

**TOXICOLOGICAL PROFILE FOR
SYNTHETIC VITREOUS FIBERS**

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

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DISCLAIMER

The use of company or product name(s) is for identification only and does not imply endorsement by the Agency for Toxic Substances and Disease Registry.

UPDATE STATEMENT

A Toxicological Profile for Synthetic Vitreous Fibers, Draft for Public Comment was released in September 2002. This edition supersedes any previously released draft or final profile.

Toxicological profiles are revised and republished as necessary. For information regarding the update status of previously released profiles, contact ATSDR at:

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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.


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*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). This public law directed ATSDR to prepare toxicological profiles for hazardous substances most commonly found at facilities on the CERCLA National Priorities List and that pose the most significant potential threat to human health, as determined by ATSDR and the EPA. The availability of the revised priority list of 275 hazardous substances was announced in the *Federal Register* on November 7, 2003 (68 FR 63098). For prior versions of the list of substances, see *Federal Register* notices dated April 17, 1987 (52 FR 12866); October 20, 1988 (53 FR 41280); October 26, 1989 (54 FR 43619); October 17, 1990 (55 FR 42067); October 17, 1991 (56 FR 52166); October 28, 1992 (57 FR 48801); February 28, 1994 (59 FR 9486); April 29, 1996 (61 FR 18744); November 17, 1997 (62 FR 61332); October 21, 1999 (64 FR 56792) and October 25, 2001 (66 FR 54014). Section 104(i)(3) of CERCLA, as amended, directs the Administrator of ATSDR to prepare a toxicological profile for each substance on the list.

QUICK REFERENCE FOR HEALTH CARE PROVIDERS

Toxicological Profiles are a unique compilation of toxicological information on a given hazardous substance. Each profile reflects a comprehensive and extensive evaluation, summary, and interpretation of available toxicologic and epidemiologic information on a substance. Health care providers treating patients potentially exposed to hazardous substances will find the following information helpful for fast answers to often-asked questions.

Primary Chapters/Sections of Interest

Chapter 1: Public Health Statement: The Public Health Statement can be a useful tool for educating patients about possible exposure to a hazardous substance. It explains a substance's relevant toxicologic properties in a nontechnical, question-and-answer format, and it includes a review of the general health effects observed following exposure.

Chapter 2: Relevance to Public Health: The Relevance to Public Health Section evaluates, interprets, and assesses the significance of toxicity data to human health.

Chapter 3: Health Effects: Specific health effects of a given hazardous compound are reported by type of health effect (death, systemic, immunologic, reproductive), by route of exposure, and by length of exposure (acute, intermediate, and chronic). In addition, both human and animal studies are reported in this section.

NOTE: Not all health effects reported in this section are necessarily observed in the clinical setting. Please refer to the Public Health Statement to identify general health effects observed following exposure.

Pediatrics: Four new sections have been added to each Toxicological Profile to address child health issues:

Section 1.6 **How Can (Chemical X) Affect Children?**
Section 1.7 **How Can Families Reduce the Risk of Exposure to (Chemical X)?**
Section 3.7 **Children's Susceptibility**
Section 6.6 **Exposures of Children**

Other Sections of Interest:

Section 3.8 **Biomarkers of Exposure and Effect**
Section 3.11 **Methods for Reducing Toxic Effects**

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The following additional material can be ordered through the ATSDR Information Center:

Case Studies in Environmental Medicine: Taking an Exposure History—The importance of taking an exposure history and how to conduct one are described, and an example of a thorough exposure history is provided. Other case studies of interest include *Reproductive and Developmental Hazards*; *Skin Lesions*

and Environmental Exposures; Cholinesterase-Inhibiting Pesticide Toxicity; and numerous chemical-specific case studies.

Managing Hazardous Materials Incidents is a three-volume set of recommendations for on-scene (prehospital) and hospital medical management of patients exposed during a hazardous materials incident. Volumes I and II are planning guides to assist first responders and hospital emergency department personnel in planning for incidents that involve hazardous materials. Volume III—*Medical Management Guidelines for Acute Chemical Exposures*—is a guide for health care professionals treating patients exposed to hazardous materials.

Fact Sheets (ToxFAQs) provide answers to frequently asked questions about toxic substances.

Other Agencies and Organizations

The National Center for Environmental Health (NCEH) focuses on preventing or controlling disease, injury, and disability related to the interactions between people and their environment outside the workplace. Contact: NCEH, Mailstop F-29, 4770 Buford Highway, NE, Atlanta, GA 30341-3724 • Phone: 770-488-7000 • FAX: 770-488-7015.

