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EDITORIAL
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Editorial: Secondary Pollution in the Environmental Pollution Control Process: Production, Environmental Risks and Reduction

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Editorial on the Research Topic

Secondary Pollution in the Environmental Pollution Control Process: Production, Environmental Risks and Reduction

This research topic includes two contributions regarding the exploration of the composition and distribution of volatile organic compounds (VOCs) and the factors that affect their distribution in the salt lake sediments, as well as the heterogeneous oxidation of secondary organic aerosols (SOA) tracers by ozone studied by *in situ* FTIR method. Both contributions can help the readers understand more about the natural transformation process of VOCs and SOA in different environments and conditions.

The first study is from Qinghai Institute of Salt Lakes, Chinese Academy of Sciences and Qinghai Provincial Key Laboratory of Geology and Environment of Salt Lakes (Lu et al.). It mainly focused on collection of thirteen sediment samples from a depth profile in the East Taijinar Lake, China, and analysis on the VOCs of different samples that were extracted by headspace solid phase microextraction. Different approaches including gas chromatography-mass spectrometry, gas chromatography-ion mobility spectrometry and X-ray diffraction were used to analyze the VOCs, alkanes, and minerals in the collected samples. It was found that thirty-four VOCs could be identified and classified into seven types, and the VOCs correlated positively with detrital minerals. Due to the consumption of organic matter (OM) by microorganisms, the formation of VOCs could occur in sediment. As mentioned by the authors, the results in this study clearly demonstrated that the OM from different biological sources and microbial activities played a critical role in deciding the composition and distribution of VOCs in the sediment.

The second study is from Harbin Institute of Technology (Shenzhen) (Wang et al.) which mainly focused on the chemical structure changes of several SOAs when exposed to high concentration of ozone for short periods, using the *in situ* FTIR method. The studied SOAs include erythritol, analogue of 2-methyl erythritol (AME) which is a tracer of isoprene SOA, and 2, 3-dihydroxy-4-oxopentanoic acid (DHOPA) which is a tracer of toluene SOA. The systemic results obtained in this study showed that, in the presence of high concentrations of ozone, the oxidation processes of AME and DHOPA were slow. These implied that AME and DHOPA could be considered stable in the atmospheric environment when ozone was the main oxidant. The authors suggested that the heterogeneous oxidation of organic tracers by different oxidants needs to be studied more

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comprehensively in the future, so better understanding about the roles of SOAs on global climate change and air quality can be achieved.

These two articles in this collection illustrate the importance of advanced characterization techniques in understanding the physical and chemical properties of volatile organic compounds and secondary organic aerosols in the natural transformation processes.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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