

**TOXICOLOGICAL PROFILE FOR
HMX**

Prepared by:

Sciences International, Inc.
Under Subcontract to:

Research Triangle Institute
Under Contract No. 205934606

Prepared for:

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry**

September 1997

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UPDATE STATEMENT

Toxicological profiles are revised and republished as necessary, but no less than once every three years. For information regarding the update status of previously released profiles, contact ATSDR at:

Agency for Toxic Substances and Disease Registry
Division of Toxicology/Toxicology Information Branch
1600 Clifton Road NE, E-29
Atlanta, Georgia 30333

FOREWORD

This toxicological profile is prepared in accordance with guidelines* developed by the Agency for Toxic Substances and Disease Registry (ATSDR) and the Environmental Protection Agency (EPA). The original guidelines were published in the *Federal Register* on April 17, 1987. Each profile will be revised and republished as necessary.

The ATSDR toxicological profile succinctly characterizes the toxicologic and adverse health effects information for the hazardous substance described therein. Each peer-reviewed profile identifies and reviews the key literature that describes a hazardous substance's toxicologic properties. Other pertinent literature is also presented, but is described in less detail than the key studies. The profile is not intended to be an exhaustive document; however, more comprehensive sources of specialty information are referenced.

The focus of the profiles is on health and toxicologic information; therefore, each toxicological profile begins with a public health statement that describes, in nontechnical language, a substance's relevant toxicological properties. Following the public health statement is information concerning levels of significant human exposure and, where known, significant health effects. The adequacy of information to determine a substance's health effects is described in a health effects summary. Data needs that are of significance to protection of public health are identified by ATSDR and EPA.

Each profile includes the following:

- (A) The examination, summary, and interpretation of available toxicologic information and epidemiologic evaluations on a hazardous substance to ascertain the levels of significant human exposure for the substance and the associated acute, subacute, and chronic health effects;
- (B) A determination of whether adequate information on the health effects of each substance is available or in the process of development to determine levels of exposure that present a significant risk to human health of acute, subacute, and chronic health effects; and
- (C) Where appropriate, identification of toxicologic testing needed to identify the types or levels of exposure that may present significant risk of adverse health effects in humans.

The principal audiences for the toxicological profiles are health professionals at the Federal, State, and local levels; interested private sector organizations and groups; and members of the public.

This profile reflects ATSDR's assessment of all relevant toxicologic testing and information that has been peer-reviewed. Staff of the Centers for Disease Control and Prevention and other Federal scientists have also reviewed the profile. In addition, this profile has been peer-reviewed by a nongovernmental panel and was made available for public review. Final responsibility for the contents and views expressed in this toxicological profile resides with ATSDR.



David Satcher, M.D., Ph.D.
Administrator
Agency for Toxic Substances and
Disease Registry

*Legislative Background

The toxicological profiles are developed in response to the Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499) which amended the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund). Section 211 of SARA also amended Title 10 of the U. S. Code, creating the Defense Environmental Restoration Program. Section 2704(a) of Title 10 of the U. S. Code directs the Secretary of Defense to notify the Secretary of Health and Human Services of not less than 25 of the most commonly found unregulated hazardous substances at defense facilities. Section 2704(b) of Title 10 of the U. S. Code directs the Administrator of the Agency for Toxic Substances and Disease Registry (ATSDR) to prepare a toxicological profile for each substance on the list provided by the Secretary of Defense under subsection (b).

CONTRIBUTORS

CHEMICAL MANAGER(S)/AUTHOR(S):

Henry Abadin, MSPH
ATSDR, Division of Toxicology, Atlanta, GA

John J. Liccione, Ph.D.
Sciences International, Inc., Alexandria, VA

THE PROFILE HAS UNDERGONE THE FOLLOWING ATSDR INTERNAL REVIEWS:

1. Green Border Review. Green Border review assures the consistency with ATSDR policy.
2. Health Effects Review. The Health Effects Review Committee examines the health effects chapter of each profile for consistency and accuracy in interpreting health effects and classifying end points.
3. Minimal Risk Level Review. The Minimal Risk Level Workgroup considers issues relevant to substance-specific minimal risk levels (MRLs), reviews the health effects database of each profile, and makes recommendations for derivation of MRLs.

