International Society of Exposure Science

- PRESIDENT’S MESSAGE
- THE NEW ISES PRIVACY POLICY
- TOP 10 REASONS TO SUBMIT TO JESEE
- THE HUMAN MICROBIOME AND QUESTIONS FOR EXPOSURE SCIENCE
- ISES-ISEE 2018 JOINT ANNUAL MEETING: PHOTOS AND RECAP
- UNDERSTANDING THE EFFECTS OF MICROBIAL COMMUNITIES IN BUILT ENVIRONMENTS
Mission

ISES works to meet humanity’s needs for public health and environmental protection through a global community of exposure science professionals. ISES encourages the open exchange of information, provides opportunities for career development, acknowledges and promotes excellence in the practice of exposure assessments and research in the field of exposure science.

For information on membership and to learn more about the ISES, please visit http://intlexposurescience.org.

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Contents

4
President’s Message
by Judy S. LaKind, PhD

5
The New ISES Privacy Policy

6
Top Ten Reasons to Submit to JESEE
by Nicole Deziel, ISES Publications Committee Chair &
Rick Peltier, JESEE Deputy Editor in Chief

8
The Human Microbiome and
Questions for Exposure Science
by Ellen Mantus, PhD

10
ISES-ISEE 2018 Joint Annual
Meeting
by Dr. Markey Johnson and Angelika Zidek, photos
by Joey Rudd

16
Understanding the Effects of
Microbial Communities in Built
Environments
by Katherine Bowman, David A. Butler, and
Elizabeth Boyle
Dear colleagues/friends,

My term as ISES President runs until the end of this year, and then the reins will be passed to Paloma Beamer. I am delighted that the next few years of Society efforts will be in the hands of someone so diligent, creative and caring. Paloma has left an indelible mark on the Society by creating the Mentorship program and by working closely over the years with students and those early in their careers. I am grateful that she is enthusiastic about continuing to better the Society and to nurture both the careers of exposure scientists and also the Society itself.

During my term, I focused on increasing member recognition (new awards, Member Spotlight), enhanced communication (ISES Newsletter, ISES/SOT-RASS webinars), improved Society governance (due diligence with contracts and finances, bylaws compliance, updates to the election process, committee reorganization with succession planning) and policies (anti-harassment, meeting sponsorships, finance). Of course, I couldn’t have – and didn’t – do any of this alone. These advances happened because of the hard work of many, many members all working together – which leads me to my last point.

Of utmost importance to me has been to ensure that you — our members — understand your value to the Society. I tried to show my appreciation for all of your volunteer efforts with letters, e-mails, small gifts, thank you receptions for active members, and an annual Board lunch. I hope that ISES members understand that I am well aware that the strength of the Society is wholly dependent on our members and that I am deeply grateful for everything you have done to help me through the steep learning curve that is the ISES Presidency (including reminding me constantly of the Robert’s Rules of Order which always seem to elude me). I believe that there is generally a shortage of thank you’s in this world and I hope I offered enough of these to you during the last three years. But just in case:

Judy S. LaKind, PhD
President, International Society of Exposure Science
A Note About the New ISES Privacy Policy

Privacy Policy

We have recently updated our privacy policy as we believe you should be aware of the data we collect and how we use it. We respect and value the privacy of our members and only collect and use information in ways that are useful to you. As part of our continued commitment to transparency, and in compliance with the new General Data Protection Regulations (GDPR), we encourage you to review the privacy policy, available at https://www.intlexposurescience.org/Public/Privacy_Policy/Public/Privacy_Policy.aspx or via the “Privacy Policy” link at the top of the ISES website.

Communication Preferences

As part of the privacy policy we are also offering you the opportunity to determine which emails you receive from the Society by setting your communication preferences. At the bottom of every email you receive from the Society is the link “click here to manage your email preferences.” This link takes you to the preferences page of your membership account where you can opt out of receiving different categories of emails. The only exceptions to this are emails regarding renewals/payments and elections.
Top Ten Reasons To Submit To JESEE

by Nicole Deziel, ISES Publications Committee Chair & Rick Peltier, JESEE Deputy Editor in Chief

In the 1990s, when the Journal of Exposure Science (then “Exposure Analysis”) and Environmental Epidemiology (JESEE) was formed, it was one of the only places to share exposure science findings with the world. Today, new journals appear on the scene regularly, and many publish exposure science work. Some follow different operational models and advertise speedy reviews and high impact factors. Though you now have more choices when deciding where to submit your next manuscript, there are many reasons why JESEE should be at the top of your list!

1. RELEVANCE
As our society-affiliated journal, JESEE aims to be the premier and authoritative source of information on advances in exposure science. JESEE serves our membership by disseminating new scientific findings of high quality and relevance to our field.

