

A REVIEW OF THE CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS

Tim Howarth, Graham Stoneman and Chris Hill

School of Environment and Development, Sheffield Hallam University, UK

This paper presents a review of the impact and perceived success of the Construction (Design and Management) Regulations 1994. Accident statistics are recognised as being frequently utilised as a meaningful evaluative tool of such health and safety regulations. Whilst it is held that there is some value in utilising statistical accident records, it is considered that such statistics are in themselves an inadequate evaluative tool. A review of reactions and responses of practitioners prior to, and post the implementation of the CDM regulations is then presented. This review provides for practitioner reflections upon, and perceptions of the impact and operation of the regulations. This presentation of reflections does not hold claim to generalisation but is intended as study of singularities. The data for this review - questionnaires, case studies and interviews - has been consolidated from a number of studies managed or conducted by the authors. It is concluded that whilst no measurable upturn has been recorded in the industry's accident records as a result of the introduction of the Regulations, numerous benefits are perceived by industry practitioners.

Keywords: CDM regulation, health and safety, evaluation.

INTRODUCTION

In recent years UK construction-related health and safety legislation has changed and developed considerably. This development has in the main been a response to the requirements of the European Framework Directive of the late 1980's and later European health and safety directives. The developed UK legislation – a series of statutory instruments - regulations – are *enabled* by the keystone of UK health and safety legislation, the Health and Safety at Work Act 1974.

One prominent statutory instrument of recent years is the Construction (Design and Management) Regulations 1994. The CDM Regulations brought about a new UK construction health and safety paradigm - with the redistribution of safety management responsibility throughout all phases of a project; and the creation of new health and safety duty-holders that included, clients, designers and the 'planning supervisor'. Discussion and presentation of the specific nature of these duties and responsibilities are outwith the scope of this paper. Instead the reader is directed to such as Griffith and Howarth (2000), Joyce (1995) and the Regulations themselves.

Whilst the CDM Regulations are but one of a number of recent construction-related health and safety statutory instruments, the authors note that, further to CIRIA's report of "Experiences of CDM" (1997), little recent evaluation of the impact and success of construction-related health and safety statutory instruments has been undertaken. Also, a review of recent ARCOM proceedings for health and safety-related papers proved somewhat limited. For whatever reasons little has been presented at ARCOM within recent years on the topic of health and safety.

As such this paper is presented so as to provide an up to date meaningful evaluation of the impact and perceived success of the CDM Regulations – one of a number of recent construction-related health and safety statutory instruments; secondly, to redress the lack of health and safety-related papers presented at ARCOM in recent years; and thirdly as an investigative response to a recent statement by John Anderson, a former HSE senior inspector;

“It is not just that the CDM Regulations have had no effect, they have had the wrong effect. They have cost the Construction industry hundreds of millions of pounds in pointless filing and there has been no measurable improvement in the accident records (New Civil Engineer).”

RECENT HEALTH AND SAFETY STATISTICS AND THE CDM REGULATIONS

Commonly, when considering the impact of health and safety legislation, accident statistics are significantly utilised as a meaningful evaluative tool. This is certainly the case for the UK construction industry.

Figures 1 and 2 present the HSE statistics for fatalities and major injuries to workers within the Construction industry for the period 1994-99. The statistics document the first five years of the Regulations, and begin in the year immediately prior to the Regulations which came into effect on 31st March 1995. For the purpose of these statistics the term ‘workers’ embraces both self-employed persons and employees.

Whilst the volume, complexity and nature of work undertaken by the UK construction industry varies year on year, the annual accident statistics are standardised by means of presenting information appertaining to each 100,000 workers.

Figure 1 highlights the fact that since the introduction of the CDM Regulations in 1995 the fatality rate per 100 000 workers initially increased and then continued to decline. In real terms, prior to the Regulations in 1994 there were 88 worker fatalities, whereas in 1999 there were only 70. It would appear therefore that in terms of the worker fatality statistic, it is possible to view the CDM Regulations as positively contributing to health and safety improvement. This is clearly not the case though when the statistics for non-fatal major injuries are considered for the same time period.

Figure 2 highlights that non-fatal major injuries were recorded as being 200 per 100 000 workers in 1994. By 1999 this figure had doubled to 400 per 100 000 workers. In real terms there were 2627 non-fatal major injuries recorded in 1994 and 4619 non-fatal major injuries recorded in 1999, marking an increase of around 70%. It is worth noting, with reference to *figure 2*, that 1995 marked a noticeable increase in the instances of non-fatal major injuries. It is worth noting also that 1995 also marked the introduction of the CDM Regulations. In *statistical terms* therefore the positive contribution of the CDM

Regulations to the improvement of health and safety in the UK construction industry is far from conclusive.

