First Forensic Ltd

Briefing Note 3 - Paraffins

Paraffin is a generic term for a group of flammable liquids which have a boiling range of about 175° C to 325° C and contain between 8 and 16 carbon atoms (i.e. chemical formula C_8H_{18} to $C_{16}H_{34}$. The term Kerosene is often used synonymously.

Paraffin's are much less volatile than petrol and normally need to be applied to some material capable of acting as a wick, such as carpet or fabric, before they will ignite. Once ignited they will burn less vigorously, but for longer, than petrol. In addition, because they are less volatile they will also persist for longer on the clothing of a suspect.

"Paraffin type" material can include paraffin, turpentine substitute, barbecue lighting fluid, light central heating oil, lamp oil, degreasing agents and aviation fuels. It can also include some insect sprays and torch fuels.

Barbecue firelighters comprise a small amount of kerosene absorbed into a matrix, usually a urea-formaldehyde resin. Typically these comprise 80-85% kerosene, 5% matrix with the remainder being fillers. i.e. about a tablespoon of kerosene/block.

Within these products, however, there are a range of additives and additional compounds which often makes further discrimination and comparisons possible. For example, dyes are added to premium paraffin's used in heaters to produce "Esso Blue" and "Aladdin Pink".

Sometimes it is only the packaging which will differ between paraffin materials with the same chemical composition.

Depending on the analysis results from the debris, further work could be performed to eliminate some of these alternatives and/or compare with any suspect samples.