

Abstract:

Pyrethroids are synthetic esters used commercially as pesticides. They are readily available as active components of numerous over-the-counter products for control of household pests mainly formulated as sprays (aerosols), powders and for application via electro-evaporators. The potential for toxic effects in humans from inhalation of these pesticides is therefore great and there is need to develop methods of determination of indoor post-application concentration of the pyrethroids in air. A gas liquid chromatographic (GLC) method was used for the analysis of bioallethrin, permethrin, cypermethrin and deltamethrin in air. This method involved sampling of 1 m³ of air by adsorption of the analytes onto XAD sampling cartridges. Analytes were extracted with ethyl acetate and analyzed by gas chromatography with electron capture detection. The desorption/extraction efficiency (EE) was determined using fortification of known quantities of analytes (5-50 ng) and recovery ranged from 81% to 97%. The upper and lower limits of quantification (LOQ) were determined to be 4.5 ng/m³ and 45 ng/m³ respectively. This method is easily transferable to other pyrethroids or other volatile substances that are amenable to chromatography with selective detection.