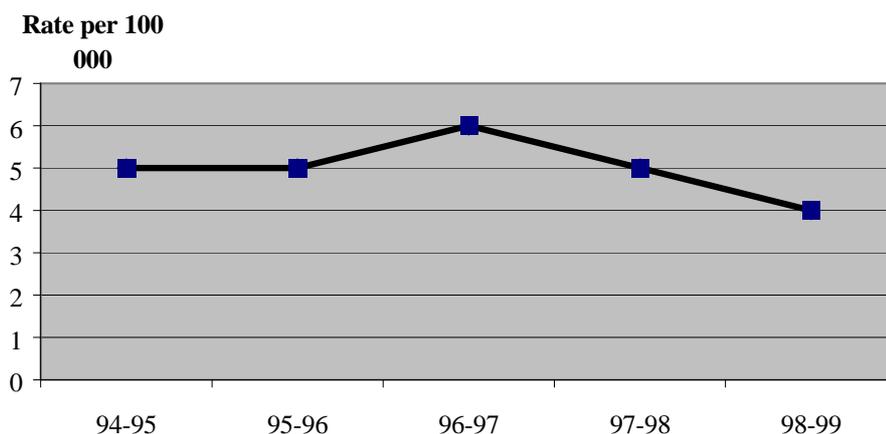


Figure 1: Construction Industry Fatalities per 100 000 Workers

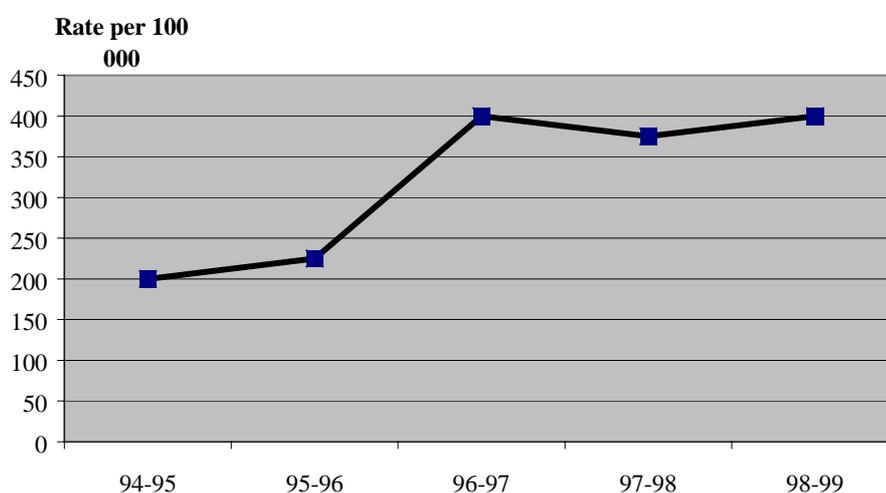


Figure 2: Construction Industry Non-Major Injuries per 100 000 Workers

The impact of the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (RIDDOR '95) upon recent health and safety statistical recording

Whilst accident statistics in themselves can undoubtedly provide a useful tool for considering the impact of health and safety legislation, it is difficult to evaluate effectiveness of recent changes in these terms alone.

Accident reporting requirements changed as of 1st. April 1996 with the introduction of "The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995" (RIDDOR 1995). The HSE pointed out in their "Health and Safety Statistics" (1999) that the revised reporting requirements of the Regulations would effect accident statistics for 95-96 and subsequent years. As such the HSE (1999) clarified changes to the reporting of statistics such that the term 'accident'

"now includes acts of violence at work, and acts of suicide or trespass on railways or other transport systems".

The list of reportable major injuries has also changed and includes

"a wider range of fractures and amputations as well as certain dislocations".

The reporting of non-fatal injuries suffered by a member of the public is now undertaken when

"the person is taken from the site of the accident to a hospital - rather than if their injury is on the list of reportable major injuries".

The reporting changes brought about by RIDDOR 95 limits the utilisation and value of a statistical evaluation of the impact of the CDM regulations.. Clearly the scope and nature of reporting requirements have changed and as such prevent direct statistical comparison, pre and post CDM.

