



# Inhalation and Respiratory Specialty Section

## of the Society of Toxicology

### Message from the President

April 08, 2021

#### Officers, 2020-2021

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**Student Rep:**  
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Dear IRSS Members,

I am glad to put my thoughts for this Spring 2021 newsletter that we are almost there towards the end of pandemic caused by SARS-CoV-2. We have had our fill of Zoom calls, mask wearing, social distancing, elbow bumps, streaming service binging, and a whole lot more with cancellation of two in-person SOT meetings and joining via Zoom. Our members deserve a lot throughout this turmoil, as it is well earned that we celebrate the achievements of our members and focus on our virtual meeting.

First, it was a great pleasure hosting the evening reception of our Specialty Section on Wednesday, March 17, 2021 which was well-attended with a great success. I'd like to say thank you again to our presenters, moderators, and attendees of this year's webinar series focusing on COVID's effects on the respiratory system. The insights gained from both discussions were truly eye-opening. Second, congratulations to all of this year's award winners: Samantha Snow, Gagandeep Kaur, Eva Vitucci, Carmen Lau, John Morris, Keith Rogers, and Meghan Rebuli. We, as a society, are very proud of your endeavors and continued strive towards excellence in this field. And last, but certainly not least, congratulations to our incoming Executive Committee and our incoming IRSS President, Judy Zelikoff and Vice President Melanie Doyle-Eisele. I am certain that even though the current state of the world will throw more trials your way, you all will not only overcome but thrive in your endeavors.

I hope you all enjoyed the SOT Virtual Meeting with wide variety of sessions/posters and found a free moment to attend some of our sponsored events too. Perhaps, like one of my mentees, you even learned something excitingly new that you plan to implement in your upcoming research. And if you are like me and find it difficult to attend anywhere near as many sessions as you desire to, do not fret. We have a forthcoming seminar by Dr. James McGrath and Dr. Eliseo Castillo. Discussing microplastics, and their association with pulmonary risk is sure to be an enlightening conversation and one I personally look forward to. Thanks to Holger Behrsing to continue the legacy of this important component of the IRSS.

Finally, thank you all for your membership in IRSS! You all have contributed to making our Specialty Section inclusively diverse and I could not feel more honored to have been your President during this challenging year. I look forward to assisting you all in my new capacity as Past President and all the discussions/webinars we shall have in the future. Best of luck to you all!

Respectfully yours,

Irfan

Irfan Rahman, PhD

President, Inhalation and Respiratory Specialty Section



# Inhalation and Respiratory Specialty Section

of the Society of Toxicology

## Executive Committee 2020-2021

President



Irfan  
Rahman

Vice President



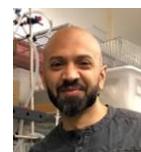
Judy  
Zelikoff

VP-elect



Melanie  
Doyle-Eisele

Sec/Treas



Mehdi Saeed  
Hazari

Past President



Matt Campen

Sr Councilor



Amie  
Lund

Sr Councilor



Christopher  
Reilly

Jr Councilor



Holger  
Behrsing

Jr Councilor



Marusia  
Popovech

Postdoc



Colette Miller

Grad student



Elise  
Hickman



# Inhalation and Respiratory Specialty Section

of the Society of Toxicology

## Incoming Executive Committee 2021-2022

President



Judy  
Zelikoff

Vice President



Melanie  
Doyle-Eisele

VP-elect



Kym  
Gowdy

Sec/Treas



Meghan  
Rebuli

Past President



Irfan  
Rahman

Sr Councilor



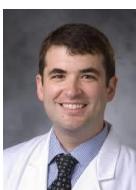
Holger  
Behrsing

Sr Councilor



Marusia  
Popovech

Jr Councilor



Robert  
Tighe

Jr Councilor



Natalie  
Johnson

Postdoc



Thivanka  
Muthumalage

Grad student



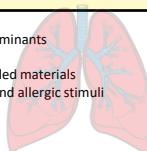
Michael  
Yaeger

# INHALATION AND RESPIRATORY SPECIALTY SECTION

## Description

The Inhalation and Respiratory Specialty Section provides a focus for members of the Society of Toxicology dealing with the impact of airborne chemicals and particles on the body. The Section meets regularly at the SOT Annual Meeting to promote a better understanding of inhalation and respiratory tract toxicology, to recognize students and colleagues for notable contributions to research, and to address issues of importance to this field. IRSS sponsors webinars and other educational opportunities.

