

BSE Public CPD Lecture – Open Kitchen Fires in Tall Residential Buildings on 5 March 2011

A CPD lecture on *Open Kitchen Fires in Tall Residential Buildings* was offered by Professor W.K. Chow and Dr. N.K. Fong on 5 March, 2011. This is a hot topic exposing the possible fire hazards from a recent development project with open kitchen design for small units in tall residential buildings.



Presentation by Professor Chow



Presentation by Dr. Fong

Open kitchens have been designed for many small residential units in tall buildings in Southeast Asia. This open design, without enclosing the kitchen with fire resisting walls, has failed to comply with the building fire safety codes in some places. Fire Engineering Approach (FEA) was adopted. Computational Fluid Dynamics (CFD) was applied with time-line analysis for a few scenarios with small fires. Gas cookers with flames were not allowed. Additional fire protection systems such as small-scale water mist suppression or dry powder systems had to be provided above the kitchen stoves for suppressing early stage of small fires.

A survey on fire load density indicated that large amounts of combustibles over 1135 MJm^{-2} were stored in small residential units. Physical hazards of kitchen fire with and without fire resisting walls were not studied thoroughly. There was no demonstration with full-scale burning tests that such fire safety provisions could suppress post-flashover fires. Consequently, there are now deep concerns on whether such open kitchens in tall residential buildings are really safe when there is an accidental fire.

Open kitchen fires were discussed in this CPD lecture. Problems encountered in using CFD in FEA, particularly those research software downloaded for free, were pointed out. Further, recent experiments at the AoS-FSE with electric induction cookers indicated that the cooking oil in a frying pan could be ignited within a few minutes. Fire would spread out from the open kitchen to burn up all stored combustibles in the residential unit to give a big fire. This point was also discussed.

Professor Chow highlighted the possible fire hazards, stressed the necessity of real-scale burning fires to better understand the fire physics associated with open kitchen, and installations of sprinkler.

The CPD lecture was well attended by over 80 professionals, paying up to HK\$800 per person.