

RESEARCH PROJECT



Title:

Investigation of kitchen exhaust duct contents

Nature of problem this work is intended to address:

Commercial kitchens are hazardous locations with a relatively high risk of fire due to the multitude of cooking appliances that produce heat. These kitchens must be vented using an exhaust system that removes vapour and heat from the cooking surface. This can be accomplished by connecting an exhaust fan on the exterior of the premises to a ducting system, which interfaces with the vapour-generating processes via an exhaust hood. Over the course of cooking a meal, various vapours are released as the food items pyrolyse and evaporate. These vapours are carried into the exhaust hood by negative pressure and are evacuated into the atmosphere by the extraction fan. As these materials travel through the duct, they cool and deposit on the surfaces of the duct. Eventually, these deposits may act as a source of fuel for a fire. However, the chemical composition of these deposits is largely unknown, as are their propensities for self-heating or autoignition.

Outline of goals and objectives:

- What are the typical contents of kitchen exhaust ducts?
- Do these contents vary based on the type of cooking?
- Are these contents readily ignitable?
- Are these contents susceptible to self-heating?
- Can temperatures reached during normal cooking operations ignite these contents?
- Develop an analytical scheme to analyse and classify exhaust duct contents.

Special requirements:

This project will involve working with substances of unknown chemical composition. Knowledge of working in a chemistry laboratory is essential. Familiarity with analysis techniques such as GC-MS would be beneficial.

GKA Investigations Group project supervisors:

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