PEER REVIEW

A peer review panel was assembled for HMX. The panel consisted of the following members:

1. Dr. Tim Borges, Technical Information Analyst, Clinton, Tennessee
2. Mr. Bruce Jacobs, Director, General Physics Corporation, Edgewood, Maryland
3. Dr. Ronald Spanggord, Director of Bio-Analytical Chemistry, SRI International, Menlo Park, California

These experts collectively have knowledge of HMX's physical and chemical properties, toxicokinetics, key health end points, mechanisms of action, human and animal exposure, and quantification of risk to humans. All reviewers were selected in conformity with the conditions for peer review specified in Section 104(i)(13) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended.

Scientists from the Agency for Toxic Substances and Disease Registry (ATSDR) have reviewed the peer reviewers' comments and determined which comments will be included in the profile. A listing of the peer reviewers' comments not incorporated in the profile, with a brief explanation of the rationale for their exclusion, exists as part of the administrative record for this compound. A list of databases reviewed and a list of unpublished documents cited are also included in the administrative record.

The citation of the peer review panel should not be understood to imply its approval of the profile's final content. The responsibility for the content of this profile lies with the ATSDR.

CONTENTS

FOREWORD	v
CONTRIBUTORS	vii
PEER REVIEW	ix
LIST OF FIGURES	xv
LIST OF TABLES	xvii
1. PUBLIC HEALTH STATEMENT	1
1.1 WHAT IS HMX?	1
1.2 WHAT HAPPENS TO HMX WHEN IT ENTERS THE ENVIRONMENT?	2
1.3 HOW MIGHT I BE EXPOSED TO HMX?	3
1.4 HOW CAN HMX ENTER AND LEAVE MY BODY?	3
1.5 HOW CAN HMX AFFECT MY HEALTH?	4
1.6 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO HMX?	5
1.7 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?	5
1.8 WHERE CAN I GET MORE INFORMATION?	5
2. HEALTH EFFECTS	7
2.1 INTRODUCTION	7
2.2 DISCUSSION OF HEALTH EFFECTS BY ROUTE OF EXPOSURE	7
2.2.1 Inhalation Exposure	9
2.2.1.1 Death	9
2.2.1.2 Systemic Effects	9
2.2.1.3 Immunological and Lymphoreticular Effects	10
2.2.1.4 Neurological Effects	10
2.2.1.5 Reproductive Effects	10
2.2.1.6 Developmental Effects	10
2.2.1.7 Genotoxic Effects	10
2.2.1.8 Cancer	11
2.2.2 Oral Exposure	11
2.2.2.1 Death	11
2.2.2.2 Systemic Effects	19
2.2.2.3 Immunological and Lymphoreticular Effects	22
2.2.2.4 Neurological Effects	23
2.2.2.5 Reproductive Effects	23
2.2.2.6 Developmental Effects	24
2.2.2.7 Genotoxic Effects	24
2.2.2.8 Cancer	24
2.2.3 Dermal Exposure	24
2.2.3.1 Death	24
2.2.3.2 Systemic Effects	28

