



PEOPLE 2023 – Special Technical Sessions

Index

1) Chemicals of Emerging Arctic Concern: Sources and Environmental Fate	1
2) Microplastics and Nanoplastics: Challenges and Advances in Characterization, Risk Assessment, and Management	2
3) Impacts and Cleanup of Inland and Marine Oil Spills.....	3
4) Challenges and Solutions for the Environmental Problems in Indigenous Communities.....	3
5) Sustainable Transport, Logistics and the Environment	4
6) Technology Development in Agricultural Waste Management	4
7) Exposure Risk and Environmental Assessment of Persistent Organic Pollutants	5
8) Infrastructure Systems and the Environment	6
9) Environmentally Sustainable Management of Personal Protective Equipment Waste	7
10) Exploring the Potential of Construction and Demolition Waste: Opportunities and Challenges	8

1) Chemicals of Emerging Arctic Concern: Sources and Environmental Fate

Organizers:

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Special Session Overview

Environmental pollutants have been reported in the Arctic since the late 1800s after the first description of "dirty snow", originating from long-range atmospheric transport of early industrial emissions. Since the 1990s, Arctic pollution has been studied in a systematic and coordinated way under the auspices of the Arctic Monitoring and Assessment Programme (AMAP), often focusing on persistent organic pollutants (POPs) and generating relevant data for risk assessments and regulations, for example under the Stockholm Convention. Current monitoring programs usually only cover a selected number of chemicals potentially present in the Arctic, however, they provide a useful platform for screening for chemicals of emerging Arctic concern (CEACs). Highly sensitive trace analytical methods enable the identification and quantification of an increasing number of CEACs, but often, information is sparse on their



sources and environmental fate. Recent reports by AMAP have shown that local sources contribute to the pollutant profile in Arctic environments and that climate change can affect the environmental fate of POPs and CEACs. This is a concern in attempts to ensure that local food sources can still be harvested by future generations of Arctic indigenous populations without any concern for health and well-being. Local sources can also have implications for regulative and assessment strategies as the Stockholm Convention only considers the long-range transport of chemicals to remote regions.

We invite researchers to present their scientific results in modern environmental chemistry, toxicology, fate modelling as well as monitoring, environmental assessment, and pollutant regulation, concerning CEACs. The session will highlight scientific and toxicological aspects contributing to a better understanding of CEACs and to sustainable pollution regulations in the Arctic.

2) Microplastics and Nanoplastics: Challenges and Advances in Characterization, Risk Assessment, and Management

Organizers:

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Special Session Overview

The yearly global production of plastics exceeds 320 million tons and is expected to double in the next twenty years. Of this, only 10% is recycled. Notably, an increasing number of studies have shown the breakdown of plastics littered in the environment into microplastics (<5 mm) and nanoplastics (<1000 nm). Micro- and nanoplastics (MNPs) can be ingested by living organisms and may finally be taken up by humans via the food chain. There exist considerable challenges to efficiently separate and characterize small MNPs in samples from different environmental compartments (water, soil, sediment and atmosphere) and living organisms. Furthermore, it is critical to understand their sources, pathways for transformation, transportation, and accumulation in the environment and assess their environmental risk. On the other hand, our understanding of the formation mechanisms is limited to case studies, such as the release of MNPs during the use of plastic products. Public concerns and regulations



require scientists to provide more information on the risk of MNP contamination, the sources of the pollution, and how to reduce it. This session aims to explore the recent challenges and progress of MNP research in terms of particle characterization, risk assessment and pollution management. Presentations will cover topics such as the formation mechanisms of MNPs, release during the use of plastic products, the recent development of characterization methods, ecotoxicity and risk assessments, and how to prevent MNP release into the environment.

3) Impacts and Cleanup of Inland and Marine Oil Spills

Organizers:

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Special Session Overview

Oil spills into inland and marine waters represent a significant source of organic pollution in the environment. Improved understanding of spilled oil's fate and behaviour in aquatic environments, including its distribution, persistence, composition, and effective clean-up strategies, are needed to inform spill response planning and execution. The latest research aimed at addressing these needs will be discussed during this session.

4) Challenges and Solutions for the Environmental Problems in Indigenous Communities

Organizer: TBC

Special Session Overview

Indigenous communities have developed a profound and intimate relationship with their environment, living sustainably and in harmony with nature for thousands of years. However,



this invaluable knowledge and traditional practices have often been overlooked and undervalued in modern society. Despite their sustainable way of life, Indigenous communities are disproportionately affected by environmental problems such as climate change, deforestation, and pollution. It is imperative that we recognize and address these issues and work towards a more equitable and sustainable future for all. This special session will explore the crucial role of Indigenous communities in addressing environmental problems, covering topics such as emerging pollution problems, climate change adaptation, traditional ecological knowledge, biodiversity conservation, Indigenous leadership in decision-making, and the challenges faced by Indigenous communities in accessing resources. By inspiring meaningful dialogue and collaboration, we aim to create a more sustainable future for Indigenous communities.

5) Sustainable Transport, Logistics and the Environment

Organizer:

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Special Session Overview

A sustainable transportation system aims to reduce the negative impact of transportation on the environment, while also ensure that transportation systems are efficient, accessible, and affordable. This involves the efforts on reducing greenhouse gas emissions, improving air quality, conserving energy and natural resources, and promoting public health. The proposed session will cover a range of topics related to sustainable transportation and the environment, including electric and alternative fuel vehicles, smart transportation systems, supply chain optimization, sustainable transportation policies, and the impact of transportation on the environment.