2. PRICE
JESEE subscriptions are free to all ISES members. In addition, ISES members receive a 48% discount on page charge fees. This is a reduction from $153 to $80 per page, with articles averaging ~8 pages. Scientists from WHO Hinari-eligible countries can request a waiver from these fees. (Note: this is separate from Open Access charges.)

3. IMPACT
The 2017 Impact Factor (IF) is 3.083 and is on the rise. The IF is one metric of many used to assess a journal’s influence. The calculation has a time lag—it is the ratio of citations in one specific year for articles published in the prior two years to the number of citable articles during that time period, so the 2017 IF reflects citation patterns in 2017 for content published in 2015-2016.

4. TIME
JESEE appreciates the balance between ensuring its articles have a robust peer review with the need to quickly disseminate findings and has been working hard to speed up the review and publication process. In 2018, the average total time to first decision (time from submission to first decision by the Editor) was approximately one month. We know that there is variation in this number, but the journal is constantly striving to monitor and reduce times throughout the review process. Further, following a transition last fall to a new production system, time to online publication after acceptance has also been greatly reduced.
5. MESSAGE
JESEE is particularly interested in publishing research that integrates information from exposure science, epidemiology, and toxicology to provide holistic understanding of the most pressing environmental and public health concerns. JESEE is also interested in exposure-relevant research from investigators from a variety of other disciplinary areas.

6. DIVERSITY
JESEE is seeking to expand its reporting of high quality research from underrepresented regions of the world to match the geographic base of its authorship with the diverse readership of the ISES and the journal’s subscriber base. If you, or your colleagues, are scientists in Africa, Asia, and South America, the journal is particularly interested in your work!

7. WEB TRAFFIC
JESEE receives >270,000 downloads each year, and >30,000 individuals have registered to receive electronic Table of Contents (eTOC) (referred to as “e-Alerts” on the JESEE website).

8. PROMOTION
JESEE has a new social media editor who is an active exposure scientist and ISES member and who will be tweeting, posting, and sharing highlights of important articles in JESEE. The editor will work in collaboration with the ISES Communications and Outreach Committee. The journal also encourages all authors to use the permanently freely accessible, shareable link they receive upon publication with colleagues, on social media, and on their own websites.

9. TRAINING & MENTORING
JESEE is aiming to turn the peer-review process into a professional development opportunity. A new collaboration under development between the Publications Committee and JESEE will help train young scientists in the peer review process and give them the opportunity to do a peer review with a seasoned ISES member.

10. JOURNAL LEADERSHIP
Our journal is managed and edited by leading scientists active in our field and our Society, including the EIC Elaine Cohen Hubal, the Associate Editors, and the Editorial Board. This enhances the prestige and authority of our journal and the quality of its papers.
The Human Microbiome and Questions for Exposure Science\(^1\)\(^2\)
by Ellen Mantus, PhD

In December 2017, the National Academies of Sciences, Engineering, and Medicine released the report *Environmental Chemicals, the Human Microbiome, and Health Risk: A Research Strategy*, which outlines research that could help to gain a better understanding of the interactions between environmental chemicals and the human microbiome and the implications of those interactions for human health risk.\(^3\) The impetus for the Academies study was the growing evidence that perturbations in the human microbiome are associated with various disorders or diseases and the recent research that indicates the potential for environmental chemicals to perturb the human microbiome.

As identified in the report, one important aspect to elucidate is how the human microbiome might affect chemical exposure and influence exposure–response relationships. Research on drug metabolism conducted decades ago showed that microbiota can affect the fate of various drugs, and recent studies have provided compelling evidence that the gut microbiome can metabolize environmental chemicals in several broad chemical classes. Although many molecular mechanisms are likely involved in microbiome interactions, research has suggested a few general mechanisms (shown in the figure below) to be involved with modulation of the exposure–response relationships by the human microbiome. Each interaction conceptually can increase or decrease chemical exposure, and the role of interactions in modifying human susceptibility to toxicity of environmentally-relevant exposures remains largely uncertain.

The report proposes research to address the critical question: what is the role of the human microbiome in modulating absorption, distribution, metabolism, and elimination of environmental chemicals? Animal and in vitro experiments are recommended to generate pharmacokinetic-pharmacodynamic data that potentially could be used to develop a microbiome component for physiologically-based pharmacokinetic models that could allow for a better assessment of human responses to chemical exposures. Ultimately, this and other research described in the report should help to elucidate whether the microbiome is an important contributor to human health risks posed by exposure to environmental chemicals and the need for and direction of future research.

Ellen Mantus, PhD, is a Scholar and Director of Risk Assessment on the Board on Environmental Studies and Toxicology of the National Academies of Sciences, Engineering, and Medicine, Washington, DC, and can be contacted at emantus@nas.edu.

