B25 Extraction Methods of Capsaicin Encountered in Aerosol Defense Sprays: A Comparative Analysis

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The goals of this presentation are to present a comparative analysis of methods that may be used to extract and identify the compounds capsaicin and dihydrocapsaicin, which are the major components found in pepper spray products.

Instrumental analysis of capsaicin by Gas Chromatography Mass Spectrometry (GC/MS) has been shown to provide an excellent means for the identification of pepper spray residue after extraction from cloth samples. Solid Phase Microextraction (SPME) has been used to recover capsaicin and dihydrocapsaicin with limits of detection at 48 ng and 23 ng of material respectively.

The purpose of this presentation is to compare the extraction techniques used to recover capsaicin resulting from the use of defense sprays as weapons and present limits of detection by GC/MS for each extraction method. Additionally, persistence studies data and collection protocols detailing short-term and long-term recovery of residue is also presented. The interpretation of the results from this analysis leads to the conclusion that the residue from pepper sprays is more likely to be present as forensic evidence at crime scenes or civil disturbances.

Data from spiked cotton swabs extracted using the techniques solvent extraction, SPME, and solid phase extraction (SPE) is presented and summarized. Collection and packaging protocols of spiked samples are compared and summarized. Finally, data from the analysis of hand swabs collected after normal use of spray canisters collected over an eight-hour period will also be presented.

SPME, SPE, Pepper Spray

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