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Abstrak

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A direct solvent-extraction method was evaluated to assess its application for the extraction and analysis of PAHs (polycyclic aromatic hydrocarbons) in coal-tar-contaminated soils. Eight individual solvents and two combined solvents were used in a screening test to determine the suitability of different solvents for the direct solvent-extraction method. Based on the extracted concentrations of the Total PAH, noncarcinogenic ride - were selected for further investigation by testing these solvents on four coal-tar-contaminated soils and a certified PAH -contaminated soil. The extraction results for the Total PAH and N-PAH concentrations showed that there were no statistical differences for the three solvents at a confidence interval of 95%. However, ethanol gave lower concentrations of C-PAH than acetone and methylene chloride. Fifteen coal-tar-contaminated soil samples from a land farming treatment unit were used to compare the direct solvent-extraction method using acetone as the extraction solvent with the conventional Soxhlet extraction method (EPA method 3540) and ultrasonic extraction method (EPA Method 3550). The results showed that the direct solvent-extraction method gave higher mean PAH concentrations than the Soxhlet and ultrasonic extraction method and that the direct extraction method was equivalent to the Soxhlet method at a confidence interval of 99%. Because of its simplicity of use and its equivalent extraction capability with the Soxhlet extraction method, the direct solvent-extraction method may be used as a technique for the extraction and analysis of PAHs in contaminated soil.