RESEARCH PROJECT

Title:

Analysis of tile flooring materials for background contaminants

Nature of problem this work is intended to address:

Background materials and substrates in fire debris can emit various compounds that complicate data interpretation when attempting to identify ignitable liquid residues (ILR). Many materials can release ILR target compounds either as a result of pyrolysis or due to the presence of these compounds in the manufacturing process.

Ceramic or stone tiles are generally relatively inert substrates. Tiles are made from clay minerals and various chemical additives to alter the properties of the working material. The manufacturing process includes steps such as batching, mixing and grinding, spray drying, forming, drying, glazing, and firing. The effect of each of these steps in the process on the chemical composition of the tile is unknown. Various casework samples received by our laboratory have shown flammable compounds present in tile materials. An investigation into the significance of these findings would be beneficial.

Outline of goals and objectives:

- Research the manufacturing process of various types of tile products including ceramic tiles, cladding/modular tiles, abrasion-resistant tiles, and other tile products.
- Analyse a variety of tile types via GC-MS and determine whether any ILRs are present.
- Establish a database of tile substrate chromatograms and mass spectra.

Special requirements:

Knowledge of working in a chemistry laboratory is essential. Familiarity with analysis techniques such as GC-MS would be beneficial.

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