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
- Extracellular Vesicles and their Role in Respiratory Toxicology
- Interactions between inhaled materials and allergic stimuli
- Airway injury from systemic toxicants
- Exposure and Disease to inhaled toxicants
- Environmental Justice, Air Pollution and Climate Change

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.

Inhalation Toxicology Through the Ages

1700-1900: Industrial Revolution
Mining and combustion of coal increased from 2.7 million tons in 1700 to 250 million tons in 1900. Personal Pott (1775) notes increased incidence of cancer among chimney sweeps.

1823: Aboul Act Passed
Establishment of the British's first pollution inspectors following extensive property damages caused by emission of hydrogen gas.

1880s: London’s “Killer” Smog
Brutal outbreaks of temperature inversions in January, deadly smog events in London began to increase in severity.

1930: Hawk’s Nest Incident
Hundreds of African-American workers died between 1927-1930 of acute silicosis while digging the hydroelectric tunnel for Union Carbide.

1935: The Dust Bowl
Clouds of dust from wind of drought cause thousands of deaths due to particle exposure and starvation in the Great Plains.

1950: Smoking & Lung Cancer
Sir Richard 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 results in the 1956 Clean Air Act by British Parliament.

1954: Mary Amour
Presents her work on low dose health effects of inhaled sulfuric acid and sulfur dioxide to severe pushbacks.

Today the Mary Amour Endowment supports student awards.

1971: U.S. EPA Established
In addition to establishing the EPA, the 1970 Clean Air Act authorized the creation of the Clean Air Act. The first passed in 1953, authorize for the regulation of industrial and mobile sources of air pollution. In 1971, EPA names 44 criteria pollutants adding lead to the list in the mid-1970s.

1973: Lead Poisoning Phase Out
Following longstanding suspicion of the neurotoxic effects of lead, increased lead in children and the introduction of the catalytic converter resulted in the EPA to require a gradual reduction in lead content.

1993: Harvard Six Cities Study
Groundbreaking study found a strong link between air pollution and respiratory illness, spurring improved U.S. regulations on this particular matter.

1995: Tokyo Subway Sarin Gas
Members of religious group Aum Shinrikyo released sarin gas in Tokyo Subway, killing 12 and injuring 6,000.

1999: Libby, MT Asbestos
The EPA learns that anyone living in this northwest Montana town for six months any time before January 1991 was most likely exposed to harmful levels of asbestos.

2015: Beijing Air Pollution
A striking difference in air quality is observed after Beijing achieves clear blue skies in time for a military parade. Less than 24 hours later, Beijing AQI shoots from 17 to 160+.

2016 & 2018: New Delhi Air Pollution
PM 2.5 reached up to 300 pg/m^3 in November 2016, leading to poor visibility, increased mortality from respiratory diseases, and grounding of flights.

2019: EAVI Outbreak
Outbreak of a coronavirus, occurring associated lung injury primarily associated with duct TRC products.

2020s:

1306: Sea Coal Burn Ban
Blacksmiths exempt, compliance and enforcement difficult.

1400: Incas in the Bronze Age
Using core samples obtained from the Quilcahuayluque site in Peru, the Incas begin small mining in the late 1400s. Signs of air pollution swiftly rise once the Spanish conquer the Incas in 1533.

1556: Tobacco Arrives in Europe
Brought by French diplomat and visitor Jean Nicot. Nicotine is named after him.

1608: Greenville Smog
Smog events result cause 5,000 deaths in “Auld Rain” a town long known for its coal fire smoke emissions. Smog is coined from “smoke fog” by Dr. Harald Arne Darv Venues in a 1911 report about the incidents.

1915: Chemical Warfare a Reality
German chemical Fritz Haber developed chlorine and cyanide gases, which were used as blistering agents in WW1.

1928: U.S. PHS Monitors Air Pollution
Routine monitoring of air pollution in major eastern U.S. cities begins.

1941: St. Louis Post Ww2 Pulitizer
First Pulitzer Prize for environmental reporting awarded following the 1938 St. Louis smog episode that blocked sunlight for a week, resulting in the first smoke ordinance enacted by a U.S. city.

1942: The Holocaust
1.1 million European Jews and POWs were murdered using hydrogen cyanide gas (Zyklon B) in the extermination camps.

1960: SOT Established
To create a safer and healthier world by advancing the scientific understanding of the impact of toxicology.

