Summer time in Hong Kong is both hot and humid. Construction workers are vulnerable to heat stress during summer as heat stroke has already caused a number of deaths and injuries. Since January 2010 BRE’s Construction Safety Research Team (the Team) has collaborated with the Department of Health and Physical Education of the Hong Kong Institute of Education to conduct a RGC GRF funded research. The research aims at developing a range of helpful means and indices that could be implemented by the industry to ensure workers’ health and safety when working on stuffy work days.

The research has been facilitated by several key organizations, namely, Sun Hung Kai Properties Ltd., Hong Kong Housing Authority, China State Construction Engineering (Hong Kong) Corporation and Yau Lee Construction Co. Ltd. About three hundred sets of physiological data of construction workers and environmental data were collected over four construction sites in last summer (from July to September of 2010). On 7 December 2010, the Team proudly presented the initial research findings of the study to over sixty delegates at an Industry Forum held at PolyU.

Professor Albert Chan, the Principal Investigator of the Team, said, ‘We are delighted to share our initial findings with our industrial partners. With our newly developed heat stress model measured by the Rating of Perceived Exertion (RPE), the impact of heat stress on construction worker’s physiological condition can now be better understood. This model demonstrates that a construction worker’s perceived exertion is determined by seven influential factors, namely, duration, age, drinking habit, job nature, percentage of body fat, smoking habit, and heat index (a combination of temperature and relative humidity). It is also a good indicator to estimate the heat tolerance time within which workers can endure at the burning workplace. This will help reduce the possibility of heat stroke and ensure better health and safety for construction workers. In addition, with a huge amount of useful physiological and environmental data collected from the field studies, a more precise protocol is now designed for the laboratory testing which will be commenced in early 2011.

The research is a big step forward in pursuit of clinical experimental studies for a better understanding of physiological responses and validation of the predictable heat tolerance time with the experimental data. Finally, the Industry Forum ended with a round of applause from the delegates.
The Team took questions from the floor after presenting the key findings in the Industry Forum.

Group Photo of Research Team Members (From Left: Miss YI Wen, Dr Michael YAM, Mr Del WONG, Prof Francis WONG, Prof Albert CHAN, Dr Daniel CHAN and Miss Alice GUAN)
Heat Stress Model – Variables Selection

Rating of Perceived Exertion (RPE)

Measure the intensity of exercise.