

Safety Initiative Effectiveness in Hong Kong – One Size Does Not Fit All

Steve Rowlinson, Brenda Yip and S W Poon

**Department of Real Estate & Construction, The University of Hong
Kong**

Address all correspondence to:

steverowlinson@hku.hk

Safety Initiative Effectiveness in Hong Kong – One Size Does Not Fit All

ABSTRACT

Hong Kong is experiencing a massive increase in construction output. However, the cost of work-related accidents and ill-health in the construction industry account for as much as 8.5% of project costs when social, direct and indirect costs are included. The industry in general is receptive to change and becoming more OHS conscious but the forces driving change in the industry are opposing. The research found that institutional barriers exist to a concerted improvement effort and the best performing contractors, clients, consultants and subcontractors attain standards of excellence comparable with the best in the world but there is a wide range of organizational maturity, and so performance, throughout the industry. In this research study the following issues have been identified where new initiatives need to be developed:

- Developer attitude: a culture change is required;
- Client insurance;
- “Can do” attitude;
- Use of data;
- Maturity of Organisations;
- Health issues

KEYWORDS: Safety initiatives, effectiveness, Hong Kong, action research, organizational maturity

1. CONTEXT

An underlying theme running throughout the research has been the need for empowerment of the industry to manage itself effectively. In order to do this many industry participants have recognized the need for capability development within individual firms and development of a sustainable industry. As far as safety is concerned initiatives have been, in the main, very successful on larger, public projects but a plateau in the improvement trend has now been reached. In order to further reduce accident rates a different approach needs to be adopted and the industry as a whole needs to examine the skills required industry wide for further successful accident rate reduction.

More importantly there is a serious problem in relation to the expected increase in output within the next two years with the onset of the 10 major infrastructure projects and the West Kowloon Cultural Development. Accident rates can be seen to mirror output in the construction industry (see Figure 1) and, hence, we should anticipate a significant increase in the accident rate with the increase in output. Thus, this study was undertaken to informing planning, now, for the expected.