THE NATURE OF THIS EVALUATION REVIEW

In evaluating the impact of the CDM Regulations, and further to statistical studies of accident rates, this paper reviews and consolidates reactions and responses of a spectrum of professionals to the Regulations. The evaluation is bounded as one of singularities and does not claim generalisation. As such this review, drawn together primarily from a series of managed undergraduate and postgraduate investigations, presents a spectrum of practitioner reflections and experiences of the impact and operation of the CDM regulations. As such this review provides for the consolidation of meaningful practitioner-reflections. It is considered that recognition of the singularity of these reflections restricts the development of theoretical generalisation but provides further research with valuable points of reference and hopefully stimulates worthwhile thinking and debate.

Preconceptions of the Regulations – Views towards the Regulations *Prior* to their Enforcement

The Health and Safety at Work Act (1974) is the key stone of health and safety legislation. Prior to the CDM Regulations, interpretation of the Act implied a diversity of responsibilities for safety on site and little emphasis was placed on safety being incorporated into the design stage of a project. Reliance was also very much placed on individual sites to interpret a company's health and safety policy .

A series of interviews were conducted prior to the implementation of the CDM Regulations in 1994 . Stow (1994) investigated construction managers' The perceptions of construction managers as to the likely effects and impact of the Regulations can be summarised as such:

The new regulations, when compared with the existing Health and Safety at work Act, would tend to be more explicit rather than implicit in meaning, and, therefore, could increase effectiveness.

The present legislation wasn't outdated as it was being continually updated as new information became available.

That although initially there would be considerable confusion over the introduction and interpretation of the regulations, it was felt that the extra enforcement rules would lead to a positive change. As an example of this, better designs for safety by architects would surely lead to a reduction in accidents.

Although other methods of prevention were practised, such as site awareness campaigns, it was felt that legislation is often the only way to limit offenders. However, a further view expressed was that the most effective way of reducing accidents further was through better management and training.

The extra cost burden placed on companies would be justified in a reduction in the subsequent accident levels.

Although increased costs would be involved, it was felt justified in the saving of lives. Those companies who do not adhere to adequate safety standards at present could be faced with substantially increased safety costs in the future, which could lead to bankruptcy.

The new guidelines to be introduced relating to prosecution should ensure greater adherence to safety legislation.

Contractors should put a nominal sum aside for safety provision when tendering as it shows the client that the contractor has paid attention to the problem, and, has provided for allowances in working practice. Contractors were of the view that, eventually, contracts may be won or lost on the scale of this provision, with safer contractors rightly obtaining more work.

To conclude on views prior to implementation, it is worth highlighting that Mike Steel, health and safety director of RGCMB commented that (New Builder, 1994)

"I do not believe that the Regulations require those involved in the construction industry to do much more than we should already be doing. I would be interested to hear from anyone who can tell me which requirements of the Regulations are to any substantial degree different from the duties that already exist under the Health and Safety at Work Act and other legislation, or, are not good management principles".

PRACTITIONERS' REFLECTIONS UPON, AND PERCEPTIONS OF THE REGULATIONS

In a series surveys, interviews and case studies conducted following the introduction of the Regulations, the following reflections and perceptions were presented by construction professionals. These reflections and perceptions are here broadly categorised as: preparation of contract documentation; impact upon the operation of construction projects; additional workload as a direct result of the Regulations; reduction of accidents on projects; on-site benefits provided by the regulations.

Preparation of contract documentation

A view commonly held by contractors is that the Regulations have brought about an increase in the time taken to prepare contract documents. This is not perceived as being considerable, though it is commonly quoted as being somewhere in the order of 10-25%.

Further to this, interviews conducted with contract managers at Jakto, a civil engineering and excavation company, provide the following insight (Kilner 2000):

"the Regulations have created additional work....with more detailed method statements and risk assessment required on larger projects.most method statements are generic though, so are quickly adapted to suit the situation".

"[I have] always, without question, prepared documents for clients with health and safety in mind. Although the CDM Regulations may have directed these documents in a different direction, [I] believe [that] there is no actual time increase".

