

# Patty's Industrial Hygiene

7<sup>th</sup> Edition | 4-Volume Set

Edited by Barbara Cohrssen

*Patty's Industrial Hygiene* has had a reputation for the past 60 years of providing up-to-date information for the experienced as well as novice industrial hygienist.

The field of Industrial Hygiene continues to change with personnel often working for multinational firms, self-employed, or at small consulting firms. In the current era industrial hygiene not only have to worry about occupational health and safety concerns of global workforce that is more diverse, they often have to provide environmental health information for large companies, and government agencies.

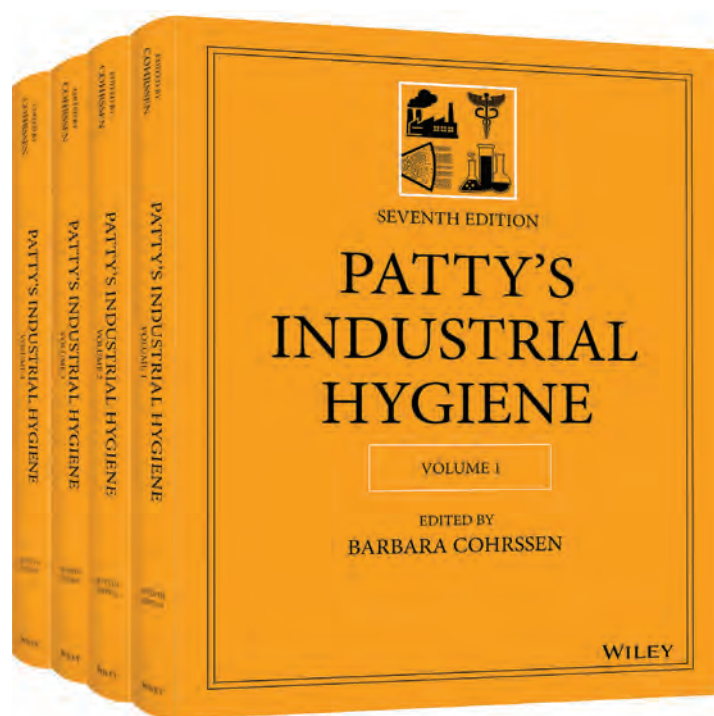
In response to these changes, the new edition of *Patty's Industrial Hygiene* adds new industrial hygiene and safety topics, as well as update existing ones. The seventh edition addresses the needs brought about by globalization and the need for many professionals to expand their roles. This reference has put in place a diverse editorial board from different regions of the world, ensuring that it has a worldwide group of contributors, and covers topics of interest globally.

## AUDIENCE

Industrial hygienist, chemists, engineers, toxicologists, and occupational safety personnel

## ABOUT THE EDITOR

**Barbara Cohrssen** is President of Cohrssen Environmental, Inc. and is a Certified Industrial Hygienist and Registered Environmental Assessor. She co-edited the previous edition of both *Patty's Toxicology* and *Patty's Industrial Hygiene*. She has over 30 years of experience in occupational and environmental health and safety.



4 Volumes | Print Set ISBN 9781119438021  
Hardcover | 1776 pages | March 2021  
List price US\$1199.95  
Online ISBN 9781119693352

*'Patty's.' Enough said.  
The name has a golden reputation associated with it.*

—**Harry Elston,**  
*Editor of Journal of Chemical Health and Safety*

 Please contact your local Wiley sales representative to place your orders or for any queries.

**WILEY**

# Patty's Industrial Hygiene

7<sup>th</sup> Edition | 4-Volume Set

## TABLE OF CONTENTS

### VOLUME 1

Contributors

Preface

Useful Equivalents and Conversion Factors

#### Part I Introduction to Industrial Hygiene

Occupational and Industrial Hygiene as a Profession: Yesterday, Today, and Tomorrow

*Barbara J. Dawson, Kyle B. Dotson, Faye Grimsley, Thomas Grumbles, Zack Mansdorf, David Roskelley, Jennifer Sahmel, Noel Tresider, and Candace Tsai*

Ethics in Industrial Hygiene  
*Nina Townsend, Garrett Brown, and Mark Katchen*

Prevention through Design  
*Georgi Popov, Bruce Lyon, and Tsvetan Popov*

Risk Communication  
*David M. Zalk*

Health Risk Assessment in the Workplace  
*Chris Laszcz-Davis, Fred W. Boelter, Michael Jayjock, Frank Hearl, Perry Logan, Cristina Ford McLaughlin, Mary V. O'Reilly, R. Thomas Radcliffe Jr., Esquire, and Mark Stenzel*

Decision Making in Managing Risk  
*Charles F. Redinger, Fred W. Boelter, Mary V. O'Reilly, John Howard and Glenn J. Barbi*

Managing Workplace Demographics  
*John Howard*

Mastering Digital Media for Workers, Employers, and Our Community of Practice  
*Max Lum*

#### Part II Chemical Agents

The History and Biological Basis of Occupational Exposure Limits for Chemical Agents  
*Dennis J. Paustenbach and William D. Cyr*

The Mode of Absorption, Distribution, and Elimination of Toxic Materials  
*Franklin E. Mirer*

Symptomatic Responses to Low-Level Occupational and Environmental Exposures  
*Brian Linde and Carrie A. Redlich*

Basic Aerosol Science  
*Parker C. Reist and Yifang Zhu*

Pulmonary Effects of Inhaled Mineral Dusts  
*David Fishwick and Chris M. Barber*

Engineered Nanomaterials

*Thomas M. Peters and Peter C. Raynor*

Gases and Vapors Affecting the Respiratory System  
*Philip Harber, William S. Beckett, and Marion J. Fedoruk*