## Issues of Interest



- Indoor and outdoor air pollution
- Occupational exposure to airborne contaminants
- Therapeutic drug delivery by inhalation
- Deposition and pharmacokinetics of inhaled materials
- Interactions between inhaled materials and allergic stimuli
- Airway injury from systemic toxicants
- Systemic injury from airway exposure
- Biomarkers of exposure and disease

## Membership Benefits

- Network with inhalation and respiratory toxicologists from industry, government, and academia.
- Present your work in sponsored and selective specialty sessions.
- Mentoring junior members.

## Reception and Awards Meeting

Wednesday, March 17, 2021

4:30 PM – 6:30 PM ET

**Virtual Meeting via Webex/Zoom**

Please join us to honor our award winners and discuss member involvement.

## Executive Committee 2020-2021/2022



**2021-2022**

President Irfan Rahman	Vice President Judy T. Zelikoff	Vice President-Elect Melanie Doyle-Eisele	Secretary/Treasurer Medi S. Hazari	Past President Matthew J.
Counselor Hooger P. Behrman	Counselor Aimee K. Ivank	Counselor Marcius Dowmunt	Counselor T. A. Reilly	Postdoctoral Rep Kymberly Goody, PhD, Ohio State Univ
Integrating E. Reardon, PhD, UIC	Elizabeth A. Johnson, Natalie M., PhD, Texas A&M	Robert M. Tighé, MD, Duke Univ	Thivanka Muthumage, PhD, University of Rochester	Grad Student Matthew J. Zelikoff
Elizabeth A. Johnson, UIC				

## Sponsored Events at SOT Virtual Meeting

- "From Inhaled Particles to Neurodegeneration and Toxicity: Evidence from Studies in Volunteers, Experimental Animals, and Cell-Based Systems" (3/16/2021 at 11:15 AM EST)
- "It Is Not Just Air: Exposure to Indoor Air Pollution, Diagnostic Tools, and Evaluation of Health Effects" (3/17/2021 at 11:30 AM EST)

### Workshops:

- "Standardization of In Vitro Inhalation Exposure for Regulatory Acceptance" (3/15/2021 at 11:15 AM EST)
- "Precision-Cut Lung Slices: A Versatile Tool for Pulmonary Toxicology" (3/16/2021 at 11:15 AM EST)
- "New Approaches for the Identification and Evaluation of Chemical Respiratory Sensitizers" (3/22/2021 at 11:15 AM EST)

### Continuing Education:

- "Establishing Confidence in Organ-on-a-Chip Systems for Toxicity Testing: Lung-on-a-Chip as an Example" (3/26/2021 at 11:00 AM EST)

## IRSS 2021 Award Winners

**Paper of the Year Award:** Samantha Snow, US EPA

**Postdoctoral Award:** Gagandeep Chauhan, University of Rochester

**Mary Amdur Student Award:** Eva Vitucci

**Student Award:** Carmen Lau, Texas A&M University

**Career Achievement Award:** John Morris, University of Connecticut

**Donald E. Gardner Inhalation Toxicology Education Award:**

Keith Rogers, University of North Carolina

**Young Investigator Award:** Meghan Rebuli, University of North Carolina



## Inhalation Toxicology Through the Ages

### 1700-1900: Industrial Revolution

Mining and combustion of coal increases from 2.7 million tons in 1700 to 107.9 million tons in 1900. Percival Pott (1713) describes the first case of cancer among chimney sweeps.

**79 CE: Mount Vesuvius Erupts**

Destroys Pompeii and Herculaneum, suffocating Pliny the Elder.

**535 CE: Air is a Birthright**

Roman Emperor Justinian proclaims, "By the law of nature these things are common to mankind: the air, running water, the sea."

**673 CE: Greek Fire**

Ancient "napalm" described by the Crusaders as consisting of naphtha, quicklime, Sulphur, and salpeter.

### 1306: Sea Coal Burn Ban

Blacksmiths exempt, compliance and enforcement prove difficult.

### 1480: Incas in the Bronze Age

Using core samples obtained from the Quilacaya ice cap in Peru, the Incas begin smelting copper in the 1400s. Signs of air pollution swiftly rise in the 1400s. Spanish conquer Incas in 1533.

### 1556: Tobacco Arrives in Europe

Brought by French diplomat and scholar Jean Nicot. Nicotine is named after him.

**1509: Glasgow Smog**

Smog events result 1,000 deaths in "Auld Reekie" a town long known for its coal and oil refineries. The smog is coined term "smoke-fog" by Dr. Harold Antoinne Des Voeux in a 1911 report about the incidents.

