

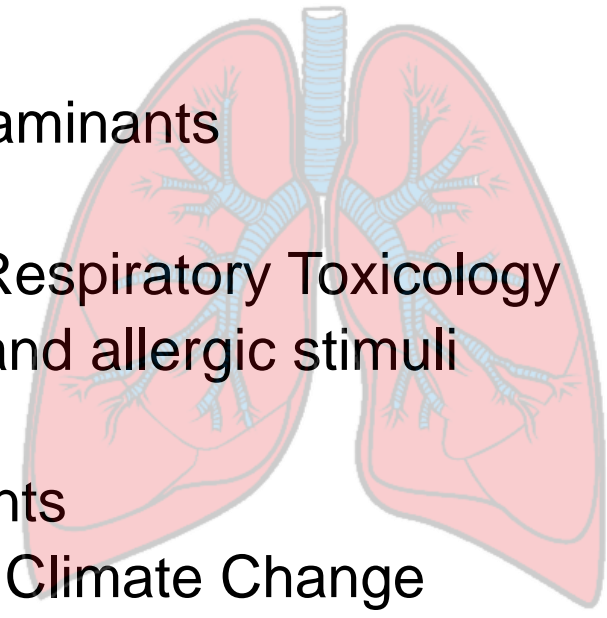
INHALATION AND RESPIRATORY SPECIALTY SECTION

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.

Reception and Awards Meeting

Tuesday March 21, 2023
6:00 PM – 7:30 PM PST
 Omni Nashville Hotel, Broadway Ballroom E

Join the Inhalation and Respiratory Specialty Section for their Business 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-Eisele



Vice President
Kymberly M. Gowdy



Vice President-Elect
Laura Van Winkle



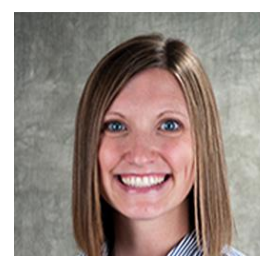
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Councilor
Natalie M. Johnson



Councilor
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Councilor
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Postdoctoral Rep
Emma Karey



Grad Student Rep
Michael Yaeger

Sponsored Events at SOT Meeting

Inhalation Drug Development: Back to Basics
 Continuing Ed – Mar 19, 1:15 PM – 5:00 PM
 Room 202, Music City Center

House on Fire: Chemistry and Toxicology of Structural 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
 Workshop – Mar 21, 8:00 AM – 10:45 AM
 Karl Dean Ballroom A1, Music City Center

A Current Perspective on Environmental Chemicals and Their Role in Initiating and Exacerbating Cardiovascular Disease
 Workshop – Mar 21, 8:00 AM – 10:45 AM
 Karl Dean Ballroom A2, 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

Refining Inhalation Risk Assessments by Integrating New Approach Methodologies
 Symposium – Mar 23, 8:30 AM – 11:15 AM
 Room 207B, Music City Center

IRSS 2022 Award Winners



Career Achievement: Irfan Rahman
Young Investigator: Jonathan Shannahan
Postdoctoral: Dorothy You
Graduate Student: Michelle Fiamingo

Mary Amdur: Aiman Abzhhanova
Mary Amdur: Vingie Ng
Donald Gardner: Morgan Domanico
Paper of the Year: Skye Kelty

Upcoming committee for 2022-2023

VP-Elect: Christopher Reilly
Secretary/Treasurer: Jennifer Larson-Casey

Councilor: Todd Stueckle
Councilor: Nikaeta Sadekar
Student Rep: Marissa Guttenberg

Inhalation Toxicology Through the Ages

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 saltpeter.

1700-1900: Industrial Revolution

Mining and combustion of coal increases from 2.7 million tons in 1700 to 250 million tons in 1900. Percival Pott (1775) notes increased incidence of cancer among chimney sweeps.

1863: Alkali Act Passed

Establishment of the Britain's first pollution inspectorate 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 1927-1935 of acute silicosis while digging a hydroelectric 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 results in the 1956 Clean Air Act by British Parliament.

1954: Mary Amdur

Presents her work on low dose health effects of inhaled sulfuric acid and sulfur dioxide to severe pushback. 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, first passed in 1963, authorizes for the regulation of industrial and mobile sources of air pollutants. In 1971, EPA names 4 oxidant criteria pollutants, adding lead to the list in the mid-1970s.

1973: Leaded Gasoline 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 gasoline lead content. Within 20 years, the number of children with elevated lead levels dropped by 98%

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 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

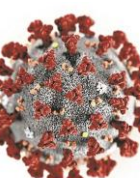
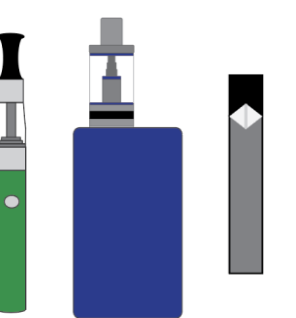
A striking difference in air quality is observed after Beijing achieves clear blue skies in time for a military parade. Less than 24 hours later, Beijing AQI shoots from 17 to 160+.

2016 & 2018: New Delhi Air Pollution

PM 2.5 reached up to 550 µg/cm3 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 illicit THC products.



0-1000 CE

1000-1700

1700-1900

1900-1920

1930s

1940s

1950s

1960s

1970s

1980s

1990s

2000s

2010s

2020s +

1306: Sea Coal Burn Ban

Blacksmiths exempt, compliance and enforcement prove difficult.

1480: Incas in the Bronze Age

Using core samples obtained from the Quelccaya ice cap in Peru, the Incas begin smelting bismuth 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 scholar Jean Nicot. Nicotine is named after him.

1909: Glasgow Smog

Smog events result cause 1,000 deaths in "Auld Reekie" a town long known for its coal-fire smoke emissions. 'Smog' is coined from 'smoke-fog' by Dr. Harold Antoine Des Voeux in a 1911 report about the incidents.

1915: Chemical Warfare a Reality

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

1928: U.S. PHS Monitors Air

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

1941: St. Louis Post Wins Pulitzer

First Pulitzer Prize for environmental reporting awarded following the 1939 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 Nazi extermination camps.

1948: Donora, PA Smog

A weather inversion concentrated sulfuric acid, nitrogen dioxide and fluorine in a smog, killing 20 and sickening over 7,000.

1960: SOT Established

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

1961: Vietnam War

U.S. spraying of herbicides results in TCDD exposure to Vietnamese citizens and deployed military personnel via widespread routes, including inhalation. Exposure linked to birth defects, cancer, diabetes, and Parkinson's Disease. Recent evidence suggests of health risks in the grandchildren of Veterans.

1982: SOT's IRSS Established

By James Stevens (President) and Don Gardener (Vice President).

1986: Bhopal Disaster

Accidental release of 40 metric tons of methyl isocyanate from a Union Carbide pesticide plant killed thousands.

1986: Chernobyl

Nuclear reactor accident results in largest nuclear disaster in history. Those living 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.

2001: World Trade Center Attacks

9/11 Terrorist attacks result in the deaths of almost 3,000, releasing large amounts of dust containing fiberglass, asbestos, metals, and VOCs into the air. As of 2019, 32,000 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 fly ash slurry was 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.

Current & Future Challenges

COVID-19

Wildland Fires

Burn Pit Emissions

PFAS

E-Cigarettes

Climate Change

Environmental Disasters