Dermal Effects of Chemical Exposures  
*Katherine J. Allnutt and Rosemary L. Nixon*

Analytical Methods  
*Robert G. Lieckfield Jr.*

### VOLUME 2

Contributors

Preface

Useful Equivalents and Conversion Factors

#### Part III Chemical Exposure Evaluation

Biological Monitoring of Exposure to Industrial Chemicals  
*Nancy B. Hopf and Silvia Fustinoni*

Real-Time Assessment of Air Contaminants Using Video Exposure Monitoring (VEM) Methods and Techniques  
*James D. McGlothlin, Fan Xu, Sandra S. Cole, and Dave Huizen*

Computed Tomography in Industrial Hygiene  
*Lori A. Todd*

Mathematical Modeling of Indoor Air Contaminant Concentrations  
*Mark Nicas and Thomas W. Armstrong*

Sensor  
*Misti L. Zamora, Christopher Zuidema, and Kirsten Koehler*

#### Part IV Chemical Exposure Control

Characterizing Air Contaminant Emission Sources  
*D. Jeff Burton, Robert L. Harris, and Earl W. Arp*

Engineering Control of Airborne Contaminants: History, Philosophy, and the Development of Primary Approaches  
*D. Jeff Burton and William A. Burgess*

Industrial Ventilation  
*D. Jeff Burton and Robert D. Soule*

Respiratory Protective Equipment  
*Craig E. Colton*

Chemical Protective Clothing  
*Krister Forsberg and James P. Zeigler*

Control Banding: Background, Evolution, and Application  
*David M. Zalk, Elaine West, and Deborah I. Nelson*

Occupational Safety and Health Law  
*John Howard and Steven Smith*

### VOLUME 3

Contributors

Preface

Useful Equivalents and Conversion Factors

#### Part V Physical Agents

Ionizing Radiation  
*Herman Cember and Thomas E. Johnson*

Nonionizing Radiation: Lasers  
*David H. Sliney*

Nonionizing Radiation: Broadband Optical  
*Margaret L. Phillips and Allene H. Butler*

Radiofrequency Electromagnetic Fields  
*Kenneth R. Foster and Richard A. Tell*

Nonionizing Radiation: Extremely Low Frequency  
*Mona Shum and Jesse Cooper*

Noise and Hearing Conservation  
*David C. Byrne and Kevin L. Michael*

Physiological Effects of Altered Barometric Pressure  
*Claude A. Piantadosi*

Hand-Arm Vibration  
*Christopher M. Nelson*

Cold Stress  
*Tiina M. Ikäheimo, Kalev Kuklane, Jouni J.K. Jaakkola, and Ingvar Holmér*

Heat Stress  
*Michael D. Larrañaga*

Occupational Ergonomics: Past, Present, and Future  
*Susan Kotowski, Kermit Davis, and Amit Bhattacharya*

Robotics in the Workplace  
*Frank J. Hearl, Vladimir Murashov, John Howard, Hongwei Hsiao, John Sammarco, Brian Lowe, and George Luxbacher*

#### Part VI Biological Agents

Occupational Microbiological Biohazards – Exposure, Detection, and Disease  
*Tiina Reponen*

Control of Biohazards  
*Nancy C. Burton*

Airborne and Emerging Infectious Diseases  
*Augusto Dulanto Chiang and Tara N. Palmore*

### VOLUME 4

Contributors

Preface

Useful Equivalents and Conversion Factors

### Part VII Program Management

Occupational Health and Safety Management Systems  
*Charles F. Redinger, Alan J. Leibowitz, and Victor M. Toy*

Sustainability and the Role of the Safety and Health Professional  
*S. Zack Mansdorf*

Product Stewardship: A Viable Practice for the Industrial Hygienist  
*Thomas G. Grumbles*

### Part VIII Specialty Areas

Emergency and Disaster: Preparedness, Response, and Recovery  
*Chris Laszcz-Davis, Mary Massey, Alan Leibowitz, Daniel Hardt, Herman Woessner, Jim Jabara, Fabrice Lebourgeois, Vicki Villarreal, Ron R. McHane, Peggy Otum, David Barnes, and Steven P. Pereira*

Hazardous Wastes  
*Lisa Simkins Barnes and Meredith G. Durant*

Industrial Hygiene Issues in Construction  
*Bruce Lippy, Gavin H. West, Matthew Gillen, Eileen Betit, Linda M. Goldenhar, Babak Memarian, Richard Rinehart, Grace Barlet, M.K. Fletcher, Sara Brooks, and Jean Christophe Le*

Agriculture Hygiene  
*Kelley J. Donham and Matthew Nonnenmann*

Health Care Industry: Contemporary Considerations  
*Robert J. Emery, Michael A. Charlton, Bruce J. Brown, and Scott J. Patlovich*

Air Pollution  
*Paul G. Reinhart, Lori White, Jee Young Kim, Lindsay Wichers Stanek, Mary Ross, Barbara Buckley, and James A. Murray*

Health and Safety Factors in Designing an Industrial Hygiene Laboratory  
*Robert G. Lieckfield*

Fire Safety in the Workplace  
*Richard L. P. Custer and Pamela A. Powell*

Advancing the Well-Being of Workers: An Introduction to Total Worker Health Approaches  
*L. Casey Chosewood and Sara L. Tamers*

Health and Safety Issues of New Energy Technologies  
*Brian Heramb*

Cannabis  
*Robert N. Phalen*

Indoor Air Quality in Nonindustrial Occupational Environments  
*John P. Springston, Elliott Horner, and Joseph Lstiburek*