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**Safety Training and Education of Construction Industry at
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**Safety Training and Education for the Construction
Industry in Hong Kong**

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Introduction

The overall occupational safety performance of the various industries in Hong Kong has significant improvement in the past five years. The accident rate per 1,000 workers for all

industries dropped by 15%, and more remarkably, the number of accidents in the construction industry recorded a sharp reduction of 28%. However, the accident rate in 2001 in the construction industry, which stood at 114.6 per 1,000 workers (Labour Department, 2001), was still unacceptably high in comparing with developed countries. The industry's occupational safety and health performance certainly has room for further improvement. The detailed accident figures of various industries in Hong Kong can be viewed at the homepage of the Occupational Safety and Health Council (OSHC) in Hong Kong <http://www.oshc.org.hk/eng/6-5-1.asp>.

Safety Training has been emphasised and provoked by the Government in the past years. Two important documents which have had influential implications on the strategy and policy on occupational health and safety in the construction industry in Hong Kong are described briefly as below.

In 1995, after a consultation paper on the Review of Industrial Safety in Hong Kong, the Government has set clear objectives to improve occupational health and safety of workers in industrial undertakings, in particular the construction industry (Wong, 1995). The new strategy is to place emphasis on self-regulation policy and new legislation would be enacted on safety management issues. The new challenge strive an imminent demand on knowledge of safety management not only from the existing safety practitioners but also from those engineering professionals. This paper provides a general review on the safety management training for the safety officers, safety auditors, construction degree and postgraduate students and construction site staff in Hong Kong.

In April 2000, the Chief Executive of the Hong Kong Special Administrative Region had appointed the Construction Industry Review Committee to comprehensively review the current state of the industry and to recommend improvement measures. In January 2001, the Committee completed a report in which construction safety and safety training were addressed (CIRC, 2001). The industry needs to foster a safety culture at all levels such as senior management must demonstrate strong commitment and support to achieve continuous improvement in site safety performance beyond meeting the minimum statutory requirements. It is recommended to adopt a four-pronged approach target at the following areas: (a) designing for construction safety and integrated management; (b) safety promotion and training; (c) incentives for sound safety management; and (d) enhanced enforcement.

The Hong Kong Polytechnic University (PolyU) sustains its role in occupational safety education mainly at degree and postgraduate level, as well as to play an active role in supporting training of registered safety officers. It is also one of the training scheme providers for Safety Auditors. The University supports the belief of safety starting from design. It requires construction and engineering students to undertake extensive safety training during

their studies. The Industrial Centre is the department in the University responsible for providing safety training in different perspectives. Details of the safety courses provided by the Centre can be viewed at: <http://www.ic.polyu.edu.hk/esh/esh.htm>.

Registered Safety Officers (RSO)

It is a legal requirement that the proprietor of a construction company or a shipyard with 100 or more employees has to employ a registered safety officer to promote health and safety at the workplace. The required qualifications for registration as a safety officer have to be one of the following:

1. A recognized degree or post-graduate diploma in occupational safety and health, or equivalent, and relevant working experience of not less than 1 year.
2. A degree in Science or Engineering, or equivalent, and a recognized certificate, diploma or higher diploma in occupational safety and health, and relevant working experience of not less than 1 year.
3. A recognized certificate, diploma or higher diploma in occupational safety and health, and relevant working experience of not less than 2 years, of which one year must be obtained after the academic qualification.
4. A recognized certificate in construction safety and relevant working experience of not less than 2 years, of which one year must be obtained after the academic qualification.

There are about 2,000 persons registered as safety officers with the Labour Department in Hong Kong, however, it is estimated that only 40 % of the registered persons are actively engaged in the industry and most of the registered safety officers are working in construction industry. The latest version of the Factories & Industrial Undertaking (Safety Officers & Safety Supervisors) Regulations issued in June 2002 requires registered safety officers to revalidate their registration once every four years. As a condition for revalidation, they are required to attend 100 hours of continuing professional development (CPD) programmes over a four-year period. It is anticipated that most of the CPD events will be of construction safety related.

Safety Management

In November 1999, the Factories & Industrial Undertaking (Safety Management) Regulation was enacted. Proprietors and contractors employing more than 100 workers are required to implement a safety management system. The proprietors and contractors are also required to appoint a registered safety auditor to conduct regular safety audits to ensure that the safety management system is implemented effectively. For a person to be registered as a safety auditor, he or she has to complete an approved training scheme and possess relevant working experience in the management of occupational safety and health. The Industrial Centre of the PolyU is one of the

approved training providers to conduct the safety auditor-training scheme. Both safety officers and construction professionals take safety management as a vital training in their continual professional development programmes in the construction industry.

Postgraduate Scheme in Occupational Safety & Health (POSH)

To provide opportunity for the safety professionals to further advance their safety management knowledge, an integrated Postgraduate Scheme in Occupational Safety & Health (POSH) was co-organised by the Industrial Centre of the PolyU and the University of Western Sydney, Australia since 1996. On completion of the programme, students will be awarded Graduate Diploma of Applied Science (Occupational Safety & Health) or Master of Applied Science (Safety Management). Majority of the students are safety professional at senior management level from the local construction companies and enterprises.