2.2.3.3	Immunological and Lymphoreticular Effects	30
2.2.3.4	Neurological Effects	30
2.2.3.5	Reproductive Effects	31
2.2.3.6	Developmental Effects	31
2.2.3.7	Genotoxic Effects	31
2.2.3.8	Cancer	31
2.3	TOXICOKINETICS	31
2.3.1	Absorption	32
2.3.1.1	Inhalation Exposure	32
2.3.1.2	Oral Exposure	32
2.3.1.3	Dermal Exposure	32
2.3.2	Distribution	33
2.3.2.1	Inhalation Exposure	33
2.3.2.2	Oral Exposure	33
2.3.2.3	Dermal Exposure	33
2.3.2.4	Other Routes of Exposure	33
2.3.3	Metabolism	34
2.3.4	Excretion	34
2.3.4.1	Inhalation Exposure	34
2.3.4.2	Oral Exposure	35
2.3.4.3	Dermal Exposure	35
2.3.4.4	Other Routes of Exposure	35
2.4	MECHANISMS OF ACTION	35
2.5	RELEVANCE TO PUBLIC HEALTH	36
2.6	BIOMARKERS OF EXPOSURE AND EFFECT	45
2.6.1	Biomarkers Used to Identify or Quantify Exposure to HMX	46
2.6.2	Biomarkers Used to Characterize Effects Caused by HMX	46
2.7	INTERACTIONS WITH OTHER SUBSTANCES	47
2.8	POPULATIONS THAT ARE UNUSUALLY SUSCEPTIBLE	47
2.9	METHODS FOR REDUCING TOXIC EFFECTS	48
2.9.1	Reducing Peak Absorption Following Exposure	48
2.9.2	Reducing Body Burden	48
2.9.3	Interfering with the Mechanism of Action for Toxic Effects	49
2.10	ADEQUACY OF THE DATABASE	49
2.10.1	Existing Information on Health Effects of HMX	49
2.10.2	Identification of Data Needs	51
2.10.3	On-going Studies	55
3.	CHEMICAL AND PHYSICAL INFORMATION	57
3.1	CHEMICAL IDENTITY	57
3.2	PHYSICAL AND CHEMICAL PROPERTIES	57
4.	PRODUCTION, IMPORT, USE, AND DISPOSAL	61
4.1	PRODUCTION	61
4.2	IMPORT/EXPORT	61
4.3	USE	61
4.4	DISPOSAL	62

5. POTENTIAL FOR HUMAN EXPOSURE	63
5.1 OVERVIEW	63
5.2 RELEASES TO THE ENVIRONMENT	63
5.2.1 Air	63
5.2.2 Water	65
5.2.3 Soil	65
5.3 ENVIRONMENTAL FATE	65
5.3.1 Transport and Partitioning	65
5.3.2 Transformation and Degradation	66
5.3.2.1 Air	66
5.3.2.2 Water	66
5.3.2.3 Sediment and Soil	67
5.4 LEVELS MONITORED OR ESTIMATED IN THE ENVIRONMENT	69
5.4.1 Air	69
5.4.2 Water	69
5.4.3 Sediment and Soil	69
5.4.4 Other Environmental Media	69
5.5 GENERAL POPULATION AND OCCUPATIONAL EXPOSURE	69
5.6 POPULATIONS WITH POTENTIALLY HIGH EXPOSURES	70
5.7 ADEQUACY OF THE DATABASE	70
5.7.1 Identification of Data Needs	71
5.7.2 On-going Studies	73
6. ANALYTICAL METHODS	75
6.1 BIOLOGICAL MATERIALS	75
6.2 ENVIRONMENTAL SAMPLES	77
6.3 ADEQUACY OF THE DATABASE	81
6.3.1 Identification of Data Needs	82
6.3.2 On-going Studies	83
7. REGULATIONS AND ADVISORIES	85
8. REFERENCES	87
9. GLOSSARY	93
APPENDICES	
A. MINIMAL RISK LEVEL WORKSHEETS	A-1
B. USER'S GUIDE	B-1
C. ACRONYMS, ABBREVIATIONS, AND SYMBOLS	C-1

LIST OF FIGURES

2-1. Levels of Significant Exposure to HMX - Oral	17
2-2. Existing Information on Health Effects of HMX	50
5-1. Frequency of NPL Sites with HMX Contamination	64
5-2. Proposed Mechanism for the Solar Photolysis of HMX in Water	68

LIST OF TABLES

2-1. Levels of Significant Exposure to HMX - Oral	12
2-2. Levels of Significant Exposure to HMX - Dermal	25
2-3. Genotoxicity of HMX <i>In Vitro</i>	44
3-1. Chemical Identity of HMX	58
3-2. Physical and Chemical Properties of HMX	59
6-1. Analytical Methods for Determining HMX in Biological Materials	76
6-2. Analytical Methods for Determining HMX in Environmental Samples	78
7-1. Regulations and Guidelines Applicable to HMX	86