**1915: Chemical Warfare is a Reality**

German chemist Fritz Haber developed chlorine and cyanide gases, which were used as blistering agents in WWI.

### 1922: U.S. PHS Monitors Air

Routine monitoring of air pollution in major eastern U.S. cities begins.

### 1930: Hawk's Nest Incident

Hundreds of African-American workers die between 1927-1935 of acute silicosis while digging through a man-made tunnel for Union Carbide.

### 1935: The Dust Bowl

Clouds of dust from years of drought cause thousands of deaths due to particle exposure and starvation in the Great Plains.

### 1950: Smoking & Lung Cancer

Sir Richard Shaboe Doll and Bradford Hill publish first paper linking smoking and lung cancer.

### 1952: London Great Smog

Caused or contributed to as many as 12,000 deaths. Continued smog events result in the 1956 Clean Air Act by British Parliament.

### 1954: Mary Amdur

Presents her work on the dose health effects of sulfur dioxide and sulfur dioxide to severe push-back. Today, the Mary Amdur Endowment supports student awards.

### 1971: U.S. EPA Established

In addition to establishing the EPA, the 1970 Amendments of the Clean Air Act, implemented strict standards for the regulation of industry and new sources of air pollution and mortality.

### 1973: London Gasoline Price Cut

Following longstanding suspicion of the neurotoxic effects of lead, increased lead in children and the introduction of the catalytic converter resulted in the EPA's decision to reduce lead in gasoline lead content. Within 20 years, the number of children with elevated lead levels dropped by 98%.

### 1982: SOT's IRSS Established

To create a safer and healthier world, by advancing the science and increasing the impact of toxicology.

### 1981: Vicks

US warning of terbutaline results in TCDD exposure to Vietnamese citizens and deployed military personnel via widespread routes, including inhalation. Effects include hypertension, diabetes, and Parkinson's Disease. Recent evidence suggests health risks in the grandchildren of Veterans.

### 1986: Chernobyl

Nuclear reactor accident results in largest radiation release in history. Those within 30 km of the plant inhaled up to 1000 mSv (adults) and 6000 mSv (infants) of radioactive iodine, an isotope known to cause thyroid cancer.

### 1993: Harvard Six Cities Study

Groundbreaking study found a strong link between air pollution and mortality. Spurring improved U.S. regulations on fine particulate matter.

### 1995: Tokyo Subway Sarin Gas

Members of religious group Aum Novi Secula released sarin gas in Tokyo subways, killing 12 and injuring 6,000.

### 1999: Libby, MT Asbestos

The EPA warns that anyone living in Libby, MT has a 1 in 5 chance of getting mesothelioma most likely before January 1991.

### 2001: World Trade Center Attacks

In the largest commercial attack in the U.S., 1.1 billion gallons of fuel are released into the Emory River. Nearly 40 deaths and 250 cases of illness have been linked to the remediation effort and failure to provide PPE to employees.

### 2015: Beijing Air Pollution

A striking difference in air quality is observed after Beijing achieves clear blue skies in time for a 2008 Winter Olympic. Less than 24 hours later, Beijing AQI shoots from 17 to 160+.

### 2016: New Delhi Air Pollution

PM 2.5 levels spike up to 550 µg/m³ in November 2016, leading to poor visibility, increased mortality from respiratory diseases, and grounding of flights.

### 2019: EVALI Outbreak

Outbreak of e-cigarette, or vaping, product use associated lung injury primarily associated with illicit THC products.



### Current & Future Challenges

#### COVID-19

#### Wildland Fires

#### Burn Pit Emissions

#### PFAS

#### E-Cigarettes

#### Climate Change



## Inhalation and Respiratory Specialty Section

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# Awards: Winners of 2020-2021

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**Student Award:** Carmen Lau, Texas A&M University

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**SOT 2021 Program Webinars hosted by IRSS Members: Thank you to all**  
<https://www.toxicology.org/events/am/AM2021/program-overview.asp>

**Symposia: Sponsored Events at SOT Virtual Meeting 2021**

- “From Inhaled Particles to Neurodegeneration and Toxicity: Evidence from Studies in Volunteers, Experimental Animals, and Cell-Based Systems” (3/16/2021 at 11:15 AM ET)
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## Webinar Series 2020-2021

### “Microplastics and pulmonary risk:

### Environmental prevalence, exposure and mechanisms of pulmonary action”

Tuesday, April 13th, 2021 at 2:00 – 3:00 PM EDT.



