

Newsletter | January 2017

# International Society *of* Exposure Science

## LETTER

From the new ISES President

## JESEE

Welcomes a New Editor-in-Chief

## RESEARCH

How Using Consumer Products Affects Exposure

## SURVEY

ISES Member Benefits Survey Results

## UPCOMING

2017 ISES Annual Meeting

# About

**The International Society of Exposure Science (ISES)** promotes and advances exposure science (methods, measurements, models) as it relates to the complex inter-relationships between human populations, communities, ecosystems, wildlife, and chemical, biological, and physical agents, and non-chemical stressors. ISES members have diverse expertise and training in biological, physical, environmental, and social sciences, as well as various engineering disciplines.

According to the National Research Council, “exposure science links human and ecological behavior to environmental processes in such a way that the information generated can be used to mitigate or prevent future adverse exposures.” The Society’s multidisciplinary expertise and international reach make it the premiere professional society for practitioners associated with all aspects of exposure science (research, teaching, policy, communication, outreach).

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

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# President's Welcome

Dear ISES members,

Welcome to 2017 and to the new International Society of Exposure Science Newsletter. With this Newsletter, we plan to reach out to you three or four times a year with information on new happenings with the Society, information on advances in exposure science, updates on our annual meeting and messages from our friends in other organizations. Please enjoy and let me know if you would like to contribute.

I am honored to be able to serve the Society as President for the next two years. This is an exciting time to be an exposure scientist – the approaches available to us include everything from traditional environmental measurements (albeit sometimes captured with new tools including increasingly small sensors) and biomonitoring to sophisticated models and computational approaches as well as citizen science. As we move forward in the 21st century our challenges include ensuring that we continue to produce high quality data that we can use and interpret.

***As the premier international society for exposure science, we have an opportunity to use our voice to garner recognition for the field and to make sure that the “exposure space” is recognized, valued, and expanded.***

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I would love to hear your views on how members can serve the Society and how the Society can better serve its members. ISES members benefit from resources such as our mentoring program, our journal – the Journal of Exposure Science and Environmental Epidemiology, and career advancement through various networking opportunities, job postings, and our new ISES Member Spotlight.

In 2017, we are initiating activities that we hope will further benefit the Society and its members. Please keep an eye on our revamped website <http://intlexposurescience.org> for webinars and videos, for important announcements on employment opportunities, service opportunities, and of course for information on our annual meeting.

Finally, I encourage you to engage with ISES. There are many ways to become an active member - we have existing chapters in the Tri-state area of NY, NJ and PA, in California and in Europe and East Asia. If you live/work in these areas, please join! If you are in an area that does not currently have a chapter, please consider getting one started. You can also become involved with ISES Committees and Special Projects. I especially encourage our young members (students, new professionals) to participate – I believe you will find it extremely rewarding! If you are unsure about how to engage, please contact me.

Thanks for making our Society the international leader in exposure science; I look forward to working with you to accomplish even more.



A handwritten signature in black ink that reads "Judy LaKind".

*Judy LaKind, Ph.D.  
President, ISES*

## New JESEE Editor-In-Chief, Dr. Elaine Cohen Hubal

Springer Nature and the International Society of Exposure Science are pleased to announce the new Editor-in-Chief of Journal of Exposure Science and Environmental Epidemiology (JESEE) – Dr. Elaine Cohen Hubal (Raleigh, NC USA). Dr. Cohen Hubal officially assumed the editorship in January 2017.



Dr. Cohen Hubal has over 25 years of experience in the field of environmental health with core expertise in children’s exposure, human health risk modeling, and exposure science to inform design and interpretation of high-throughput and alternative methods in toxicity testing. Dr. Cohen Hubal specializes in applying integrated systems-based approaches to characterize and evaluate biological and environmental systems. Her primary research interest is in understanding and predicting

complex relationships between environmental factors and health outcomes with an emphasis on vulnerable populations and life stages.

Dr. Cohen Hubal received her Ph.D. and M.S. in Chemical Engineering from North Carolina State University and a S.B. in Chemical Engineering from Massachusetts Institute of Technology. She is currently employed as the Deputy National Program Director (NPD) for US EPA’s Chemical Safety for Sustainability (CSS) research program. As Deputy NPD for CSS, Dr. Cohen Hubal also leads EPA’s children’s environmental health cross-cutting research roadmap. She has published in the areas of children’s exposure, human health risk modeling, and exposure science to inform design and interpretation of high-throughput toxicity testing.