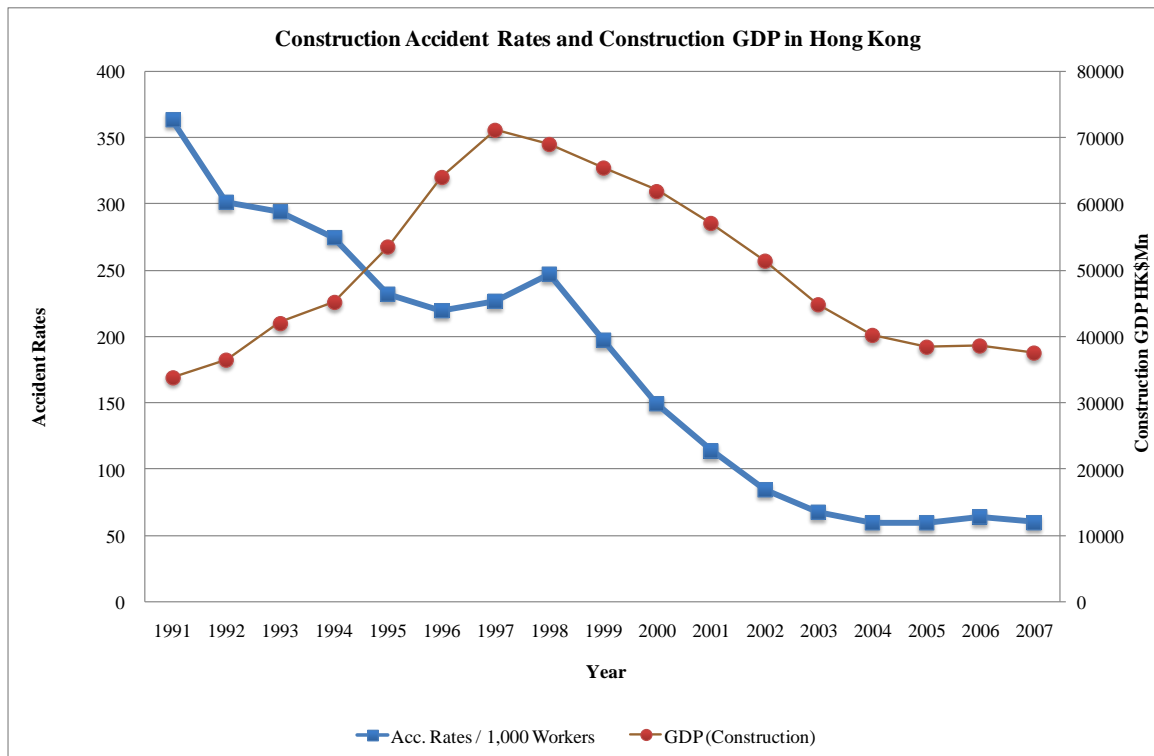


Figure 1 - Construction Accident Rates and Construction GDP in Hong Kong

Source: Census and Statistics Department & Labour Department, Hong Kong.

Approach

The objectives of this study were to assess what are effective strategies for all sectors and sizes within the industry. In order to consider these strategies the following needed to be addressed:

- an audit of the current situation, with problems identified and targeted, the current issues study reported here;
- capabilities and costs identified and change focused on effectiveness, the cost effectiveness study and cost calculator, reported elsewhere;
- in order to see improvement change needs to be implemented at all levels and in all sectors of the real estate and construction industry.

Background to the research

Hong Kong has moved away from prescriptive safety legislation towards performance based management of safety and health over the past decades (Lingard and Rowlinson 1994). This move has obviously met with some success as the accident rate in the construction industry has continued to fall over this period. Figure 2 indicates how a series of initiatives, commencing with the promulgation of the safety management system approach, has led to a steady and consistent decline in accident rate. The decline has been such that the accident rate in Hong Kong's construction industry is now apparently less than that in the United States (see endnote), and is also now lower than that of the

catering industry in Hong Kong. Hence, at least in parts of the industry, something has been done effectively and performance has improved. In order, to maintain this downward trend it is necessary to review existing initiatives as well as develop new ones.

The Hong Kong context

One of the issues to bear in mind in this research is that organisations are all different. What works effectively in one organisation may not be as effective in another organisation. Hence, it has been important to widely survey different sectors of the industry and different levels within organisations in order to draw together a report that provides a good understanding of what makes initiatives effective. Examples of good practice have been drawn from work in the United Kingdom whereby workers are empowered to improve safety performance through worker engagement groups. Such an initiative, which may perhaps be started through the site safety work cycle, could well be effective in Hong Kong and should be investigated. Also, culture is an important issue. Not just the national culture but the culture within the organisation. All countries and organisations exhibit different cultures and in order to make use of these cultural traits there is a need to focus on the partnership between worker and company and between company and industry and to develop the concept of relationship management and the sharing of common goals in order to improve safety performance. Additionally, the multi-layered sub-contracting system adopted in Hong Kong has been seen to be an impediment to safety. This was indicated in the Tang report and is being addressed by the Construction Industry Council. Hence, these structural and cultural issues must be included in the safety management process in order for effectiveness to be properly gauged.

The issue of 'Design for Safety' has been regularly raised as an important concern. The fact that risk assessments related to method statements are now commonplace on Hong Kong projects has undoubtedly contributed to improvements in safety. However, the process of involving the client and consultants in the early stages of the project in considering safety is fraught with difficulty, as the UK has found out (and to a greater extent the EC with its model) in attempting to implement the UK Construction Design and Management Regulations. Recent reports have indicated that this approach is flawed and needs to be remodelled in order to become effective. Work in progress in Australia (by Lingard et al, 2008, Federal Safety Commissioner, 2006 & 2007) that investigates why simplistic design OHS provisions are unworkable in the complex, socio-technical process of construction design has informed this research. This is one area that needs to be carefully considered and an industry consensus derived so that such an approach can be effectively implemented. A whole life cycle view may well be the answer.

