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.

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.

Inhalation Toxicology Through the Ages

0-1000 CE

1306: Sea Coal Burn Ban

Blacksmiths exempt from compliance and enforcement prove difficult.

1480: Incas in the Bronze Age

Living now were completely obtained from the Quichean cap in Peru, the Incas began smelting bismuth in the late 1400s.

1556: Tobacco Arrives in Europe

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

1700-1900: Industrial Revolution

Mining and combustion of coal increases over three times in 1700 to 250 million tons in 1900. Portland cement (1775) noted increases incidence of cancer among chimney sweeps.

1830: Alkali Act Passed

Establishment of the British's first pollution regulation following extensive property damages caused by emission of hydrogen chloride gas.

1880s: London's "Killer" Smog

Brought on by temperature inversions in January, deadly smog events in London begin to increase in duration and severity.

1930: Hawk's Nest Incident

Hundreds of African-American workers died between 1927-1930 of acute silicosis while digging a hydroelectric tunnel for U.S. Steel.

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 Samuel 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

Pioneers for women's role in low dose health effects of inhaled sulfuric acid and sulfuric oxide to severe health. Today, the Mary Amdur Endowment supports student awards.

1961: Vietnam War

Many more were exposed to the mercury compound or organochlorine nerve agent named "agent orange" by the U.S. military.

1968: Bhopal Disaster

Accidental release of 40 metric tons of methyl isocyanate from a Union Carbide plant. 1,400 people died, more than 200,000 people were injured.

1986: Chernobyl

Nuclear reactor accident results in evacuation of thousands of people living within 30 km of the plant inhaled radioactive particles.

1993: Harvard Six Cities Study

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

1995: Tokyo Subway Sarin Gas

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

1999: Libby, MT Asbestos

The EPA warns that anyone living in Libby asbestos-contaminated northwest Montana town for six or more years before January 1991 was most likely exposed to harmful levels of asbestos.

2001: World Trade Center Attacks

110 terrorist attacks result in the deaths of over 3,000 people, releasing large amounts of dust containing benzene, anthrax, metals, and VOCS into the air. Of the 20,000 cases of respiratory/digestive diseases and 9,000 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 slurry was released into the Emory River. Nearly 40 deaths and 250 cases of illnesses have been linked to the remediation efforts and failure to provide PPE to employees.

2009: Cyanide Spill

Cyanide and cyanide poisons were released by the Metal Company in Zimbabwe.

2015: Beijing Air Pollution

A striking increase 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 500 μg/m^3 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-associated lung injury primarily associated with THC products.

2020s +

- Current & Future Challenges
  - COVID-19
  - Wildland Fires
  - Burn Pit Emissions
  - PFAS
  - E-Cigarettes
  - Climate Change

Sponsored Events at SOT Virtual Meeting

Webinars:
- "Electronic Cigarettes and Cardiovascular Toxicity: New Friend or Old Foie?" (4/28/2020)
- "Resolution of Inflammation in Chemical Toxicity/Tissue Injury: What’s Emerging?" (5/12/2020)
- "Sex, Lungs, and Air Pollution" (6/11/2020)

Continuing Education:
- "In vitro approaches to assess the toxicity of inhaled substances" (5/15/2020)
- "Lung Function: It’s Not Just Breathing" (6/28/2020)

Upcoming hot topic seminar topics will focus on the outbreak of e-cigarette, or vaping-associated, lung injury (EVALI), including epidemiology, clinical perspectives, forensic evidence, and potential mechanisms.

IRSS 2020 Award Winners

Career Achievement Award: Urmila Kodavanti, US EPA
Young Investigator Award: Phoebe Stapleton, Rutgers/SUNY
Donald E. Gardner Education Award: Cody Smith, Rutgers
Mary Amur Award: Elise Hickman, UNC Chapel Hill
Graduate Student Award: Christina Awada, NYU
Postdoctoral Awards: Tosifa Memon, University of Utah
Paper of the Year Award: Meghan Rebuli, UNC Chapel Hill

Inhalation and Respiratory Specialty Section

Description

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Reception and Awards Meeting

Thursday, May 21, 2020
2:30 PM – 4:00 PM EDT
Virtual Meeting via Webex
Please join us to honor our award winners and discuss member involvement.

Executive Committee 2020-2021

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