Dr. Cohen Hubal has served as an expert on a variety of scientific panels and committees including the Voluntary Children's Chemical Evaluation Program (VCCEP) Peer Consultation, the Study Design Working Group for the NCS, and as chair of the WHO IPCS working group on "Identifying Important Life Stages for Monitoring and Assessing Risks from Exposures to Environmental Contaminants." Currently, she is a core member of the Health Canada and Environment Canada Chemicals Management Plan Science Committee and is Member of the California Department of Toxic Substances Control's Green Ribbon Science Panel.

## About the Journal



JESEE publishes research important to exposure assessment for toxic substances, environmental epidemiology that includes a strong exposure analysis component and related disciplines that advance the exposure assessment process. JESEE also publishes original research presenting significant advances in exposure analysis such as measurements, modeling,

instrumentation, and questionnaires; mechanisms of exposure via pathways that lead to routes of exposure; development of molecular biomarkers of exposure, health effects, and susceptibility; genomic, proteomic, and metabonomics approaches and studies that assess exposure in the context of health effects; studies on chemical, biological, and physical principles required to analyze human exposure from single and multiple media and routes; occupational exposure studies that enhance the understanding of environmental exposure; and, population-based studies of exposure to toxic substances.

For more information about JESEE, please visit [www.nature.com/jes](http://www.nature.com/jes)

# How Using Consumer Products Affects Exposure

*Daniel A. Vallero, Ph.D.*

*Adjunct Professor | Pratt School of Engineering | Duke University*

*dav1@duke.edu*

As most ISES members know, the volume and variety of manufactured chemicals continues to increase. However, little is known about the risks associated with the frequency and extent of human exposure to most of these chemicals. This is particularly problematic for consumer product ingredients. In recent years, increasing attention has rightly been given to near-field scenarios; especially exposure to chemicals when using consumer products. Europe has led the way, with the Registration, Evaluation and Authorisation of Chemicals (REACH), which stresses the safe use of chemicals with respect to human health and the environment to complement toxicity testing.

***In the U.S., the recent signing of the Lautenberg Act signaled the need for high-throughput methods to characterize and screen chemicals based on exposure potential, so that when combined with toxicity data the overall population risk can be assessed.***

The Toxic Substances Control Act (TSCA) requires detailed risk information for high priority chemicals lacking information. As of the time of the legislation's signing, less than 2% of chemicals that fit into these categories have detailed risk information associated with them in TSCA. Prior work by EPA's National Exposure Research Laboratory (NERL) and its collaborators has led to enhancements in decision support tools, including using multi-criteria decision analysis tools to prioritize chemicals for further research, resulting in a high-level chemical prioritization tool for risk-based screening.

Physical, chemical and biological information for many chemical ingredients usually is fraught with less uncertainty than that of product use and other social scientific information. To address the information gap, NERL and the U.S. Army Corps of Engineers have joined in research to combine exposure and toxicity factors with input from subject-matter experts in both human factors and physicochemical properties using multi-criteria methods and a web-based expert elicitation protocol. The experts provided insights into the relative importance of various human and physicochemical factors for prioritizing toxicity research on manufactured chemicals.

An elicitation with 32 experts informed relative prioritization of risks based on chemical properties and human use factors, and the values for each chemical associated with each metric were approximated with data from EPA's CP\_CAT database. Three different versions of the model were evaluated using distinct weight profiles, resulting in three different ranked chemical prioritizations with only a small degree of variation across weight profiles. An ancillary benefit of this research was to investigate how EPA's expert elicitation guidelines can be translated into a virtual, webinar format.

The results appear in a manuscript submitted to the journal *Risk Analysis*. NERL and the Corps will continue to place greater emphasis on human factors experts to better define qualitative metrics.

An ancillary outcome of this research was that we were able to conduct an expert elicitation in a virtual, rather than a face-to-face format. This consisted of webinars and read-ahead information to introduce the concepts and background of the research, with the actual elicitation conducted online using a smart query instrument <http://bit.ly/2j51bkf>.



Here, Chloe Jayne was exposed to spaghetti sauce, both orally and dermally! That's a good thing! But, it is important to minimize exposures to chemicals in the fork, sun block, and the soap she will be using following her feast. This is the driver for a better understanding of near-field exposure scenarios. Photo: Courtesy of A.C.V. Randall (used with permission).