Impact upon the operation of construction projects

A small questionnaire investigation of 20 industry professionals reports the Regulations to include (Kilner 2000):

The standardisation of documentation and the providing of more and better information than in the past – Managing Director

The provision of improved information with regard to existing services and history of the site – Works Director

The provision of relevant information to site operatives prior to site operations with set procedures laid down for the transportation of said information - Surveyor

Valuable assistance in the formation of method statements, risk assessments, COSHH assessments and site specific toolbox talks. The Regulations act as a double check – Contracts Manager

A safer and more cautious working environment – Site Manager

Increased awareness of the risks to health and safety in operations on site – Groundworks Manager

Greater attention is paid to the use of safe working methods – Site Manager

Additional workload as direct result of the Regulations

Questionnaire responses suggested that additional workload is commonly considered to be a direct result of the Regulations. In contracting organisations this additional work is evident in the need for “more detailed method statements and risk assessments”. These are “required for all operations” as “the breaking down of information into individual cells has created a situation where method statements are required for each work item”.

One contractor also expressed that as a result of the Regulations additional time is now being spent in liaison meetings and in conveying the necessities of the Regulations to operatives.

In a case study undertaken within a medium sized contractor (Welch J 1997), with a £12 million turnover, the additional work due to the implementation of the CDM Regulations was broadly identified as

Changing the company’s Health and Safety Policy to reflect the regulations;

Introduction of Method Statement / Risk Assessment books;

Contractor pre-qualification – the completion of questionnaires and attendance of interviews so as to qualify for tender consideration;

The incorporation of the health and safety plan, provided by the supervisor into the tender process;

Notification of the project to the HSE – as principal contractor this is undertaken post tender and pre contract commencement;

Development of the health and safety plan;

Site inductions provided by the site supervisor (on average 40 inductions per project of one hour duration – averaged over 9 projects ranging from £300K - £750K);

Writing additional risk assessment / method statements

Increased levels of site supervision;

Safety Audits – carried out once every 3-4 weeks.

Training Courses – pre-CDM and ongoing.

Monthly health and safety committee meetings

With appropriate cost allocation against these activities the fiscal cost of implementing and complying with the Regulations is made feasible. Within the context of this case study the potential benefits – these primarily being perceived as a reduction in accident rates – were considered to outweigh the financial costs of complying with the Regulations.

Reduction of accidents on projects

Questionnaire investigation further concluded that:

Over 90% of professionals surveyed considered that the Regulations had reduced the levels of accidents on construction projects. Commentary and rationale supporting this perceived improvement includes:

“a closer control of operatives is held”;

“increased information is provided by all parties”;

“Generally the greater awareness of ‘do’s and don’ts’ contribute to success”

“Operatives are made aware of the health and safety requirements on each individual site”.

A recent survey of 200 civil engineers (New Civil Engineer 20th January 2000) found that 58% considered that the Regulations had saved lives whilst 18% had no opinion.

On-site benefits provided by the Regulations

Questionnaire responses outlined that the Regulations are considered to positively contribute to on-site health and safety ;

“there has been a reduction in accident and dangerous occurrences arising from the production of better distributed information”;

“they have brought about increased operative awareness”;

“there’s increased site safety awareness of all parties involved, for example other trades should now be better aware of the risks caused by their operations”;

“Increased liaison between all parties and a reduction in accidents has resulted”;

CLIENT AND CONTRACTOR REFLECTIONS

A survey of 40 clients and 40 principal contractors was also recently undertaken with regard to implementation and operational issues around the Regulations (Graham 1999). The intention of the investigation was to provide for a singular reflection of a sample group of contractors and clients. As an undergraduate investigation, the sample was limited to 40 and was regionally focused for reasons of manageability. The survey was not intended for the development of generalised theory. Respondent contractors included Alfred McAlpin; AMEC Construction; Beazer; Bovis Europe;

Bryant Group; Clugston; Gibb; Kier; Kyle Stewart; Loach; Mansell; Morrison; Redrow; Taylor Woodrow; Wates.

The conclusions drawn from the investigation of contractor reflections upon, and perceptions of, the Regulations can be summarised as follows:

50% of contractors were unsure as to the clear benefits provided by the planning supervisor;

90% of contractors claim not to have significantly increased the value of tenders to allow for the additional costs of compliance;

88% of contractors feel that the health and safety plan and the health and safety file have not placed an unnecessary burden on their operations;

90% of contractors have not significantly modified methods of working so as to comply with the Regulations.

95% of contractors considered that clients are accepting the lowest tender price and are not giving due thought to the additional expense of complying with the Regulations.

Client Perceptions

Respondent clients included Barnsley Council; Barnsley hospital; Bramco Engineers; Rotherham hospital; Sheffield Council; Sheffiled Northern General Hospital; South Riding Estates.

