

**AUTHORIZATION TO FILE DOCUMENTS INCORPORATED
BY REFERENCE BY DESCRIPTION**

Submit this form with the RIS project for the regulatory action to request an exemption from the requirements of filing in full textual material adopted by reference into regulations, or email to varegs@dls.virginia.gov.

Questions, contact Office of the Registrar of Regulations.

1 Agency: Department of Mines, Minerals and Energy (DMME)

2 VAC Number/Chapter Title: 4VAC25-40

3 Effective Date of Final Regulation (leave blank for proposed stage): 11/30/2018

4 Name of Document Incorporated by Reference (include edition or effective/revised date):
1996 Threshold Limit Values and Biological Exposure Indices published by the American Conference of Governmental Industrial Hygienists

5 Summary or description of the document incorporated by reference:
The 7th edition of the Documentation of the TLVs and BEIs provides the basic rationale for the development of TLVs for chemical substances and physical agents and of BEIs for selected chemicals

6 Is a copy of the document incorporated by reference in custody of the agency and available to the public for inspection and copying as required by § 2.2-4103? YES NO

7 Document may be inspected at the following agency location:

DMME
900 Natural Resources Drive
Charlottesville, VA 22903

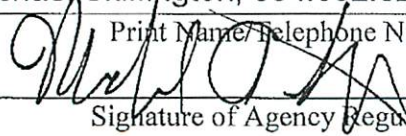
Document may be obtained from the following entity (include website and cost of document):

<http://www.acgh.org/forms/cont/Products/FormPublic/DocumentationoftheThresholdLimitValuesandBiologicalExposureIndices-7thed>
\$949.50

8 Explain why it is impractical to file a copy of the document incorporated by reference:
The cost of the document makes it impractical to file.

9 Attach a copy of the document cover, title page, and copyright page.

Requested by: Michael Skiffington, 804.692.3212


Signature of Agency Regulatory Coordinator

Print Name/ Telephone Number of Agency Regulatory Coordinator

3/4/2019

Date

Approved:



Registrar of Regulations

3-5-2019

Date

1996

TLVs[®] and BEIs[®]

**Threshold Limit Values
for Chemical Substances
and Physical Agents
Biological Exposure Indices**

Second Printing

ACGIH



WORLDWIDE

1996 TLVs[®] and BEIS[®]

Threshold Limit Values
for Chemical Substances
and Physical Agents

Biological Exposure Indices

Second Printing



POLICY STATEMENT ON THE USES OF TLVs AND BEIS

The Threshold Limit Values (TLVs[®]) and Biological Exposure Indices (BEIS[®]) are developed as guidelines to assist in the control of health hazards. These recommendations or guidelines are intended for use in the practice of industrial hygiene, to be interpreted and applied only by a person trained in this discipline. They are not developed for use as legal standards, and the American Conference of Governmental Industrial Hygienists (ACGIH) does not advocate their use as such. However, it is recognized that in certain circumstances individuals or organizations may wish to make use of these recommendations or guidelines as a supplement to their occupational safety and health program. The ACGIH will not oppose their use in this manner, if the use of TLVs and BEIS in these instances will contribute to the overall improvement in worker protection. However, the user must recognize the constraints and limitations subject to their proper use and bear the responsibility for such use.

The introductions to the TLV/BEI Booklet and the TLV/BEI Documentation provide the philosophical and practical bases for the uses and limitations of the TLVs and BEIS. To extend those uses of the TLVs and BEIS to include other applications, such as use without the judgment of an industrial hygienist, application to a different population, development of new exposure/recovery time models, or new effect endpoints, stretches the reliability and even viability of the data base for the TLV or BEI as evidenced by the individual documentations. It is not appropriate for individuals or organizations to impose on the TLVs or the BEIS their concepts of what the TLVs or BEIS should be or how they should be applied or to transfer regulatory standards requirements to the TLVs or BEIS.

The Policy Statement on the Uses of TLVs/BEIS was approved by the Board of Directors of ACGIH on March 1, 1988

TABLE OF CONTENTS

ISBN: 1-882417-13-5

© 1996 by the American Conference of Governmental Industrial Hygienists. This book is fully protected by copyright and no part of it may be reproduced in any form or by any means—graphic, electronic, or mechanical including photocopying, recording, taping, or information storage and retrieval systems—without written permission from the American Conference of Governmental Industrial Hygienists, Technical Affairs Office, Kemper Woods Center, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634.

The American Conference of Governmental Industrial Hygienists is an organization devoted to the administrative and technical aspects of occupational and environmental health. The association has contributed substantially to the development and improvement of worker health protection. The Conference is a professional society, not a government agency.

The 6th edition of the *Documentation of the Threshold Limit Values and Biological Exposure Indices* is a companion publication to the TLVs/BEIs issued by ACGIH®. This publication gives the pertinent scientific information and data with reference to literature sources that were used to base each TLV or BEI. For better understanding of the TLVs and BEIs, it is essential that the Documentation be consulted when the TLVs are being used or when invoking the BEIs. For further information, contact the Technical Affairs Office, ACGIH.

Requests for interpretations or technical information should be directed to the Technical Affairs Department at the address below or to the following E-mail address: acgih_tech@pol.com. For placement of an order, contact the Publications Department at the address below or use the following E-mail address: acgih_pubs@pol.com.

ACGIH
1330 Kemper Meadow Drive
Cincinnati, OH 45240-1634
Telephone: 513-742-2020; Fax: 513-742-3355

New Material or Revisions for 1996	v
Chemical Substances	
Introduction	3
Adopted Threshold Limit Values	13
Notice of Intended Changes	39
Adopted Appendices	
A. Carcinogenicity	41
B. Substances of Variable Composition	42
C. Threshold Limit Values for Mixtures	42
D. Particle Size-Selective Sampling Criteria for Airborne Particulate Matter	45
Chemical Substances and Other Issues Under Study	49
Committee Members	51
Biological Exposure Indices	
Introduction	55
Adopted Biological Exposure Determinants	60
Notice of Intent to Establish or Change	67
Chemical Substances and Other Issues Under Study to Establish Biological Exposure Indices	68
Committee Members	69
Physical Agents	
Introduction	73
Adopted Threshold Limit Values	
Airborne Upper Sonic and Ultrasonic Acoustic Radiation	75
Cold Stress	76
Hand-Arm (Segmental) Vibration	85
Heat Stress	89
Ionizing Radiation	96
Lasers	97
Light and Near-Infrared Radiation	105
Musculoskeletal Statement	109
Noise	110
Continuous or Intermittent	111
Impulsive or Impact	111
Radiofrequency/Microwave Radiation	113
Static Magnetic Fields	117
Sub-Radiofrequency (30 kHz and below) Magnetic Fields	118
Sub-Radiofrequency (30 kHz and below) and Static Electric Fields	119
Ultraviolet Radiation	121
Whole-Body Vibration	125
Notice of Intended Changes	133
Physical Agents Under Study	133
Committee Members	134
Footnotes	inside back cover