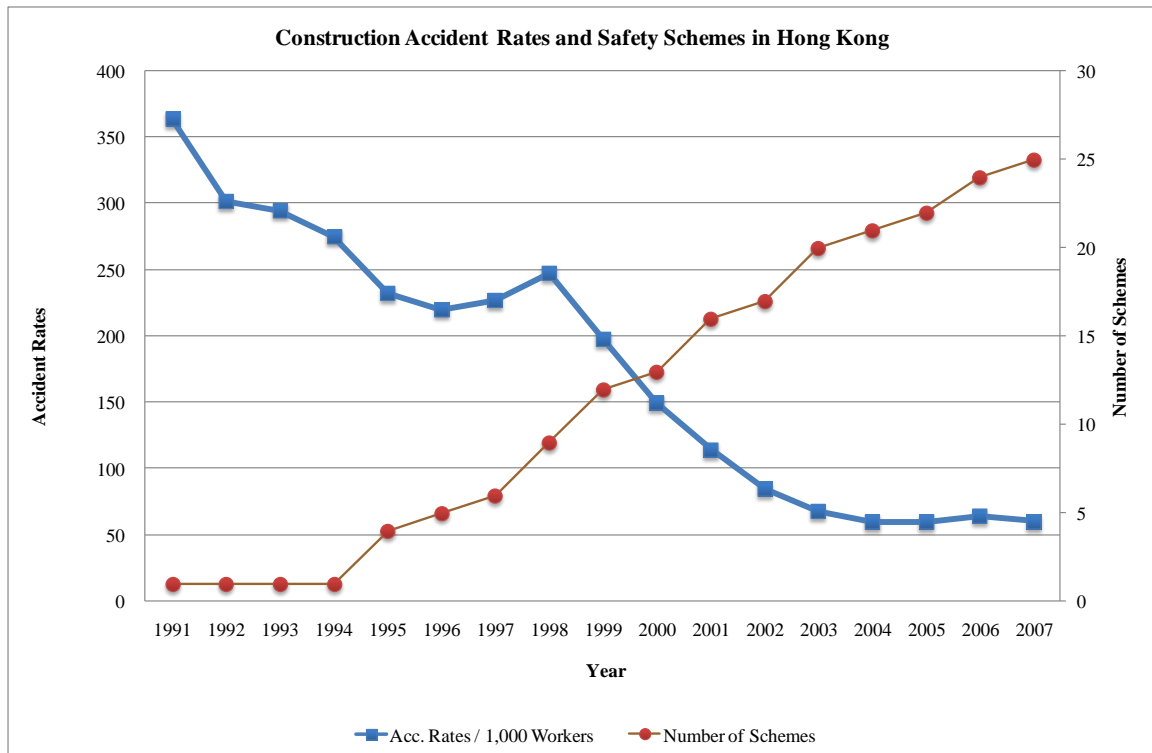


Figure 2 - Construction Accident Rates and Safety Schemes in Hong Kong

Source: Labour Department and HKU research team

Existing initiatives

Of the initiatives which have been undertaken in order to improve construction site safety one might categorise these into four types. These are:

Statutory, based on the Hong Kong Ordinances with the Occupational Safety and Health Ordinance being an example which introduced safety management systems to the industry;

Financial, which are to do with providing incentives to safe performance such as the 'Pay for Safety Scheme' introduced by Works Bureau contracts in 1994;

Procedural, these initiatives are based around processes that are included in the construction contract and these might include the Housing Authority PAS Scheme, the Safety Work Cycle and other similar initiatives;

Punitive-administrative, examples of this would be the Works Bureau's approach to safety performance, whereby contractors who experience serious injuries on their sites are brought before a committee, who can advise voluntary suspension from tendering. The Housing Authority's Superleague might fall into this category.

These initiatives have been assessed in order to form the framework within which the findings of this research are explained and presented: things that have worked well; things that need improvement; things which have been ignored but need to be addressed.

2. Work Undertaken

Potential issues that can be used as drivers for improvements were identified. The research approach used to do this is discussed below.

Research Programme

The research adopted a participative approach in which the results of the surveys were fed back to managers and the effects of the safety initiatives and the perceptions of managers on the safety performance perceived by employees and other stakeholders were explored in participating organisations. This provided a valuable benchmarking exercise for the participating organisations and provided them with an opportunity to explore new directions in order to improve their performance. It also provided the researchers with the opportunity to compare and contrast these effects in different industry sectors and, through collaboration with Australian and UK researchers, highlighted significant differences that may be brought about by different cultures.

