Estimation of the uncertainty in a multiresidue method for the determination of pesticide residues in fruit and vegetables - DTU Orbit (14/10/2019)

The estimation of uncertainty of an analytical result has become important in analytical chemistry. It is especially difficult to determine uncertainties for multiresidue methods, e.g. for pesticides in fruit and vegetables, as the varieties of pesticide/commodity combinations are many. In the present study, recommendations from the International Organisation for Standardisation's (ISO) Guide to the Expression of Uncertainty and the EURACHEM/CITAC guide Quantifying Uncertainty in Analytical Measurements were followed to estimate the expanded uncertainties for 153 pesticides in fruit and vegetables. Data from in-house validation were used in the estimation of the uncertainty. No significant difference in the relative standard deviation for reproducibility (RSDR) were found between the different concentration levels at concentration levels exceeding 2.5 times the detection limit. Therefore, it was possible to pool the RSDR within a single matrix. However, a difference in RSDR between matrices was seen, thus the poorest RSDR of the investigated matrices was chosen for the uncertainty estimation. The expanded uncertainties ranged from 7 to 78% with an average of 32% and median of 32%. Furthermore, only RSDR contributed to the uncertainty estimation.

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