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\(^1\) This article is based on a report of the National Academies of Sciences, Engineering, and Medicine (NASEM) authored by the Committee on Advancing Understanding of the Implications of Environmental-Chemical Interactions with the Human Microbiome. Committee members were Ronald Atlas (chair), Kjersti Aagaard, Elaine Hsiao, Yvonne Huang, Curtis Huttenhower, Rosa Krajmalnik-Brown, Susan Lynch, William Nazaroff, Andrew Patterson, John Rawls, Joseph Rodricks, Pamela Shubat, and Brian Thrall. Academies staff included Ellen Mantus (study director) and Andrea Hodgson. The sponsors of the study were US Environmental Protection Agency and the National Institute of Environmental Health Sciences. The report is available at [https://www.nap.edu/catalog/24960/environmental-chemicals-the-human-microbiome-and-health-risk-a-research](https://www.nap.edu/catalog/24960/environmental-chemicals-the-human-microbiome-and-health-risk-a-research).

\(^2\) The figure and selected text are reprinted with permission from Environmental Chemicals, the Human Microbiome, and Health Risk: A Research Strategy, 2018, by the National Academy of Sciences, Courtesy of the National Academies Press, Washington, DC.

\(^3\) As defined in the NASEM report, the human microbiome refers to all microorganisms on or in the human body, their genes, and surrounding environmental conditions. The term microbiome is often used in conjunction with a specific body site, such as the gut, skin, or respiratory microbiome.
Figure 1. General mechanisms by which the microbiome might directly or indirectly modulate the exposure–response relationship of an environmental chemical. Direct effects of chemicals on the microbiome have the potential to affect all other mechanisms that are mediated by the microbiome.

A Few Examples: Exposure, The Human Microbiome, and Possible Questions to Consider

*Formaldehyde:* Given formaldehyde’s antimicrobial properties, could inhalation exposure to formaldehyde at high indoor concentrations perturb the respiratory microbiome? If so, could such perturbation alter health risks posed by the exposure?

*Phthalates:* Given chemical conversion of various phthalates to their monoesters by some microbial species, could the skin or gut microbiome mediate phthalate uptake and influence risk by facilitating chemical conversion of diesters to monoesters?

*Triclosan:* Given the widespread exposure to triclosan, its antimicrobial properties, and the vulnerability of an infant’s microbiome, could early-life exposure to triclosan predispose infants to adverse health outcomes?
Meeting Highlights

- The meeting attracted nearly 2000 participants from 68 countries and 64 travel awards from 30 countries.
- The scientific program included over 1900 oral presentations and posters representing the diverse issues, disciplines, and methods that comprise environmental exposure and health research.
- The program also featured numerous activities and events to promote networking and dialogue including the Student Poster Competition, Technology and Sensor Fair, and Chapters and Committees Fair. The meeting also had a number of inaugural events such as the Joint ISES-ISEE Student and New Researcher (SNR) Networking Happy Hour as well as the 2018 Women’s Networking Event (WNE): the latter was the 5th anniversary of the inaugural ISES event and the first WNE held with ISEE.
- The Joint meeting also had its first ever ISES-ISEE President’s Roundtable “Society Presidents’ Call for Discussion: Intersection of Epi, Exposure and Decision-Making: Data Quality for Public Health Protection” which stimulated great discussions in a jam-packed room!
- 2018 was the first year of the ISES Excellence in Exposure Science Award
- Last but not least, the meeting offered a variety of social activities and excursions ranging from the research incubator to whitewater rafting.

Thanks from the Co-Chairs

We could not have achieved our many goals for the meeting without the support, enthusiasm, and hard work of our Technical Organizing Committee (TOC). Over 120 TOC members from government, academia, the private sector, and NGOs worked tirelessly to organize every facet of ISES-ISEE 2018. We also thank the scientists who contributed to the conference program, as well as the course instructors, student volunteers, sponsors and exhibitors, Congress by Design, and the leadership of ISES and ISEE. Because of your support, ISES-ISEE 2018 was the largest, and one of the most globally representative, joint meetings of ISES and ISEE.
Networking at the ISES-ISEE Meeting

Previous page: 1) Welcome to the ISES-ISEE meeting. 2) Dr. Markey Johnson, ISES co-chair 3) Angelika Zidek, ISES co-chair

This page: Networking at the ISES-ISEE Meeting

Pages 12 & 13: Awards
Understanding the Effects of Microbial Communities in Built Environments: A Research Agenda

by Katherine Bowman, David A. Butler, and Elizabeth Boyle

How do the many microbial communities indoors—collectively, the microbiome of the built environment—affect our lives? The negative impacts of exposures to microbes in buildings, such as transmission of infections and exacerbation of asthma symptoms in damp spaces, are well-established. Over the past decade though, there has been exciting research suggesting that exposures to certain microbes indoors may have positive impacts on human health. For example, some studies have shown that children living on farms, who may have exposures to different or more diverse microbiomes, have lower rates of asthma than other children.

