

INDUSTRIAL HEALTH

Editors-in-Chief

Katsutoshi OHDO *Director-General, National Institute of Occupational Safety and Health, Kiyose, Japan (JNIOSH)*
Kazuyuki IWAKIRI *Deputy Director-General, National Institute of Occupational Safety and Health, Kawasaki, JNIOSH*

Deputy Editor

Masaya TAKAHASHI *Director, Research Center for Overwork-Related Disorders, JNIOSH*

Honorary Editors

Shigeji KOSHI *Former Director-General, National Institute of Industrial Health, Kawasaki, Japan (NIIH)*

Shunichi ARAKI *Former President, JNIOSH, and Former President & Director-General, NIIH*

Sohei YAMAMOTO *Former Director-General, NIIH*

Yasutaka OGAWA *Former President, JNIOSH*
Shigeo UMEZAKI *Former Director-General, JNIOSH*

Shigeki KODA *Former Deputy Director-General, JNIOSH*

Haruhiko SAKURAI *Former Director-General, NIIH*

Yasuo TOYOSAWA *Former Director-General, JNIOSH*

Mitsutoshi TAKAYA *Former Director-General, JNIOSH*

Advisory Editors

Yoshiharu AIZAWA *Professor Emeritus, Kitasato University, Tokyo, Japan*

Torbjörn ÅKERSTEDT *Professor, University of Stockholm, and Karolinska Institute, Stockholm, Sweden*

Thomas E. BERNARD *Professor, University of South Florida, Tampa, USA*

Marilyn A. FINGERHUT *Consultant, National Institute for Occupational Safety and Health (NIOSH), Washington, D.C., USA*

Renato GILIOLI *Director, ISPESL/ICP Consortium for WHO Collaborating Centre in Occupational Health, Clinica del Lavoro "Luigi Devoto", Milan, Italy*

Ingvar HOLMÉR *Former Professor, Lund Technical University, Lund, Sweden*

Sergio IAVICOLI *Director, Dpt. Occupational Medicine, National Insurance for Work Accidents and Occupational Diseases, Rome, Italy*

Masayuki IKEDA *Professor Emeritus, Kyoto University, Kyoto, Japan*

Seong-Kyu KANG *Professor, Gachon University Gil Medical Center, Incheon, Korea*

Kazutaka KOGI *Advisory Researcher, The Ohara Memorial Institute for Science of Labour, Tokyo, Japan*

Philip J. LANDRIGAN *Professor, Boston College, Chestnut Hill, USA*

Ken C. PARSONS *Professor Emeritus, Loughborough University, Loughborough, UK*

Steven L. SAUTER *Coordinator, Work Organization & Stress-related Disorders, NIOSH, Cincinnati, USA*

Thomas J. SMITH *Professor Emeritus, Harvard School of Public Health, Boston, USA*

Yuji TAKETANI *Former President, Japan Labour Health & Welfare Organization, Kawasaki, Japan*

Yasuhiro TAKEUCHI *Professor Emeritus, Nagoya University, Nagoya, Japan*

Nobuo YANAGISAWA *Director-General Emeritus, Kanto Rosai Hospital, Kawasaki, Japan*

Editors

Yasuaki ARAKAWA *Ex-President, Japan Society for Biomedical Research on Trace Elements, Tokyo, Japan*

Sin Eng CHIA *Director, WHO Collaborating Center, National University of Singapore, Singapore*

Kaori FUJISHIRO *Senior Epidemiologist, Division of Surveillance, Hazard Evaluation, and Field Studies, NIOSH, Cincinnati, USA*

Naomi HISANAGA *Occupational Physician, CKD Co., Aichi, Japan*

Takeshi HONMA *Technical Advisor, Training Institute, Japan Association for Working Environment Measurement, Tokyo, Japan*

Hajime HORI *Professor Emeritus, University of Occupational and Environmental Health, Kitakyushu, Japan*

Gaku ICHIHARA *Professor, Tokyo University of Science, Tokyo, Japan*

Norito KAWAKAMI *Project Professor, Graduate School of Medicine, University of Tokyo, Tokyo, Japan*

Yangho KIM *Professor, Ulsan University Hospital, Ulsan, Korea*

Reiko KISHI *Professor, Hokkaido University Center for Environmental and Health Science, Sapporo, Japan*

Fumio KOBAYASHI *Professor Emeritus, Aichi Medical University School of Medicine, Aichi, Japan*

Akio KOIZUMI *Professor Emeritus, Kyoto University, Kyoto, Japan*

Yukinori KUSAKA *Professor Emeritus, University of Fukui, Eiheiji-cho, Japan*

Peter A. LEGGAT *Professor, James Cook University, Townsville, Australia*

Xinxin LIU *Senior Researcher, Ergonomics Research Group (RG), JNIOSH*

Roberto LUCCHINI *Professor, University of Brescia, Brescia, Italy*

Akinori NAKATA *Professor, University of Occupational and Environmental Health, Kitakyushu, Japan*

Rusli Bin NORDIN *Professor, MAHSA University, Selangor, Malaysia*

Jun OJIMA *Counsellor, Tokyo Occupational Health Service Center, Tokyo, Japan*

Teruhito OTSUKA *Director, Center for Occupational Accident Investigation, JNIOSH*

Jungsun PARK *Chair-Professor, Daegu Catholic University, Gyeongsan, Korea*

Shin-ichi SAWADA *Former Director, International Center for Research Promotion & Informatics, JNIOSH*

Rina SO *Senior Researcher, Ergonomics RG, JNIOSH*

Ken TOKIZAWA *Senior Researcher, Ergonomics RG, JNIOSH*

Iwao UCHIYAMA *Professor Emeritus, Kyoto University, Kyoto, Japan*

Rui-Sheng WANG *Former Director, Division of Industrial Toxicology & Biological Monitoring, Research Center for Chemical Information & Management, JNIOSH*

Kazuhito YOKOYAMA *Professor, International University of Health and Welfare, Tokyo, Japan*

Editorial Secretaries

Yoko TSUBOTA *Center for Research Promotion & International Affairs, JNIOSH*
Mayumi KOJIMA *Center for Research Promotion & International Affairs, JNIOSH*

INDUSTRIAL HEALTH is published bimonthly by the National Institute of Occupational Safety and Health, 6-21-1 Nagao, Tama-ku, Kawasaki 214-8585, Japan TEL +81-44-865-6111 FAX +81-44-865-6124 e-mail ihjim@h.jniosh.johas.go.jp <https://www.jniosh.johas.go.jp>

Indexed by: Index Medicus [MEDLINE], Chemical Abstracts [CA SEARCH], Biological Abstracts [BIOSIS PREVIEWS], EMBASE/Excerpta Medica, ISI®'s SCISEARCH®, Chemical Hazards in Industry and Laboratory Hazards Bulletin, Elsevier BIOBASE/Current Awareness in Biological Sciences, NII Scholarly and Academic Information Navigator [CiNii] (<https://ci.nii.ac.jp/>), Safety and Health at Work (ILO-CIS Bulletin)

Printed by: International Press Editing Centre Incorporation, 1-24-12, Sugamo, Toshima-ku, Tokyo 170-0002, Japan TEL +81-3-5978-4067 FAX +81-3-5978-4068