6) Technology Development in Agricultural Waste Management

Organizer:

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Special Session Overview

Climate change has been on everyone's lips in recent years. The G20 countries have committed themselves to a global reduction of greenhouse gases. To do so, different solutions are being developed. At the level of agricultural enterprises, it is known that animal production is responsible for a part of the emanations of certain greenhouse gases such as methane and ammonia. To reduce these emissions, it is possible to recover the gases produced by the decomposition of animal waste and other farm manure to produce energy. This also applicable to some industrial wastes such as agri-food production and related companies.

The concept of waste minimization and recycling are decades old, but often fail to ease the burden on natural resources. Circular economy envisages an end to the linear "take-make-dispose" approach through reuse, recycle and remodel in-line with waste reduction. Cutting-edge (clean) technology is needed to: recover fertilizer nutrients, save energy, release clean water into the environment, reutilise all parts of the waste and capture new value. Furthermore, bio-based products from agricultural/municipal/industrial wastes, which have their origin as solar energy, can achieve well balanced C-cycle compared to fossil alternatives. Thus, the transition to circular economy has enormous industrial potential, and significant benefits for a sustainable environment and society. This session aims to bridge different streams of research ranging from life sciences (genomics), engineering and informatics to identifying biological (including microbial conversions) pathways for production of a range of value-added bioproducts, and compare them to all other current and expected options. This will yield us the coveted "Triple bottom line" outcomes: social, ecological and financial.

7) Exposure Risk and Environmental Assessment of Persistent Organic Pollutants

Organizers:

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Special Session Overview

Persistent organic pollutants (POPs) are of growing concern because of their persistent behavior, and long-range transport far away from the origin through the atmosphere, rivers, and ocean currents. The pervasive distribution of POPs governs progressively by phase partitioning between multimedia environments, such as air, soil, water, atmosphere, ice, soil, and vegetation, where these pollutants accumulate and are taken up by food webs. Due to their ubiquitous occurrence, they have become subject to a threat to the ecosystem, biota, and human health. Climatic conditions have been considered a crucial factor influencing the trends and levels of POPs. Research approaches have been developed to assess the environmental impact of these pollutants on various ecosystems, including colder regions and marine and coastal environments. Moreover, International treaties, such as Stockholm Convention on POPs, have been signed by many countries to limit POP emissions and lessen environmental contamination. However, with time, the list of new POPs in the environment has been increasing and requires intensive research for the forthcoming future.

The conference session aims to provide a forum for researchers, scholars, students, and professionals from different organizations, institutes, academia, and industries to present their latest research through presentations. Topics include but are not limited to: 1) to review environmental impact assessment and other emerging challenges associated with the POPs in various ecosystems; 2) to examine the ubiquitous distribution of POPs in the multimedia environment under various environmental conditions followed by risk assessment and health effects; 3) to discuss the possibly growing impact of local sources, physical, ecological changes and extreme events on the level of POPs; (4) to discuss strategies to enhance community-based monitoring to bridge the knowledge gap for effective control of POPs.

8) Infrastructure Systems and the Environment

Organizers:

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Special Session Overview



Infrastructure is the backbone of society. It provides essential services, such as water, sewer, energy, transportation, etc. Mitigating the environmental impacts of infrastructure as well as their adaptation to climate change have emerged as key challenges in the 21st century due to an increasing pace of urbanization, diversity of infrastructure facilities, their capital intensity, long service life, interconnections, and criticality of these facilities and services.

In the sense of these challenges, this technical session will focus on emerging research and practice in integrating and coordinating sustainability, circularity, and resilience dimensions to enhance environmental protection, reduce vulnerability to climate change, and improve resource efficiency and recovery in management of infrastructure facilities and services. The areas of particular interest are (but not limited to):

- *Climate change adaptation and mitigation strategies in infrastructure management*
- *Assessment and mitigation of environmental risks associated with construction and operation of infrastructure systems*
- *Life cycle analysis applications to infrastructure management*
- *Circular economy, resource conservation, efficiency, and recovery in infrastructure management*
- *Infrastructure resilience and vulnerability to climate change*
- *Green and/or natural infrastructure asset management*

9) Environmentally Sustainable Management of Personal Protective Equipment Waste

Organizer: TBC

Special Session Overview

To prevent the transmission of the coronavirus infection, wearing personal protective equipment (PPE), such as face masks, is recommended. With the excessive demand for face masks, the global production reached previously unheard-of levels, increasing from 12,534.4 million pieces in 2019 to 37,885.5 million pieces in 2020 and 402,138.1 million pieces in 2021, respectively. It is expected to find the sustainable solutions for PPE which can provide effective protection without compromising the environment of the planet. The proposed session will cover a range of topics, including but not limited to the degradation of PPE, sustainable materials for PPE manufacturing, circular economy for PPE, environmental impact of PPE, and reuse, recycling, and repurposing of PPE.



10) Exploring the Potential of Construction and Demolition Waste: Opportunities and Challenges

Organizers:

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Special Session Overview

Construction and demolition waste (C&DW) is a sustainable material that can help mitigate the negative impact of the construction industry on the environment. It is produced by processing waste materials from construction and demolition sites, which can then replace natural resources in various construction applications. Using C&DW can reduce the need for virgin materials and lower the carbon footprint of construction projects. It also helps divert waste from landfills and reduces the depletion of natural resources.

In the context of collaborative solutions to environmental problems under climate change, using C&DW has significant relevance. With the increasing global demand for construction materials, there is a growing need for sustainable alternatives that can reduce the negative impact on the environment. Collaborative efforts between various stakeholders in the construction industry, including designers, contractors, suppliers, and regulators, can help promote the use of C&DW and drive innovation in this area. By working together to develop and implement sustainable practices, we can mitigate the environmental impact of construction activities and contribute to a more sustainable future.