

# RESEARCH PROJECT

**Title:**

A study into the long-term storage of fire debris samples archived on activated charcoal strips

**Nature of problem this work is intended to address:**

A variety of sample extraction procedures are used in fire debris analysis. Some of these procedures allow for an archive of the sample to be retained after the initial analysis is complete. This is a primary benefit of passive headspace extraction onto activated charcoal, the most employed extraction technique in forensic laboratories performing fire debris analysis. Sample archiving allows for sample reanalysis later, which can be beneficial in cases where the results of the analysis must be verified such as when they are questioned by a third party during legal proceedings.

Some studies have been completed to assess the efficacy of long-term storage methods for activated charcoal strips. However, like other aspects of the analysis process, storage methods should be verified to ensure that sample material is not lost or degraded by the storage conditions employed by a particular laboratory. Our laboratory has been archiving sample extracts in refrigerated storage for an extended period, with our oldest samples now being eight years old. This is a reasonable timeframe over which to evaluate the efficacy of long-term storage methods.

**Outline of goals and objectives:**

- Reanalyse samples of fire debris that have been archived onto activated charcoal strips.
- Assess the efficacy of our storage methods by comparing new analysis results to the original results obtained.
- Examine samples for major differences in chemical composition which may have occurred because of prolonged storage.

**Special requirements:**

Knowledge and skills related to working in a chemistry laboratory are essential. Familiarity with analysis techniques, including gas chromatography-mass spectrometry, would be beneficial.

**GKA Investigations Group project supervisors:**

Alexander Visotin, Laboratory Manager