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Analytical Methods for Determination of Compliance with OEL Values Established in Poland in 2020–2021

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In Poland Occupational Exposure Limits are called Maximum Admissible Concentrations (MAC) and are published by the Minister of Labour and Social Policy (based on documented proposals from the Interdepartmental Commission for MACs for Agents Harmful to Health in the Work Environment) and are legally binding. There is a practice that no MAC values are published unless the appropriate analytical method is available enabling determination of compliance. Validation of analytical methods is also required for compounds for which MAC values have been changed or for methods that do not meet criteria specified in the European standard EN 482.The objective of the project was to develop analytical methods for furan (Fu), hydrogen peroxide (HP), triethylamine (TEA), 4-chlo-ro-o-toluidine (4-CTA), 2-methoxypropan-1-ol (2M1P), N-methylformamide (NMF), 1-methyl-2-pyrrolidone (NMP) and 1-ethyl-2-pyrrolidone (NEP).Parameters of air sample collection (sorbent selection, air volume, sampling rate, desorption efficiency) and analytical conditions were investigated. Validation parameters, required according to the European standard EN 482:2020 such as limit of detection, limit of quantification, analytical range, precision, specificity and expanded uncertainty were also determined. Gas chromatography was used in analysis of Fu, TEA, 2M1P, NMF, NMP while NMF, 4-CTA and HP were analyzed by high performance liquid chromatography (HPLC) or spectrophotometry (UV-VIS).

Biography

Slawomir Brzeznicki is an Assistant Professor at Nofer Institute of Occupational Medicine (NIOM) in Lodz, Poland. He obtained M. Sc. Degree at Faculty of Pharmacy, Medical Academy of Lodz and PhD degree in medical biology at NIOM. His research focuses on analytical method development for biological and environmental monitoring of occupational and environmental exposure to harmful chemicals and assesment of exposure related health risks.