1961: Vietnam War
U.S. spraying of herbicides results in TCDD exposure to Vietnamese civilians and deployed military personnel via widespread routes, including irrigation. Exposures linked to birth defects, cancer, diabetes, and Parkinson’s Disease.

1968: Bhopal Disaster
Accidental release of 40 metric tone of methyl isocyanate from a Union Carbide pesticide plant killed thousands.

1969: Chernobyl
Nuclear reactor accident results in the largest nuclear disaster in history. Those living within 30 km of the plant suffered up to 1000 mSv (adults) and 800 mSv (infants). One cell isotope known to cause thyroid cancer.

1982: SOT’s IRSS Established
By James Stevers (President) and Dan Gartner (Vice President) for increasing the impact of toxicology.

1986: Bhopal Disaster
Accidental release of 40 metric tone of methyl isocyanate from a Union Carbide pesticide plant killed thousands.

1987: Chernobyl
Nuclear reactor accident results in the largest nuclear disaster in history. Those living within 30 km of the plant suffered up to 1000 mSv (adults) and 800 mSv (infants). One cell isotope known to cause thyroid cancer.

2001: World Trade Center Attacks
9/11 Terrorist attacks result in the deaths of almost 3,000, releasing a mixture of dust containing fiberglass, asbestos, metals, and VOCs into the air. As of 2018, 32,000 cases of respiratory / digestive diseases and 6,000 cancers, resulting in over 700 and 600 deaths, respectively, have been reported in first responders.

2008: Kingston Coal-Ash Spill
In the largest coal ash spill in the U.S., 1.1 billion gallons of coal ash was spilled into the Emory River. Over 250 sites were killed by the remediation effort and fail to provide PPE to employees.

2019: EAVI Outbreak
Outbreak of a coronavirus, occurring associated lung injury primarily associated with duct TRC products.

Reception and Awards Meeting
Tuesday March 21, 2023
6:00 PM – 7:30 PM PST
Omnivore Nashville Hotel, Broadway Ballroom E

Join the Inhalation and Respiratory Specialty Section for their Annual Meeting and Reception. The event will include: a report of section activities in the past year, award announcements, introductions of the 2023-2024 officers, and ample networking opportunities to connect with colleagues. This event is open to all in-person Annual Meeting attendees interested in joining the section, regardless of current membership status with the hosting group.

Executive Committee 2022-2023
President
Melanie Doyle-Ellas
Vice President
Hyndra St. Gossey
Vice President-Elect
Lara Van Welie
Secretary/Treasurer
Meghan Redbud
Past President
Judith T. Zelek
Councilors
Katie E. Zychowski
Natalie M. Johnson
Patricia Shively
Robert M. Tigh
Postdoctoral Rep
Emmya Hanley
Grad Student Rep
Michael Taeger

Inhalation Development: Back to Basics
Continuing Ed – Mar 19, 11:15 AM – 5:00 PM
Room 202, Music City Center
House on Fire: Chemistry and Toxicology of Structure & Fire Smoke at the Wildland Urban Interface
Symposium – March 20, 9:15 AM – 12:00 PM
Karl Dean Ballroom A1, Music City Center
Developing Human-Relevant New Approach Methodologies to Measure Key Events in Pulmonary Adverse Outcomes: Focus on Chronic Endpoints
Symposium – Mar 21, 8:00 AM – 10:45 AM
Karl Dean Ballroom A1, Music City Center
It’s Getting Hot: Extreme Heat Events and Disparate Health Impacts, Perceptions, and Vulnerability
Symposium – Mar 21, 3:00 PM – 4:40 PM
Karl Dean Ballroom A1, Music City Center

IRSS 2022 Award Winners
Career Achievement: Irfan Rahman
Young Investigator: Jonathan Shannahnan
Postdoctoral: Dorothy You
Graduate Student: Michelle Framingon

Upcoming committee for 2022-2023
VP-Elect: Christopher Reilly
Secretary/Treasurer: Jennifer Larson-Caysey
Councilor: Todd Stueckle
Counselor: Niketa Sadekar
Student Rep: Marissa Guttengen

Sponsored Events at SOT Meeting
2020s +
Current & Future Challenges
COVID-19
Wildland Fires
Burn Pit Emissions
PPAS
E-Cigarettes
Climate Change
Environmental Disasters