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P12 - VOC concentrations in hospital settings: definition of a protocol for monitoring activities in inpatient wards, its application and the first results

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Introduction: Indoor Air Quality is one of the main issues in which governments are focusing. In healing spaces, several researchers are reporting a growing number of data analysis and research works in order to improve users' health. Currently the main investigations are related to biological and physical risks, otherwise chemical ones are less investigated. Several countries are carrying out air quality monitoring in those professional workplaces in which chemicals are used, but also in some typically indoor spaces for building hygiene assessment. Therefore, it determined the definition of guideline values for hospitals because the current scenario lacks of specific norms. **Method:** A research group has started a monitoring activity of air quality in inpatient rooms, giving rise to a protocol supported by ISO 16000 and guidelines by international institutions. The analysis examines VOCs -referring to WHO (2010) and ISO 16000- considered dangerous, and the influence of thermo-hygrometric, ventilation and concentration of pollutants' conditions. The methodology with passive samplers requires the use of an activity log for registering all the activities during the day. **Results:** The application of the protocol on some inpatient rooms permitted to verify the feasibility of the monitoring. Each investigation (one week per month, per a year) considered all the activities, users and processes that influence the indoor air, as well as room configuration, furniture and finishing materials. Although data analysis reports quite adequate values, several inadequate design and management activities cause inadequate values, especially related to formaldehyde (values between 8 and 10,2/ 10 µg/m³), benzene (0,7 and 3,4/ 2 µg/m³) and carbon dioxide (914 and 1154/ 1000 ppm). **Conclusion:** The analysis is work in progress on some case studies for controlling the indoor air values even during the year, and it is expanding to several hospitals. Although the main goal is to reduce the concentration levels, the aim is to define limit values for VOCs, for guaranteeing healthy healing spaces. These data will support the definition of design and management guidelines for healthy inpatient wards.

P13 - Active indoor air sampling of organochlorinated persistent pollutants and polycyclic aromatic hydrocarbons

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Introduction: The German guideline VDI 2464 Part 41 targets the sampling and measurement of organochlorinated persistent pollutants (OCP) and polycyclic aromatic hydrocarbons (PAH) in outdoor and indoor air. Repetitive trials of indoor air sampling on the basis of VDI 2464 Part 4 were executed to gain information about the quality of determination of OCP and PAH.

Method: The sampling campaign was performed in the period from July 7th to 10th 2015 in a building of about 600 m³ volume, employing two low volume samplers (LVS) in parallel as described in VDI 2464 Part 4. In addition, a second backup cartridge filled with XAD-2 was connected behind the master cartridge. Field blanks for filter and XAD-2 were utilized. For quality control the master cartridge was spiked with 16 ¹³C-labelled EPA-PAH as sampling standards. **Results and Discussion:** Recoveries are sufficient for all compounds. Both LVS perform very similarly. Recovery values lower than 70 % only occur for benzo(a)pyrene (BaP). Backup values are often 10% or less, which confirms a quantitative sampling. On filters, concentrations above the LOQ are only detectable for compounds with lower vapor pressure and high affinity to filter trapped aerosols (eg. DDTs).

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