The National Institute for Occupational Safety and Health (NIOSH) conducts research on occupational diseases and injuries, responds to requests for assistance by investigating problems of health and safety in the workplace, recommends standards to the Occupational Safety and Health Administration (OSHA) and the Mine Safety and Health Administration (MSHA), and trains professionals in occupational safety and health. Contact: NIOSH, 200 Independence Avenue, SW, Washington, DC 20201 • Phone: 800-356-4674 or NIOSH Technical Information Branch, Robert A. Taft Laboratory, Mailstop C-19, 4676 Columbia Parkway, Cincinnati, OH 45226-1998 • Phone: 800-35-NIOSH.

The National Institute of Environmental Health Sciences (NIEHS) is the principal federal agency for biomedical research on the effects of chemical, physical, and biologic environmental agents on human health and well-being. Contact: NIEHS, PO Box 12233, 104 T.W. Alexander Drive, Research Triangle Park, NC 27709 • Phone: 919-541-3212.

Referrals

The Association of Occupational and Environmental Clinics (AOEC) has developed a network of clinics in the United States to provide expertise in occupational and environmental issues. Contact: AOEC, 1010 Vermont Avenue, NW, #513, Washington, DC 20005 • Phone: 202-347-4976 • FAX: 202-347-4950 • e-mail: AOEC@AOEC.ORG • Web Page: <http://www.aoec.org/>.

The American College of Occupational and Environmental Medicine (ACOEM) is an association of physicians and other health care providers specializing in the field of occupational and environmental medicine. Contact: ACOEM, 55 West Seegers Road, Arlington Heights, IL 60005 • Phone: 847-818-1800 • FAX: 847-818-9266.

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THE PROFILE HAS UNDERGONE THE FOLLOWING ATSDR INTERNAL REVIEWS:

1. 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.
2. 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.
3. Data Needs Review. The Research Implementation Branch reviews data needs sections to assure consistency across profiles and adherence to instructions in the Guidance.

PEER REVIEW

A peer review panel was assembled for synthetic vitreous fibers. The panel consisted of the following members:

1. Jeffrey I. Everitt, D.V.M., Senior Scientist, CIIT Centers for Health Research, Research Triangle Park, North Carolina;
2. Morton Lippmann, Ph.D., Professor of Environmental Medicine, New York University School of Medicine, Tuxedo, New York;
3. John A. Pickrell, Ph.D., D.V.M., Associate Professor of Environmental Toxicology, Kansas State University, Diagnostic Medical Pathobiology Department, Manhattan, Kansas; and
4. Ernest McConnell, DVM, MS (path), DABT, DACVP, President, Toxpath Inc., Raleigh, North Carolina.

These experts collectively have knowledge of synthetic vitreous fibers' 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

DISCLAIMER	ii
UPDATE STATEMENT	iii
FOREWORD	v
QUICK REFERENCE FOR HEALTH CARE PROVIDERS.....	vii
CONTRIBUTORS	ix
PEER REVIEW	xi
CONTENTS.....	xiii
LIST OF FIGURES	xvii
LIST OF TABLES	xix
1. PUBLIC HEALTH STATEMENT.....	1
1.1 WHAT ARE SYNTHETIC VITREOUS FIBERS?	1
1.2 WHAT HAPPENS TO SYNTHETIC VITREOUS FIBERS WHEN THEY ENTER THE ENVIRONMENT?	2
1.3 HOW MIGHT I BE EXPOSED TO SYNTHETIC VITREOUS FIBERS?.....	3
1.4 HOW CAN SYNTHETIC VITREOUS FIBERS ENTER AND LEAVE MY BODY?.....	4
1.5 HOW CAN SYNTHETIC VITREOUS FIBERS AFFECT MY HEALTH?.....	5
1.6 HOW CAN SYNTHETIC VITREOUS FIBERS AFFECT CHILDREN?.....	8
1.7 HOW CAN FAMILIES REDUCE THE RISK OF EXPOSURE TO SYNTHETIC VITREOUS FIBERS?	9
1.8 IS THERE A MEDICAL TEST TO DETERMINE WHETHER I HAVE BEEN EXPOSED TO SYNTHETIC VITREOUS FIBERS?.....	10
1.9 WHAT RECOMMENDATIONS HAS THE FEDERAL GOVERNMENT MADE TO PROTECT HUMAN HEALTH?.....	10
1.10 WHERE CAN I GET MORE INFORMATION?	11
2. RELEVANCE TO PUBLIC HEALTH	13
2.1 BACKGROUND AND ENVIRONMENTAL EXPOSURES TO SYNTHETIC VITREOUS FIBERS IN THE UNITED STATES	13
2.2 SUMMARY OF HEALTH EFFECTS	16
2.3 MINIMAL RISK LEVELS	22
3. HEALTH EFFECTS	29
3.1 INTRODUCTION.....	29
3.2 DISCUSSION OF HEALTH EFFECTS BY ROUTE OF EXPOSURE	29
3.2.1 Inhalation Exposure	31
3.2.1.1 Death	31
3.2.1.2 Systemic Effects	31
3.2.1.3 Immunological and Lymphoreticular Effects.....	96
3.2.1.4 Neurological Effects.....	96
3.2.1.5 Reproductive Effects	96
3.2.1.6 Developmental Effects	96
3.2.1.7 Cancer.....	96
3.2.2 Oral Exposure.....	107
3.2.2.1 Death	107
3.2.2.2 Systemic Effects	107
3.2.2.3 Immunological and Lymphoreticular Effects.....	108

