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Improved prediction of risk from volatile organic compounds

Arthur Nwachukwu

Federal University of Ndufu-Alike Ikwo, Nigeria

Volatile organic compounds (VOCs) have a variety of negative impacts on human health, some (e.g. benzene and formaldehyde) are known to be human carcinogen. There is, therefore, often a pressing requirement to monitor these compounds. However, monitoring them is not straightforward as their concentrations vary with environmental parameters such temperature, barometric pressure, and groundwater movement. Because of this, the sampling frequency that is used at present is ineffective for determining their representative concentration, therefore, a device which can be left in-situ to collect high temporal resolution data has been developed. VOCs are measured by PID; however, PID measures aggregate VOC concentration. Because VOCs have differing toxicities and behaviours, individual identification is required; therefore, a sample must be collected. In order to do this, a sorbent material must be used to transfer the sample to the GC-MS for identification. The sorbent material must be appropriate for the range of VOCs and of sufficient capacity for extended exposure. The objectives of the work are therefore to: (i) select an appropriate sorbent for incorporation into a dual measurement VOC monitoring device, then to use the instrument to (ii) derive an optimum monitoring methodology.

Biography

Arthur Nwachukwu has completed his PhD (Earth, Atmospheric & Environmental Sciences) from the University of Manchester, UK. He is the CEO/Managing Director, Green Albatross Solutions Ltd, Manchester, UK. He is also a Lecturer at the Federal University of Ndufu-Alike Ikwo, Nigeria. He has published more than 20 papers in reputed journals.

arthur.nwachukwu@funai.edu.ng

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