### **Background Materials:**

1. Carthew, P., C. Clapp, and S. Gutsell, Exposure based waiving: the application of the toxicological threshold of concern (ttC) to inhalation exposure for aerosol ingredients in consumer products. *Food and Chemical Toxicology*, 2009. 47(6): p. 1287-1295.
2. Csiszar SA, Meyer DE, Dionisio KL, Egeghy P, Isaacs KK, Price, PS et al. A conceptual framework to enhance life cycle assessment using near-field human exposure modeling and high-throughput tools. 2016 Nov 1;50(21):11922-11934. Epub 2016 Oct 18
3. Mitchell J, Pabon N, Collier Z, Egeghy P, Cohen-Hubal E, Linkov I et al. A Decision Analytic Approach to Exposure-Based Chemical Prioritization. *PLoS ONE*. 2013;8(8):e70911.
4. US Environmental Protection Agency Office of the Science Advisor. Expert Elicitation White Paper Review. 2012 Available from: [https://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr\\_activites/Expert%20Elicitation%20White%20Paper?OpenDocument](https://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/Expert%20Elicitation%20White%20Paper?OpenDocument)
5. Mitchell J, Amot J, Jolliet O, Georgopolous P, Isukapalli S, et al. (2013) Comparison of modeling approaches to prioritize chemicals based on estimates of exposure and exposure potential. *Sci Total Environ* 458-460, 55-567.

6. Mitchell J, Arnot JA, Jolliet O, Georgopoulos PG, Isukapalli S, Dasgupta S, Pandian M, Wambaugh J, Egeghy P, Hubal EA, Vallero DA. Comparison of modeling approaches to prioritize chemicals based on estimates of exposure and exposure potential. *Science of the Total Environment*. 2013 Aug 1;458:555-67.
7. Linkov, I., & Moberg, E. (2012). *Multi-criteria decision analysis: Environmental applications and case studies*. Boca Raton, FL: CRC Press.
8. Egeghy PP, Vallero DA, Cohen Hubal EA (2011). Exposure-based prioritization of chemicals for risk assessment. *Environ Sci Pol* 14(8): 950-964.

**EPA Dashboards and databases:**

8. Chemistry Dashboard: <https://comptox.epa.gov/dashboard>.
9. Chemical and Product Categories (CPCat): <https://www.epa.gov/chemical-research/chemical-and-product-categories-cpcat>

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***For more information, please check out the two additional documents, “Read Me” and “Supplemental Information” which are available at:***

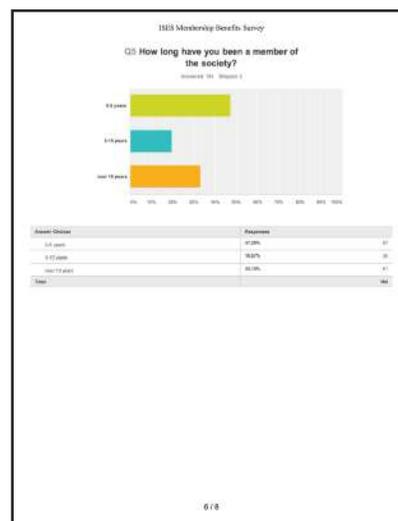
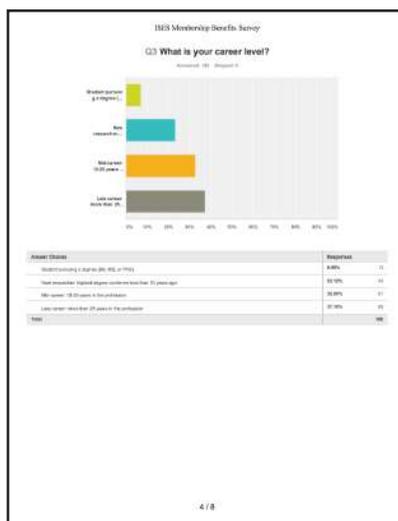
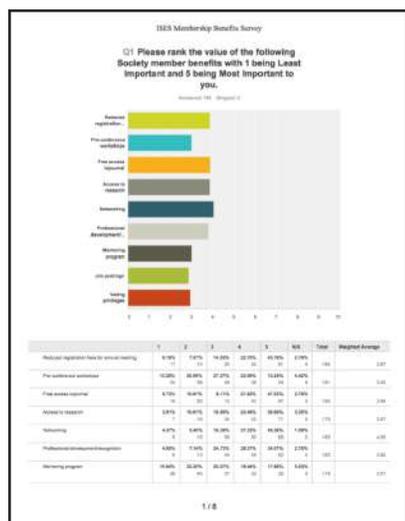
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# ISES Member Benefits Survey Results

ISES recognizes that satisfied members are an important component for successfully retaining our members and growing the Society. As a first step in learning what our members think of the Society’s member benefits, the ISES Membership Committee surveyed ISES members on member benefits. This included both current benefits as well as ideas for benefits to add. A big THANK YOU to all of you that responded to the benefits survey. Your feedback is essential for the Society to learn how to best serve you.