Safety Effectiveness Qualitative Study

A series of face to face interviews were conducted among 30 different stakeholders in the construction industry to collect their opinions on the effectiveness of different safety initiatives. The participants were strategically selected to include but not limit to developers, main contractors of Groups A, B and C, sub-contractors, suppliers and insurers. The positions of the interviewees mainly include directors, project managers and safety management. During the interviews, the interviewees were asked to share their experience and express their opinions on the current safety initiatives; as well as suggest new initiatives or areas for future improvement. The interviews were conducted continuously until the interview contents were saturated.

The map that appears here in Figure 3 indicates the range of issues which surfaced during the detailed study of perceptions of safety initiatives and safety management in Hong Kong. The map was derived from a series of interviews with a wide range of professionals, managers, workers and administrators in the industry (contracting, consulting, developer and insurance sectors) and the questioning was informed from a detailed analysis of accident statistics. Each of these issues will be dealt with briefly here but two underlying issues need to be highlighted in order to put the issues into context.

3. Results

Maturity is an important issue

It became apparent during the study that a major issue for the industry was the maturity of organisations. If we were to take a five level maturity system then one might argue that only the top ten contractors could be classed as level five maturity. Indeed, much of the industry is seen to be at a maturity level one or two whereby their main focus in terms of safety management is compliance as opposed to the continuous improvement philosophy of the top contractors. Such a view could also be applied to the private developers, in that perhaps less than ten of these can be seen to be adopting a mature attitude to safety management on their projects. Hence, in terms of future strategy this leads us to the situation whereby a three-pronged approach to improving accident rates is necessary. Briefly, this means that three different foci of attention should be provided for those contractors, and developers, falling into the three categories of immature, maturing and mature. This approach is illustrated in Table 1 and points to the need to develop quite separate strategies for the “three levels” of participants in the industry; one size does not fit all.

Table 1 - Maturity of Organisations

Level	Nature	Commitment	Focus
Level 1 - Initial	Immature	Compliance	Compliance
Level 2 - Repeatable Managed	Maturing	Continuance	Norm
Level 3 - Defined		Normative	
Level 4 - Quantitatively Managed	Mature	Affective	Continuous
Level 5 - Optimizing			Improvement

(Source: adapted from the Capability Maturity Model: http://valuebasedmanagement.net/methods_cmm.html)

Education and training

The current green card system could usefully be revamped but is not the cause of the problem addressed here – the green card system sits at the bottom of the whole range of training needs of the industry. There is an urgent need, as noted above, to develop an OH&S competence framework for the industry as a whole in order that management may exercise effective leadership. This view was reported from a number of sources. The basic problem for the green card is twofold, and at one level reflects similar criticism of the Construction Skills Certification Scheme in the UK too (<http://www.cscs.uk.com>). Firstly, the syllabus of the green card scheme needs to be reviewed so that it may be more carefully structured and address *skill and safety* issues at a more detailed level, particularly focussing on hazard identification rather than knowledge of legislation; the former being essential for the front line worker. Secondly, there appears to be an over provision of underperforming providers of accreditation courses and this issue needs to be addressed by the industry as a whole..

Whilst recognising that it is important to reach consensus on this an important issue to bear in mind here is that the green card system was devised in order to provide only a basic, introductory course which is to be supplemented by contractors' own in-house training system. However, in comparison with the UK, the Hong Kong course emphasises regulations and knowledge of their implementation as opposed to hazard recognition; a very different focus. Hence, any review of the system should focus on the effectiveness of and need for teaching regulations as opposed to hazard recognition and action. A more practical focus of the course content might lead to a significant improvement.

Education and training at tertiary and professional levels

The coverage of occupational health and safety issues at tertiary institutions can be improved quite considerably. A whole series of professions are educated in Hong Kong's tertiary institutions, such as civil engineers, builders, facility managers, building services engineers, structural engineers, architects, etc. and there is no common syllabus in terms of occupational health and safety and there are no courses designed at integrating the design and management of construction projects, excepting MIDIM at Hong Kong University. This is an issue that should be addressed by both the universities and the professions. It is now a cause for failure in Institution of Civil Engineers (UK) professional assessments if the candidate does not show adequate knowledge of occupational health and safety. Such an approach could be mandated for all of the professions within Hong Kong.

