RESEARCH PROJECT

Title:

Are expert fire examiners able to identify ignitable liquids by scent better than laypersons?

Nature of problem this work is intended to address:

A variety of techniques are available to fire examiners in order to assist them in detecting ignitable liquid residues (ILR) at fire scenes. These include electronic detectors, colorimetric assays, various light sources, as well as biological sensors. Perhaps the most well-known biological sensor is the accelerant detection canine. It is well established that the olfactory senses of canines are far superior to those of humans, and it is this ability that makes them such a useful fire investigation tool. However, in the absence of canine assistance, olfactory examination is a common presumptive testing method by which fire examiners try to ascertain the identity of an ignitable liquid (which may be present as a neat liquid or mixed with fire debris) simply by smelling it. Over the course of a fire examiner's career, they are exposed to a myriad of odours at fire scenes and as a result, some fire examiners claim to be able to differentiate between ignitable liquids based on scent alone. This study aims to assess whether or not this is possible.

Outline of goals and objectives:

- Design a study which will enable multiple liquids to be sampled (by smelling) by study participants, accounting for olfactory fatigue and other factors which could influence results
- Determine whether fire examiners are able to identify ignitable liquids by scent
- Determine whether laypersons are able to identify ignitable liquids by scent
- Determine whether there is a statistically significant difference between the abilities of both groups
- Assess whether fire examiners are able to discern the difference between liquids that are chemically similar.

Special requirements:

Knowledge and skills related to working in a chemistry laboratory are essential. Familiarity with statistical tests would be beneficial.

GKA Investigations Group project supervisors:

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