriological (Biological) Weapons against Crops	113		
CONCLUS	ION	<i>.</i>	114		
APPENDI	CES		117		
Ge	neva]	Protocol of 17 June 1925	117		
General Assembly resolution 2162 B (XXI)					
- Ge	neral	Assembly resolution 2454 A (XXIII)	120		
BIBLIOGRAPHY					
טרדותדית	TRZT.IIŢ		122		

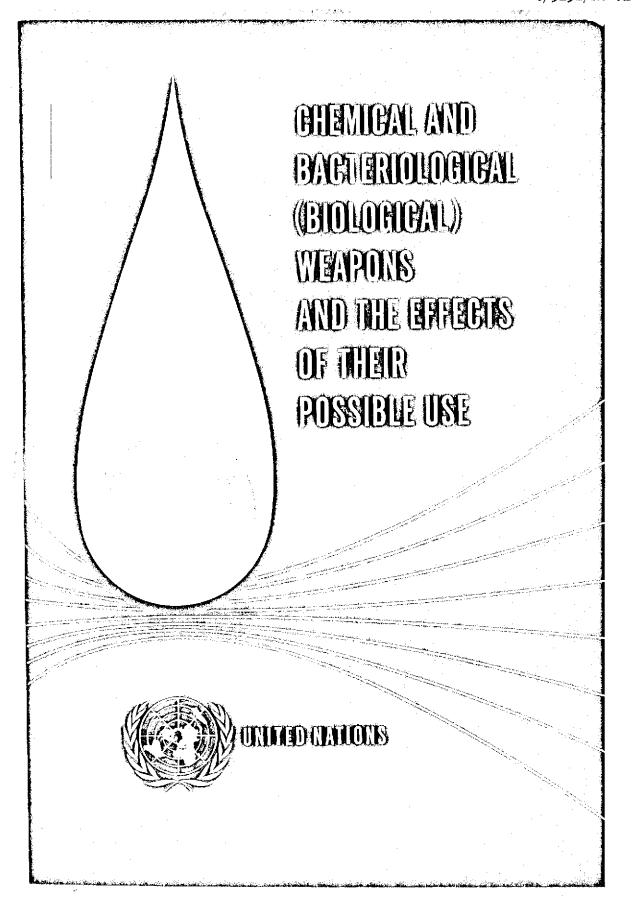
FOREWORD BY THE SECRETARY-GENERAL

During the past few years, I have become increasingly concerned by developments in the field of chemical and bacteriological (biological) weapons and have given expression to this concern on several occasions. A year ago, I stated publicly that "the international community was not sufficiently conscious of the dangers inherent in this new type of weapon of mass murder", and that "due attention had not been focused on this very serious problem". In the introduction to my annual report on the work of the Organization, in September 1968, I stated:

"While progress is being made in the field of nuclear disarmament, there is another aspect of the disarmament problem to which I feel too little attention has been devoted in recent years. The question of chemical and biological weapons has been overshadowed by the question of nuclear weapons, which have a destructive power several orders of magnitude greater than that of chemical and biological weapons. Nevertheless, these too are weapons of mass destruction regarded with universal horror. In some respects, they may be even more dangerous than nuclear weapons because they do not require the enormous expenditure of financial and scientific resources that are required for nuclear weapons. Almost all countries, including small ones and developing ones, may have access to these weapons, which can be manufactured quite cheaply, quickly and secretly in small laboratories or factories. This fact in itself makes the problem of control and inspection much more difficult. Moreover, since the adoption, on 17 June 1925, of the Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases and of Bacteriological Methods of Warfare, there have been many scientific and technical developments and numerous improvements, if that is the right word, in chemical and biological weapons, which have created new situations and new problems. On the one hand, there has been a great increase in the capability of these weapons to inflict unimaginable suffering, disease and death to ever larger numbers of human beings; on the other hand, there has been a growing tendency to use some chemical agents for civilian riot control and a dangerous . trend to accept their use in some form in conventional warfare.

"Two years ago, by resolution 2162 B (XXI), the General Assembly called for the strict observance by all States of the principles and objectives of the Geneva Protocol of 1925, condemned all actions contrary to those objectives and invited all States to accede to the Protocol. Once again, I would like to add my voice to those of others in urging the early and complete implementation of this resolution. However, in my opinion, much more is needed...."

At its twenty-third session, by resolution 2454 A (XXIII), the General Assembly requested me to prepare, with the assistance of qualified consultant experts, a report on chemical and bacteriological (biological) weapons in accordance with the



Department of Political and Security Council Affairs

CHEMICAL AND
BACTERIOLOGICAL
(BIOLOGICAL)
WEAPONS
AND THE EFFECTS
OF THEIR
POSSIBLE USE

REPORT OF THE SECRETARY-GENERAL