An ambitious report, titled Microbiomes of the Built Environment: A Research Agenda for Indoor Microbiology, Human Health, and Buildings (2017), explores how the interactions between indoor microbial communities, humans, and built environments affect indoor air quality, human health, and building systems. The study, which was conducted under the auspices of the National Academies of Sciences, Engineering, and Medicine

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<th>Characterize Interrelationships</th>
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<td>1 Understand relationships among building features, occupants, and microbial communities</td>
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<td>2 Incorporate social and behavioral sciences to analyze the roles of people in the environment</td>
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<th>Assess Effects of Exposures on Health Outcomes</th>
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<td>3 Use complementary study designs to develop and test health-specific hypotheses</td>
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<td>4 Clarify effects of timing, dose, and differences in human sensitivity on relationships</td>
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<td>5 Develop assessment approaches to address combinations of exposures</td>
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<th>Explore Non-health Impacts</th>
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<td>6 Understand energy, environmental, and economic impacts of interventions that modify microbial exposures and integrate data into frameworks for assessing potential interventions</td>
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<th>Advance Tools and Research Infrastructure</th>
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<td>7 Refine molecular tools and methods to enable more quantitative, sensitive, and reproducible experimental designs</td>
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<td>8 Refine building and microbiome sensing and monitoring tools</td>
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<td>9 Develop guidance on sampling and exposure methods for testing hypotheses</td>
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<td>10 Develop a data commons</td>
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<td>11 Develop empirical, computational, and mechanistic modeling tools</td>
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<td>12 Support effective communication and engagement</td>
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**Table 1.** Abbreviated description of the 12 priority areas of the proposed research agenda.
Exposure scientists can make critical contributions to furthering this wide-ranging agenda. Research that includes measures of microbial exposures from the environment could help address questions such as:

- What are the biological mechanisms by which microorganisms in built environments influence human health?
- How do factors such as the stage of life, route of exposure, and differences in human sensitivity modify whether and how microbes affect health?
- How can we better assess exposures to mixtures of microbial agents, chemicals, and physical materials?

Furthering the proposed research agenda and achieving an improved understanding of the nexus of built environments, microbial communities, and human occupants may ultimately enable us to better define and promote a vision for healthful built environments.

For further reading:


Katherine Bowman, PhD is a Senior Program Officer in the Board on Life Sciences at NASEM and study director for the report Microbiomes of the Built Environment: A Research Agenda for Indoor Microbiology, Human Health, and Buildings. The projects on which she works address social, ethical, and security implications of developments in science and technology (KBowman@nas.edu).

David A. Butler, PhD is a Scholar and Director of the Office of Military and Veterans Health in the Health and Medicine Division of NASEM. He has directed a number of studies addressing indoor air quality issues and the health effects of particulate, chemical, and microbial exposures (DButler@nas.edu).

Elizabeth Barksdale Boyle, MPH, CIH is a Program Officer in the Board on Environmental Studies and Toxicology at NASEM. She is also a fellow of the Bloomberg American Health Initiative at Johns Hopkins University Bloomberg School of Public Health, where she is pursuing a doctor of public health in environmental health, and chair of the ISES Nominations Committee (EBoyle@nas.edu).

1 The members of the NASEM Committee on Microbiomes of the Built Environment: From Research to Application were Joan Wennstrom Bennett (Chair), Rutgers University; Jonathan Allen, Lawrence Livermore National Laboratory; Jean Cox-Ganser, National Institute for Occupational Safety and Health; Jack Gilbert, University of Chicago; Diane Gold, Brigham and Women’s Hospital, Harvard Medical School, and Harvard T.H. Chan School of Public Health; Jessica Green, University of Oregon; Charles Haas, Drexel University; Mark Hernandez, University of Colorado Boulder; Robert Holt, University of Florida; Ronald Latanision, Exponent, Inc.; Hal Levin, Building Ecology Research Group; Vivian Loftness, Carnegie Mellon University Karen Nelson, J. Craig Venter Institute, Jordan Peccia, Yale University, Andrew Persily, National Institute of Standards and Technology, and Jizhong Zhou, University of Oklahoma. The study was sponsored by the Alfred P. Sloan Foundation, Gordon and Betty Moore Foundation, National Aeronautics and Space Administration, National Institutes of Health, U.S. Environmental Protection Agency, and National Academy of Sciences Cecil and Ida Green Fund.
Thanks for reading!

Past Issues

Missed a past issue of the ISES newsletter? Catch up at http://bit.ly/2nvDReO

Membership Opportunities

Interested in learning more about membership opportunities with the International Society of Exposure Science? Check out https://intlexposurescience.org for more information.