**James McGrath, PhD**

Professor of Biomedical Engineering  
University of Rochester



**Eliseo Castillo, PhD**

Assistant Professor, Department of Internal Medicine  
University of New Mexico Health Sciences Center

#### Moderators:

- **Irfan Rahman, PhD**, Professor, University of Rochester, Rochester, NY
- **Judith Zelikoff, PhD**, Professor, New York University School of Medicine
- **Holger Behrsing, PhD**, Director & Head: Respiratory Toxicology Program, IIVS, Inc.

**For nominations and suggestions-**

**Please contact:**

**Holger P. Behrsing, PhD**

Director – Respiratory Toxicology

Office: 301.963.4946

[hbehrsing@iivs.org](mailto:hbehrsing@iivs.org)





# Inhalation and Respiratory Specialty Section

of the Society of Toxicology

## Specialty Section-Collaboration and Communication Group (SS-CCG)

Mission: Facilitate the exchange of ideas across Specialty Sections

### Seeking Input:

- Co-sponsored events (webinars, etc.)
- Best Practices

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### Forthcoming Meetings

The 23<sup>rd</sup> Congress of the International Society for Aerosols in Medicine (ISAM) will be held in Boise, Idaho from 22<sup>nd</sup> to 26<sup>th</sup> May 2021.

<https://www.isam.org/website/2021%20Congress/congress>

The International Society for Aerosols in Medicine (ISAM)  
office@ISAM.org

Call for Proposals for the International Congress of Toxicology 2022 Scientific Program  
Maastricht, **September 18-22, 2022.**

The International Congress of Toxicology is a joined meeting of IUTOX and EUROTOX ([www.ict2022.com](http://www.ict2022.com)). The theme of the 2022 ICT "*Uniting in Toxicology*", reflects our desire to address topics dealing with different disciplines. Submit your scientific proposals via the [submission platform](#) making sure to include the organiser details, the recommended speakers, and a brief presentation for the proposal.

[https://www.eventclass.org/contxt\\_ict2022/welcome/index](https://www.eventclass.org/contxt_ict2022/welcome/index)

The 10th International Conference on Nanotoxicology (virtual program) is just around the corner. Registration is open, and the conference runs from **April 20-22**. The program is available online. There are **212** presentations consisting of, **7** Keynotes, **86** Abstract Oral Presentations, and **119** Poster Presentations with presenters from over **28** countries.

Further information on this conference can be found in the attached flyer link or at [10th International Conference on Nanotoxicology \(nanotox2021.org\)](http://10th International Conference on Nanotoxicology (nanotox2021.org))



# Inhalation and Respiratory Specialty Section

## of the Society of Toxicology

Dear members,

We would like to acknowledge and thank all of our Executive Committee and IRSS members for their contributions

**IRSS Awards Committee:**

Melanie Doyle-Eisele (Chair 2020-2021) and

All EC members

**Incoming Chair: Kym Gowdy**

**Education, Technical, Outreach,  
Endowment and Webinar Committee  
(2020-2021)**

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Holger Behrsing, PhD (IIVS)

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Marusia Popovech, PhD (Exxon)

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Colette Miller, PhD (EPA)

[Miller.Colette@epa.gov](mailto:Miller.Colette@epa.gov)

Elise Hickman, PhD (UNC)

[ehickman@email.unc.edu](mailto:ehickman@email.unc.edu)

**2021-2021**

**Webinars:**

Holger Behrsing, Natalie Johnson, and  
Marusia Popovech

**Journal Club:**

Natalie Johnson and Robert Tighe

**Mentorship and Networking:**

Marusia Popovech, Robert Tighe, Thivanka  
Muthumalage and Michael Yaeger

**Program Committee:**

Judith Zelikoff, PhD (Chair 2020-2021)

[Judith.Zelikoff@nyulangone.org](mailto:Judith.Zelikoff@nyulangone.org)

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Christopher A. Reilly, PhD

[Chris.Reilly@pharm.utah.edu](mailto:Chris.Reilly@pharm.utah.edu)

**Incoming Chair: Melanie Doyle-Eisele**

**Membership and Endowment**

**Incoming Chair: Meghan Rebuli**

**Technical**

Judith Zelikoff; Melanie Doyle-Eisele;  
Holger Behrsing and others

**Thank you for your involvement and commitment.  
Please be a part of our endeavors and contact us for  
feedback and involvement!**



# Inhalation and Respiratory Specialty Section

of the Society of Toxicology



All slides will be available from  
[www.toxicology.org/groups/ss/IRSS](http://www.toxicology.org/groups/ss/IRSS)