3.2.2.4	Neurological Effects	108
3.2.2.5	Reproductive Effects	108
3.2.2.6	Developmental Effects	108
3.2.2.7	Cancer	108
3.2.3	Dermal Exposure	108
3.2.3.1	Death	108
3.2.3.2	Systemic Effects	108
3.2.3.3	Immunological and Lymphoreticular Effects	109
3.2.3.4	Neurological Effects	109
3.2.3.5	Reproductive Effects	109
3.2.3.6	Developmental Effects	109
3.2.3.7	Cancer	109
3.2.4	Other Routes of Exposure	109
3.3	GENOTOXICITY	110
3.4	TOXICOKINETICS	112
3.4.1	Absorption	112
3.4.1.1	Inhalation Exposure	112
3.4.1.2	Oral Exposure	115
3.4.1.3	Dermal Exposure	115
3.4.2	Distribution	115
3.4.2.1	Inhalation Exposure	115
3.4.2.2	Oral Exposure	121
3.4.2.3	Dermal Exposure	121
3.4.2.4	Other Routes of Exposure	121
3.4.3	Metabolism	122
3.4.3.1	Inhalation Exposure	122
3.4.3.2	Oral Exposure	123
3.4.3.3	Dermal Exposure	123
3.4.4	Elimination and Excretion	123
3.4.4.1	Inhalation Exposure	123
3.4.4.2	Oral Exposure	124
3.4.4.3	Dermal Exposure	124
3.4.4.4	Other Routes of Exposure	125
3.4.5	Physiologically Based Pharmacokinetic (PBPK)/Pharmacodynamic (PD) Models	125
3.5	MECHANISMS OF ACTION	130
3.5.1	Pharmacokinetic Mechanisms	130
3.5.2	Mechanisms of Toxicity	132
3.5.3	Animal-to-Human Extrapolations	134
3.6	TOXICITIES MEDIATED THROUGH THE NEUROENDOCRINE AXIS	136
3.7	CHILDREN'S SUSCEPTIBILITY	137
3.8	BIOMARKERS OF EXPOSURE AND EFFECT	139
3.8.1	Biomarkers Used to Identify or Quantify Exposure to Synthetic Vitreous Fibers	140
3.8.2	Biomarkers Used to Characterize Effects Caused by Synthetic Vitreous Fibers	141
3.9	INTERACTIONS WITH OTHER CHEMICALS	142
3.10	POPULATIONS THAT ARE UNUSUALLY SUSCEPTIBLE	143
3.11	METHODS FOR REDUCING TOXIC EFFECTS	144
3.11.1	Reducing Peak Absorption Following Exposure	145
3.11.2	Reducing Body Burden	145
3.11.3	Interfering with the Mechanism of Action for Toxic Effects	145
3.12	ADEQUACY OF THE DATABASE	146