The conclusions drawn from the client sample can be summarised as follows:

Additional time implications and costs to clients when complying with the Regulations are:

- a. The appointment of, and fee for, the planning supervisor;
- b. Additional design team cost for compliance;
- c. The time required for the formulation of the pre-tender health and safety plan

The health and safety file was regarded as being strongly beneficial by those clients surveyed. The Clients also considered that the file serves as a useful record of the constructed project and can have considerable value in relation to future time and cost savings.

88% of clients believe that contractors have not significantly increased the tender price to accommodate any cost increase of complying with the regulations.

CONCLUSION

Clearly there have been issues around the introduction and implementation of the CDM Regulations - the extension and evolution of health and safety duties has brought about operational changes in construction health and safety management. The nature and extent to which the Regulations can be regarded a 'success' is uncertain - statistical evidence is both inadequate and inconclusive in this respect. Also the extent of cultural change within the industry as a result of the Regulations is uncertain.

Whilst in the main industry reflections upon the Regulations have been within a context of acceptance and belief of the Regulations' positive contribution to health and safety, some reflections have presented issues of continuing concern. Clearly the regulations and their Code of Practice are not without criticism -

" the Code of Practice has not effectively specified the practical extent of the undertakings of each duty holder (Building 2000)".

In light of such criticisms though a revised Code of Practice, developed to provide further practical guidance to the Regulations is being prepared. As Kevin Myers, the HSE's chief inspecting officer for construction, points out

"There is an element of over-bureaucracy, which isn't at the instigation of the HSE. It is people trying to cover their backs. We want designers to design safely, not to produce a two-inch thick risk assessment afterwards. The new Approved Code of Practice will spell things out more, so that duties are clearer (Building 2000)."

This paper does not concur with the sentiment of John Anderson's comment that the Regulations have had

"the wrong effect. They have cost the Construction industry hundreds of millions of pounds in pointless filing and there has been no measurable improvement in the accident records (New Civil Engineer)."

Whilst no measurable significant upturn has been recorded in the industry's accident records, this paper has reviewed that as a result of the Regulations other benefits have been perceived by industry practitioners.

REFERENCES

- Building (2000) *Are We Safer Now?* 7th April, 49.
- CIRIA (1997) *Experiences of CDM*. Report 171, August.
- Graham, S. (1999) *The Implementation of the CDM Regulations 1994 Upon the Construction Industry*. Sheffield Hallam University, Unpublished dissertation.
- Griffith, A. and Howarth, T. (2000) *Construction Health and Safety Management*. London: Longman - forthcoming.
- Health and Safety Executive, HSE (1994) *The Construction (Design and Management) Regulation..* London: HSE, HMSO.
- Health and Safety Executive (1999) *Safety Statistics Bulletin*. HSE, MISC179.
- Joyce, R. (1995) *The CDM Regulations Explained*. London: Thomas Telford.
- Kilner, I. (2000) *A Case Study of the CDM Regulations Within A Small Civil Engineering and Excavation Company*. Sheffield Hallam University, Unpublished dissertation.
- New Builder (1994) 1st August, 18.
- New Civil Engineer (2000) *Ineffective CDM Regulations Cost Industry Dear*, 20th January, 5.
- Stow, J. (1994) *A Critical Analysis of the CON DAM Regulations*. Sheffield Hallam University, Unpublished dissertation.
- Welch, J. (1997) *Has the Implementation of the CDM Regulations Caused Contractors to Incur Additional costs or Are there Cost Savings to be Gained*. Sheffield Hallam University, Unpublished dissertation.

Construction regulations will also be adapted and construction methods in civil and structural engineering reviewed. MultiUn. Construction regulations will also be adapted and construction methods in civil and structural engineering reviewed. MultiUn.Â Regardless of this, the construction regulations of the LÃ¼nder on barrier-free construction apply to all construction projects. Giga-fren. The Hull Construction Regulations are in place so that ships are designed and constructed in a safe manner to meet Canada's obligations under the Safety of Life at Sea (SOLAS) Convention. EurLex-2. 23 4.7 review of design and construction/operational alternatives . . . 24 4.8 design documentation . . . 25 4.9 design verification . . .Â Part C of the E4 standard provides the specifications for the design, construction and fabrication, testing, and operation of environmental technology.Â Quality planning â€œ All work involving the design, construction, and operation of environmental technology should be planned, documented, and controlled as needed to achieve conformance with approved quality criteria.