People issues

Communication is a problem in safety improvement. It was reported by a number of respondents that communicating safety management ideas, procedures and instructions is often a difficult task. A major issue here is the overwhelming of middle management with documentation and systems whereas at the worker level it is the problem of maintaining a consistently focused message to the workers. Technologies such as visualisation, video

on phone, sms, etc are now all readily available and provide simple, functional and effective means of promoting safety messages and explaining safe practice. Many expressed the view that language wasn't so much a barrier as the means of communication. A different view that addresses this issue is presented in Hare and Cameron's (2007) paper.

Ageing workforce

In a related point, there was also a belief that the ageing workforce and ingrained ideas and attitudes were difficult to change because of this demography. In their reports, Leaviss, Gibb and Bust (2008a; 2008b; 2008c) highlight the issue of older workers in the construction industry and list the following key issues in relation to their "value", which have also been raised by contractors' directors in Hong Kong (see Table 2). Given the likely upsurge in output in the near future leveraging the positive values in "inducting" new staff and addressing the negative values through training and job re-design are essential new initiatives.

In addition Leaviss et al. (2008a) point out the financial benefits of reducing work-related ill-health in the construction industry. A UK study estimated the cost of work-related accidents and ill-health in the construction industry to account for 8.5% of project costs (HSE 1997). This includes the costs of delays, absenteeism, health and insurance charges. Quite worryingly, there appears to be a worldwide trend for construction workers to retire early due to health issues: this both deprives the industry of skills developed and knowledge gained over many years and also adds to the social cost that the industry generates for society at large.

Table 2 – Value: Older Workers in Construction

Positive Value	Negative Value
Trade skills and knowledge	Lack of fitness
Experience	Lack of safety behaviour
Work ethic	Resistance to change
Workmanship	Cost to project

Potential Issues which can be used as Drivers for Improvements

Developer attitude. Following on from the previous point, it is important to recognize that developers as well as contractors exhibit different levels of maturity. Such a problem needs to be addressed at an institutional level in that the organizations representing developers and government departments interacting with them need to lay down basic principles and procedures they are expected to follow.

Client insurance. The insurance industry plays an important role in the real estate and construction industries. However, the Insurance Industry Ordinance does not allow for the active and comprehensive sharing of information on construction industry performance. Hence, an experience rating modification system is difficult to implement in Hong Kong at the present time. This is an institutional barrier to progress which would allow better performing contractors to experience lower premiums and so higher competitiveness. Indeed, one mechanism for addressing this might be to put the insurance in the hands of the clients and so focus clients' attention on occupational health and safety management.

“Can do” attitude. One of Hong Kong construction industry's distinctive competences is its “can do” attitude. The ability to construct high-rise buildings on four day floor cycles cannot be matched in many places worldwide. However, this “can do” attitude comes at the cost of flooding sites with plant and equipment and a focus on long working hours in arduous conditions leading to stress all round. This is an issue which needs to be reviewed and the industry needs to be educated to take a more mature attitude to this problem. The ability to say no to unreasonable client demands for speed needs to be developed and the Housing Authority's initiatives in the 1990s in this area are an excellent, successful example.

Use of data. The industry as a whole and the Labour Department in particular collect a massive amount of data on construction site accidents and their effects. A program should be put in place to make better use of this data in order to inform contractors and developers of trends in accident causation. This work could be let competitively to an organisation outside of the Labour Department in order to ensure an unbiased opinion. Examples of issues which have been identified but not so far addressed are the occurrence of high rate of accidents in the summer months and the existence of two peaks in accident occurrence at different times of the day. Evidence from the UK indicates that interventions in terms of workers diet can be effective in this respect.

Frank auditing. Independent auditors are placed in an ambiguous position in that they strive to provide frank audits and yet are under pressure to ensure that their auditees actually achieve a passing grade. Hence, there is a tendency to underplay faults in audited safety management systems in order to address this ambiguity. However, the mature contractors and developers expect to be given feedback from audits which will allow continuous improvement within their organizations. Thus, there needs to be a careful review of the existing system to protect the integrity of the auditors and provide best value for the auditees.

