

Letterhead of THE UNIVERSITY OF EDINBURGH  
SCHOOL of CIVIL and ENVIRONMENTAL ENGINEERING  
DIVISION of ENGINEERING

The Hon James TO Kun-sun  
Legislative Council Security Panel  
Legislative Council Chambers  
Central  
Hong Kong PRC

Our Ref. G/Dougal/ACS

19<sup>th</sup> January 1999

Dear Mr To,

Thank you for the opportunity to present my views on behalf of the Karaoke Concern Group at the recent meeting of the panel on security. I felt it proper to you to express my concern about the views presented by Ms Chang King-yiu at the end of the time available for discussion. I wanted to challenge the way she threw in a number of alleged facts about the application of fire resistance without attempting to explain why they were relevant to the discussion in hand. I had difficulty in following the details of what she said, but I would like to challenge some of the issues which she addressed so forcefully.

The following are of particular concern.

1. She refused to recognise the value of controlling the combustibility of the contents of a Karaoke establishment.
2. She refused to accept that fire resistance is relevant only when the fire has become fully developed.
3. She stated incorrectly that anything less than one hour's fire resistance was not possible.
4. She implied (quite incorrectly) that the walls of the Karaoke rooms were "flammable".

Ms Chang commented that there has been considerable advances in technology which permit relatively simple modifications to be made to improving fire resistance. While this true to some degree, her limited view excludes other more important technical advances that give us the ability to control the fundamental problem, namely the fire itself.

I think it would be reasonable to say that if the standard polyurethane foam furniture was replaced, no changes to the existing walls of the Karaoke rooms would be required. However, if the polyurethane foam furniture is not replaced, then providing one hour's fire resistant walls to the Karaoke rooms will make absolutely no improvement to life safety.

The above points are stated without attempting to justify them. I realise that this is inappropriate in the circumstances, and accordingly I append to this letter some explanatory notes which support my argument. If you would like any further clarification, please do not hesitate to contact me at the above address. I can be reached easily by fax at the number given.

Yours sincerely

Professor D D Drysdale

## **Addendum to letter of 19/1/99 from Professor D D Drysdale to The Hon James TO Kun-sun**

The following sections are intended to re-enforce the four points made in the accompanying letter.

1. It is now widely agreed by the Fire Safety Engineering Community that controlling the fire (i.e. selecting materials which ignite with difficulty, and only burn slowly) is the most effective way of improving life safety in any building. The critical parameter is the rate of burning, or the “rate of heat release”. Materials or items which give very high rates of heat release are inherently dangerous. This is well illustrated in the video “The Front Room Fire” which I left for the committee to view. The video shows a bad (but not unrealistic) example in which flashover occurred in three minutes. There are now materials available which if assembled in a settee similar to that shown in the video would either not give flashover at all, or lead to flashover only after a prolonged period of time (10-15 minutes, for example). This delay in flashover provides much more time for people to get out of the building.
2. Fire resistance is relevant only to the fully developed fire. To understand this point, it should be noted that in the early stages of the fire, the temperature in the space (e.g. a Karaoke room) remains relatively low. Smoke detectors will activate when the fire is quite small, and easily put out by a hand fire extinguisher, or even a cup of coffee, provided that the fire is not accelerating in the way shown in the video. As the fire develops, and the temperatures under the ceiling rises, eventually a sprinkler will be activated, well before the fully developed fire begins. Up to this point, the boundaries of the compartment are simply preventing the flow of smoke into the rest of the building, but any barrier is going to do this regardless of what fire resistance rating it has been given. Given that the fire detector will activate at a very much earlier stage giving warning to the staff that a fire exists, there is plenty of time available for evacuation procedures to be set in place and for the first aid fire fighting team to attend the fire and extinguish it themselves. The likelihood of this is greatly enhanced if “fire safe furniture” has been installed.
3. Ms Chang clearly does not understand the purpose and concept of fire resistance. She stated incorrectly that less than one hour’s fire resistance was not possible, although in the consultation document it is stated that the doors to the Karaoke rooms must have a half hour’s fire resistance. This in itself is rather an odd requirement. In principle it is possible to specify a barrier which has only 15 minutes fire resistance, although this is not common, simply because fire resistance is specified to protect the structural integrity of the building and prevent the spread of the fully-developed fire, when temperatures can reach 1000°C and more.
4. If the simultaneous translation was correct, I believe that Ms Chang gave the impression that the walls of the rooms were flammable. In fact these walls are non-combustible, papered on both faces. I am told that these facings are fire retarded, but in fact a wallpaper adhering properly to a non-combustible surface cannot be ignited until the fire has progressed towards flashover and beyond or is in direct contact with flame. The non-combustible substrate (i.e. the plaster) keeps the paper “cool”, under which circumstances it will not burn. It should also be noted that any non-combustible wall will have some measure of fire resistance if only 10 to 15 minutes. (This is true even for a combustible wall in a wooden structure.) If the start of the fully developed fire has been delayed through good selection of materials by 10 to 15 minutes and if the Fire Service Department arrive 15 minutes after detection, they may still have 10-15 minutes grace before the fire breaks out of the compartment of origin, *provided that the door has been closed to confine the fire during these early stages.*