Enhanced Curriculum on Industrial Safety for Construction Degree Students

Building a safety culture is an ultimate goal to be achieved across the whole construction sector in Hong Kong. It is necessary to educate everyone to accept that “Construction safety is a duty of all”. In response to the Construction Advisory Board’s recommendation to give more emphasis to education on safety management in tertiary institutions, construction related departments of the PolyU have made commitments to incorporate safety components in their course curricula starting from 1996. The enhanced curriculum of “Construction Safety” module includes:

- i. Overview - Introduction to construction safety. Professional responsibility. Historical background and current perspective. Construction safety practices in other developed countries. Government’s policy in industrial safety. Safety and health law in Hong Kong. Accident Statistics in local construction industry.
- ii. Occupational Health Practice - Related statutory requirements and regulations. Dust hazards and control. Noise assessment and control measures. Hearing conservation. Respiratory protection.
- iii. Construction Safety - Construction sites (Safety) Regulations. Codes of practice. Potential hazards and risks associated with construction sites. Working in confined space, at height and in high risk construction activities. Case studies.
- iv. Safety Technology - Principles of risk & loss control. Engineering control measures. First aids. House-keeping. Manual lifting. Fire safety. Electrical hazards. Machinery safety. Personal protection equipment (PPE). Machine guarding. Needs for preventive maintenance. Case studies.
- v. Accident Prevention - Principles of accident prevention - e.g. Causation models. Job safety analysis. Fault tree analysis. Accident reporting procedures. Follow-up actions.
- vi. Construction Safety Management Issues - Management and employee responsibilities. Safety

policy and safety plans. Safety committee. Safety officers. Safety inspection. Safety audits. Safety operation procedures. Safety training for employees. Selection and control of subcontractor. Emergency plan.

Table 1 below shows the Industrial Safety Modules offered by the Industrial Centre of the Hong Kong Polytechnic University.

Table 1 Industrial Safety Modules Offered by the Industrial Centre (Wong, Tang & Lip, 1996)

The two modules offered by the IC including a 35 hours' module (Industry Safety I) and a 70 hours' module (Industry Safety II) for students of the Construction and Land Use Faculty at the PolyU.

Safety Training for the Construction Site Staff

The Construction Industry Training Authority (CITA) is one of the leading training institutions in Hong Kong specifically for the workforce of the local construction industry. CITA was established in 1975 with an aim to provide off-the-job practical training for people who want to be construction craftsmen, technicians and operatives (CITA, 2002). Safety programmes offered by the CITA are summarized in Table 2:

Table 2 Safety Related Programmes Offered by the CITA (CITA, 2002)

According to the Factories and Industrial Undertakings Ordinance, persons employed in carrying out construction work must have undergone a basic training course i.e. possess a construction industry safety card. The course provided by CITA has been approved and recognized by the Commissioner for Labour and includes the following topics:

- . Objective of safety training.
- . Importance of safe work system to employees.
- . General duties of proprietor and persons employed.
- . Factories & Industrial Undertakings Ordinance and subsidiary regulations.
- . Potential hazards of works.
- . Principles of accident prevention.
- . Accident emergency procedure.
- Safety in site formation and excavation.
- Manual lifting and handling.
 - Personal protective equipment.
 - Safety in scaffolds.
- Working platforms and ladders.
- Control of construction wastes.

Course Title	Credits	Duration
Safety Course for Graduate Engineers (Civil, Structural & Building)	2	3 hrs x 6 sessions
Safety Plan Preparation and Implementation	1	2 hrs x 4 sessions
Safety Auditing	1.5	2 days (12 hours)
Safety Training Techniques	0.5	2 hrs x 2 sessions
Safety Laws / F&IU Ordinance and New Development	1	2 hrs x 4 sessions
Safety Training Course for competent Persons Working with Confined Space	1.5	2 days (14 hrs)
Assistant Safety Officer Evening Course	2	84 hrs
Effective Site Safety & Instruction Techniques	1.5	2 days (14 hrs)
Construction Safety Supervisors Course	1.5	42 hrs
Safety Working Cycle Course	0.5	6 hrs
Construction Safety Officer Course	-	4 hrs/week, 40 weeks
Construction Safety Supervisor Course	-	42 hrs
Safety Auditor Training Scheme	-	42 hrs
Mandatory Basic Safety Training Course (Construction Industry Safety card Course)	-	1 day (7 hrs)
Advanced Safety Training Course for Construction Workers (Construction Industry Silver Card Course)	-	2 days (14 hrs)

Industry Silver Card Course) (Wong, et al, 2000) with the first part same as that of the Mandatory Basic Safety Training Course, and the second part consists of seven different topics, each for a specific trade for trainees to enrol in accordance with their job nature. The seven topics are:

Painter.

Carpenter.

Building demolition worker.

Plumber.

Bar bender and fixer.

Worker for external wall installation, plasterer and tiler.

Scaffolder and working platform installer (Wong, 1998).

Conclusion

Safety training and education is one of the most important factors contributing to the reduction of accidents in the construction industry. In providing safety training programmes, the training providers have to take into account: 1) the background and general educational level of the target group; 2) the job nature and the working environment of particular construction trade; 3) the duration of the training programme and the level of tuition fees; 4) the medium of instruction and the communication method. All these elements have to be considered so as to achieve the objective of improving construction safety performance in Hong Kong.

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