4. Conclusions

The industry in general is receptive to change and becoming more OHS conscious but the forces driving change in the industry are opposing. Currently, institutional barriers exist to a concerted improvement effort and these need to be addressed and removed. The best performing contractors, clients, consultants and subcontractors attain standards of excellence comparable with the best in the world but there is a wide range of maturity, and so performance, throughout the industry. In this research study the following issues have been identified where new initiatives need to be developed.

- Developer attitude: a culture change is required and a move towards open disclosure of OHS performance
- Client insurance: a move to a territory wide insurance modification system where the best performing contractors and developers are rewarded
- “Can do” attitude: one of Hong Kong’s strengths is also one of its weaknesses – we drive ourselves and our co-workers beyond the limit of what can be reasonably expected.
- Use of data: the data collected on accidents and incidents should be reviewed for its content and its use – more can be made of the data
- Frank auditing – focus on improvement: a mechanism has to be developed to allow independent auditors to be freed from the commercial pressure they feel to bowdlerise their audit reports.
- Maturity of Organisations: the best contractors in Hong Kong are world leaders in OHS management and performance. A concerted effort is required to enable the less mature organizations to develop and grow despite their limited resources;
- Health issues: these are not dealt with adequately in Hong Kong at the moment. One third of construction workers suffer from health issues.

Endnote

Incident rate is calculated as number of accidents multiplied by 200,000 and divided by the number of employees’ hours worked. This is intended to be equivalent to the accident rate per 100 workers assuming a 40 hour week for 50 weeks in a year. In Hong Kong the average working week in the construction industry is 48 hours, six days per week, over 50 weeks. Hence, taking the 2007 figures for both jurisdictions (the most readily available and reliable figures) the US rate of 5.4 (<http://www.bls.gov/iif/oshwc/osh/os/ostb1921.pdf>, accessed June 1, 2011) would compare with a Hong Kong rate of 4.3 (*op cit*). However, such comparisons are fraught with difficulty due to, in addition to the calculation regime, different reporting protocols and mechanisms and the worldwide phenomenon of under-reporting, the scale of which is difficult to assess in any jurisdiction. Suffice it to say that the ten year improvement from 1997-2006 in Hong Kong has been substantial and brought

accident rates back in line with western nations. Figures show over 1000 fatalities in total in the US industry in 2007 compared with 40 in Hong Kong; note, these are not rates.

References

Federal Safety Commissioner's Safety Principles & Guidance, Department of Employment and Workplace Relations, (2006) Australian Government, September,.

Federal Safety Commissioner's Leader in Safety, Department of Employment and Workplace Relations, (2007) Australian Government, May,.

Hare, B. and Cameron I. (2007) Effective worker engagement, *CII-HK Conference 2007, Never Safe Enough: A Wider Look at Construction Safety and Health*, Hong Kong, 20th November, 2007.

Leaviss, J.C., Gibb, A.G.F. and Bust, P.D. (2008a) *Growing old in construction, workers' expectations of physical ill-health*, Gainesville, Florida, USA, 9-11 March 2008.

Leaviss, J.C., Gibb, A.G.F. and Bust, P.D. (2008b) Ageing in construction work, how can equipment use prevent early retirement from the industry? *Ergonomics Society Annual Conference*, Nottingham, UK, 1-3 April 2008.

Leaviss, J.C., Gibb, A.G.F. and Bust, P.D. (2008c) Strategic promotion of ageing research capacity understanding the older worker in construction, Loughborough University, January 2008.

Lingard, H., Blismas, N., Wakefield, R., Jellie, D. and Fleming, T. (2008) 'Safer construction': The development of a guide to best practice, *Third International Conference, Cooperative Research Centre for Construction Innovation*, 12-14 March 2008, Gold Coast, Australia.

Lingard, H. (2007) The development of a guide to best practice for safer construction, *CII-HK Conference 2007, Never Safe Enough: A Wider Look at Construction Safety and Health*, Hong Kong, 20th November, 2007.

Lingard, H. and Rowlinson, S. (1994) Construction Site Safety in Hong Kong. *Construction Management & Economics*, 12 (6), pp. 501-510.