3.12.1	Existing Information on Health Effects of Synthetic Vitreous Fibers	146
3.12.2	Identification of Data Needs	146
3.12.3	Ongoing Studies	161
4.	CHEMICAL AND PHYSICAL INFORMATION	163
4.1	CHEMICAL IDENTITY	163
4.2	PHYSICAL AND CHEMICAL PROPERTIES	165
5.	PRODUCTION, IMPORT/EXPORT, USE, AND DISPOSAL	171
5.1	PRODUCTION	171
5.2	IMPORT/EXPORT	175
5.3	USE	175
5.4	DISPOSAL	177
6.	POTENTIAL FOR HUMAN EXPOSURE	179
6.1	OVERVIEW	179
6.2	RELEASES TO THE ENVIRONMENT	182
6.2.1	Air	182
6.2.2	Water	183
6.2.3	Soil	183
6.3	ENVIRONMENTAL FATE	183
6.3.1	Transport and Partitioning	183
6.3.2	Transformation and Degradation	184
6.3.2.1	Air	184
6.3.2.2	Water	184
6.3.2.3	Sediment and Soil	184
6.4	LEVELS MONITORED OR ESTIMATED IN THE ENVIRONMENT	184
6.4.1	Air	184
6.4.2	Water	188
6.4.3	Sediment and Soil	188
6.4.4	Other Environmental Media	188
6.5	GENERAL POPULATION AND OCCUPATIONAL EXPOSURE	188
6.6	EXPOSURES OF CHILDREN	200
6.7	POPULATIONS WITH POTENTIALLY HIGH EXPOSURES	201
6.8	ADEQUACY OF THE DATABASE	202
6.8.1	Identification of Data Needs	203
6.8.2	Ongoing Studies	205
7.	ANALYTICAL METHODS	207
7.1	BIOLOGICAL MATERIALS	209
7.2	ENVIRONMENTAL SAMPLES	210
7.3	ADEQUACY OF THE DATABASE	212
7.3.1	Identification of Data Needs	212
7.3.2	Ongoing Studies	215
8.	REGULATIONS AND ADVISORIES	217
9.	REFERENCES	221
10.	GLOSSARY	269

APPENDICES

A. ATSDR MINIMAL RISK LEVELS AND WORKSHEETS A-1

B. USER’S GUIDE..... B-1

C. ACRONYMS, ABBREVIATIONS, AND SYMBOLS..... C-1

D. INDEX D-1

LIST OF FIGURES

2-1. IARC (2002) Categories of Synthetic Vitreous Fibers	14
3-1. Levels of Significant Exposure to Synthetic Vitreous Fibers—Inhalation.....	67
3-2. Existing Information on Health Effects of Synthetic Vitreous Fibers	147
6-1. Frequency of NPL Sites with Synthetic Vitreous Fiber Contamination.....	180

LIST OF TABLES

2-1. BMCs and BMCLs for 10% Lung Weight Increase and Pulmonary Lesion Scores of 1 in Rats Exposed to RCF1 for 24 Months	24
2-2. Non-neoplastic Lung Responses in F344 Rats Exposed for 24 Months to RCF1	26
3-1. Levels of Significant Exposure to Synthetic Vitreous Fibers	32
3-2. Lung Clearance of Fibers with Lengths >20 µm in F344 Male Rats Following Nose-only Inhalation Exposure (6 hours/day for 5 days) to 19 Different Synthetic Vitreous Fibers or Two Types of Asbestos	120
3-3. Comparative Human and Rat Anatomical and Physiological Parameters Relevant to Alveolar Retention of Refractory Ceramic Fibers	129
4-1. Chemical Identity of Some Types of Synthetic Vitreous Fibers	164
4-2. Physical Properties of Some Types of Synthetic Vitreous Fibers	167
4-3. Measured Nominal Diameters of Glass Wool, Rock Wool, Slag Wool, Refractory Ceramic Fibers, and a Special Purpose Glass Fiber	169
4-4. Statistical Analysis of Airborne Fibers Under Different Occupational Settings	170
5-1. Production Volumes of Glass Wool, Rock Wool, and Slag Wool Products in the United States	172
5-2. Continuous Filament Glass Fiber Production in the United States	173
5-3. U.S. Import/Export Volume of Glass Fibers (Including Glass Wool), Mineral Wool and Refractory Ceramic Goods	176
6-1. Airborne Concentrations of Synthetic Vitreous Fibers in Buildings in Denmark	187
6-2. Concentrations (mg/m ³) of Total Suspended Airborne Particulate Matter in 16 Facilities in the United States	191
6-3. Concentrations (fiber(s)/cc) of Total Airborne Fibers in 16 Facilities in the United States	192
6-4. Exposures to Synthetic Vitreous Fibers Categorized by Industrial Sector	194
6-5. Exposures to Synthetic Vitreous Fibers Categorized by Product Type	195
6-6. Exposures to Synthetic Vitreous Fibers Categorized by Job Type	197
6-7. Typical Exposures in the Manufacture and Use of Refractory Ceramic Fibers	199
7-1. Analytical Methods for Determining Synthetic Vitreous Fibers in Biological Samples	211

7-2. Analytical Methods for Determining Synthetic Vitreous Fibers in Environmental Samples 213

8-1. Regulations and Guidelines Applicable to Synthetic Vitreous Fibers 218