Supporting Information:

**A sensitive LC-MS/MS method for measurement of organophosphorus pesticides and their oxygen analogs in air sampling matrices**

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Acronyms and Abbreviations

TY - JOUR

T1 - A sensitive LC-MS/MS method for measurement of organophosphorus pesticides and their oxygen analogs in air sampling matrices

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N2 - A rapid liquid chromatography tandem mass spectrometry (LC-MS/MS) method has been developed for determination of levels of the organophosphorus (OP) pesticides chlorpyrifos (CPF), azinphos methyl (AZM), and their oxygen analogs chlorpyrifos-oxon (CPF-O) and azinphos methyl-oxon (AZM-O) on common active air sampling matrices. XAD-2 resin and polyurethane foam (PUF) matrices were extracted with acetonitrile containing stable-isotope labeled internal standards (ISTD). Analysis was accomplished in Multiple Reaction Monitoring (MRM) mode, and analytes in unknown samples were identified by retention time (±0.1 min) and qualifier ratio (±30% absolute) as compared to the mean of calibrants. For all compounds, calibration linearity correlation coefficients were ≥0.996. Limits of detection (LOD) ranged from 0.15-1.1 ng/sample for CPF, CPF-O, AZM, and AZM-O on active sampling matrices. Spiked fortification recoveries were 78-113% from XAD-2 active air sampling tubes and 71-108% from PUF active air sampling tubes. Storage stability tests also yielded recoveries ranging from 74-94% after time periods ranging from 2-10 months. The results demonstrate that LC-MS/MS is a sensitive method for determining these compounds from two different matrices at the low concentrations that can result from spray drift and long range transport in non-target areas following agricultural applications. In an inter-laboratory comparison, the limit of quantification (LOQ) for LC-MS/MS was 100 times lower than a typical gas chromatography-mass spectrometry (GC-MS) method. © 2014 Copyright Taylor and Francis Group, LLC.

AB - A rapid liquid chromatography tandem mass spectrometry (LC-MS/MS) method has been developed for determination of levels of the organophosphorus (OP) pesticides chlorpyrifos (CPF), azinphos methyl (AZM), and their oxygen analogs chlorpyrifos-oxon (CPF-O) and azinphos methyl-oxon (AZM-O) on common active air sampling matrices. XAD-2 resin and polyurethane foam (PUF) matrices were extracted with acetonitrile containing stable-isotope labeled internal standards (ISTD). Analysis was accomplished in Multiple Reaction Monitoring (MRM) mode, and analytes in unknown samples were identified by retention time (±0.1 min) and qualifier ratio (±30% absolute) as compared to the mean of calibrants. For all compounds, calibration linearity correlation coefficients were ≥0.996. Limits of detection (LOD) ranged from 0.15-1.1 ng/sample for CPF, CPF-O, AZM, and AZM-O on active sampling matrices. Spiked fortification recoveries were 78-113% from XAD-2 active air sampling tubes and 71-108% from PUF active air sampling tubes. Storage stability tests also yielded recoveries ranging from 74-94% after time periods ranging from 2-10 months. The results demonstrate that LC-MS/MS is a sensitive method for determining these compounds from two different matrices at the low concentrations that can result from spray drift and long range transport in non-target areas following agricultural applications. In an inter-laboratory comparison, the limit of quantification (LOQ) for LC-MS/MS was 100 times lower than a typical gas chromatography-mass spectrometry (GC-MS) method. © 2014 Copyright Taylor and Francis Group, LLC.

KW - Air monitoring

KW - drift

KW - organophosphorus

KW - oxon

KW - pesticide

KW - polyurethane foam

KW - XAD resin

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