The Membership Committee plans to use these results to develop a plan for increasing member benefits. **The full results of the survey are available at [https://issuu.com/exposurescience/docs/newsletter\\_extra\\_-\\_member\\_survey\\_re](https://issuu.com/exposurescience/docs/newsletter_extra_-_member_survey_re).**



## 2017 ISES Annual Meeting Information

*Jennifer Lantz, PhD; Jane Hoppin, ScD; David Balshaw, PhD*  
*ISES 2017 Co-Chairs*



We're excited to host the 2017 ISES Annual Meeting in the Research Triangle Park of North Carolina (October 15-19). The 2017 meeting is entitled Integrating Exposure Science Across Diverse Communities. We are actively incorporating this theme throughout the program through workshops, symposia, and plenaries that emphasize the multi-scale nature of exposure science and the diverse communities involved. We encourage everyone to submit symposia highlighting these issues by the deadline of January 31, 2017; for more information <http://www.intlexposurescience.org/ISES2017>.

While planning is actively underway, we invite anyone who is interested in volunteering to help organize the meeting to contact us at [Co\\_Chairs17@intlexposurescience.org](mailto:Co_Chairs17@intlexposurescience.org). We look forward to seeing you in North Carolina in October!

The Research Triangle Park is one of the world's first, and largest, research parks, and is strengthened and diversified by building on the close collaboration of three local, internationally renowned universities, and the concentration of and close connections among industry, academia, and government, as well as local community partnerships. Building on this "Triangle" theme, the three co-chairs (themselves representing a partnership between industry, academia and government as well as disciplines of technology, epidemiology, and risk assessment) would like to encourage creative symposium proposals incorporating three distinct yet interconnected elements related to exposure science, for instance:

- Exposure, hazard, and risk assessment.
- Exposure assessment methods, models, and data
- Personal monitoring, remote sensing, and questionnaires
- Individuals, communities and ecosystems
- External exposures, biomonitoring, and biological response
- Exposures throughout the life course – children, adults, and the elderly
- Measuring the Exposome in an imperfect world: strategies, sampling, statistics
- Exposure assessment, epidemiology, communication

**A prize will be given for the most innovative use of the conference theme.**

## **Symposium Proposal Requirements**

Symposia will be accepted for three potential session lengths and formats other than traditional plenary presentation are encouraged:

- 60 minute (no more than three presentations),
- 90 minute (no more than five presentations), or
- Full day (five and a half hour total) symposia proposals will be considered and accepted at the discretion of the Technical Organizing Committee.

The proposal should address each of the following elements:

- a. Symposium topic.
- b. Symposium organizer name, affiliation, and contact information.
- c. Symposium abstract (approximately 300 words).
- d. Symposium speakers, including:
  - Affiliation,
  - Presentation title, and
  - Short description of the presentation (formal abstract will follow at a later date).
- e. Relationship(s) between the presentations.

Symposia proposal acceptance will be based on adherence to the conference theme and quality of the proposed presentations. We encourage diversity among the presenters such that symposium speakers reflect the diversity of exposure science professionals. **It is expected that all speakers will have agreed to participate and will register and attend the meeting at their own expense.** Detailed instructions and criteria for review of proposals are available on the 2017 meeting site at <http://intlexposurescience.org/ises2017>.

## Questions

Please address any questions to [Co\\_Chairs17@intlexposurescience.org](mailto:Co_Chairs17@intlexposurescience.org) or visit the ISES 2017 website at <http://intlexposurescience.org/ises2017>.

**Reminder: The deadline for submitting a symposia proposal is January 31, 2017 and will not be extended.** To submit a proposal, please go to the 2017 Meeting submission page at <https://ises2017.abstractcentral.com/>.

General individual abstracts submission will be **March 1 thru April 28, 2017.**