Poster M02

SIMULTANEOUS DETECTION OF GLYPHOSATE, AMPA, AND METSULFURON-METHYL IN SURFACE RUNOFF BY NEGATIVE-ION ESI ELECTROSPRAY IONISATION MASS SPECTROMETRY

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The commercial weedkiller Trounce® is a mixture of glyphosate and metsulfuron-methyl formulated for enhanced control of weeds in many environmental situations including urban areas. Herbicides of this type are frequently used by municipal authorities for control of weeds at road verges and in drainage systems. Concern has been raised regarding the environmental fate of excess herbicide from overspray and its subsequent entry to the drainage sytems.

The herbicide glyphosate and its decomposition product aminomethylphosphonic acid AMPA belong to the glycine (phosphonoamino acid) class of compounds and are highly polar compounds, generally poorly separated on reversed phase columns without derivatisation. Detection has often performed using derivatisation and fluorescence. Metsulfuron-methyl is hydrophobic with weakly acidic properties and other members of the sulfonylurea class absorb in the ultraviolet range and are frequently analysed by conventional reversed phase HPLC with UV detection. Separate HPLC analyses were previously required to monitor both at low levels.

For the determination the levels of these herbicides occurring in runoff from concrete paving treated with Trounce®, ESI ionisation provides a technique that allows simultaneous detection. A HPLC-negative ion mode electrospray-MS method was developed after a mixture of the herbicides were successfully separated using isocratic HPLC. The column was coupled to a Micromass Platform II instrument operating in ESI negative-ion mode with detection by selected ion monitoring.