

# Good Safety Management on Combined Construction Sites

Jorma Lappalainen <sup>1</sup>, Simo Sauni <sup>2</sup>, Päivi Piispanen <sup>1</sup>, Salme Nurmi <sup>2</sup>

1) *Tampere Regional Institute of Occupational Health, PO Box 486, FIN-33101 Tampere, Finland*

2) *Technical Research Centre of Finland, Manufacturing Technology, PO Box 1701, FIN-33101, Tampere, Finland*

## Introduction

Increasingly, employees of several employers work simultaneously on the same construction site. Adjustment to such circumstances places new requirements on the people involved. Communication deficiencies and lack of adjustment to the different operations have led to accidents on such sites.

## Objectives

The objective of this study was to establish a set of safety practices for construction sites that can be used as a model for construction sites in general. Special effort was exerted to find **positive** and **functional** solutions and to avoid emphasizing problems.

## Material and Methods

Data were collected on risk management and the best safety procedures used in the biggest and most demanding factory construction sites known to the researchers. The client or owner, the main contractor, subcontractors and the employees on three construction sites were interviewed. In addition data on serious accidents and accidents leading to death at workplaces where employees of several employers work simultaneously were collected and analysed. Accident statistics indicate that the selected construction sites were able to develop better than average safety practices in that their accident frequencies were only one-fourth the average for construction sites (Figure 1).

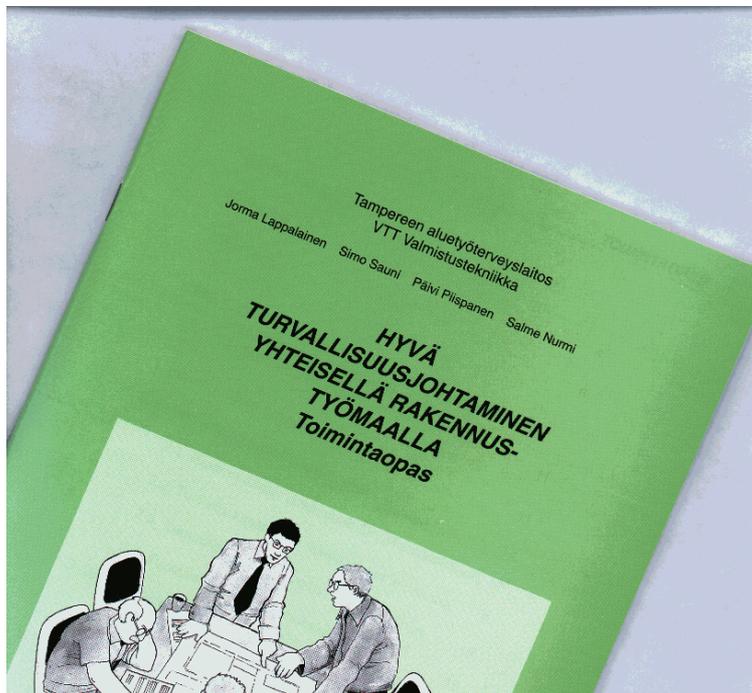
## Results

The following 13 important factors were found to be related to good safety management on combined construction sites

1. *The client's or owner's **clear will** for good safety and its implementation*

1. *A high level of cooperation among all the parties involved (client or owner, main contractor, subcontractors, employees, etc.)*
2. *Inclusion of demands for safety in the contract*
3. *Availability of a set of safety instructions and rules for the construction site*
4. *To make contractors and employees acquainted with the safety instructions and rules as well as circumstances of the construction site by the owner*
5. *Strict control of how the instructions and rules are followed*
6. *Creation of a safety plan and its acceptance once before the work begins*
7. *A high level of and maintenance of safety knowledge among the contractors and their employees*
8. *Encouragement of good safety performance*
9. *Employment of full-time safety experts by the main contractor (or assurance of access to safety expertise through other means)*
10. *Good housekeeping*
11. *Availability and use of safe passages and fall protection*
12. *Investigation of accidents and dangerous situations.*

One good solution has proved to be a practice that has been initiated by some clients or owners. These people will accept bids only from enterprises that fulfill specific safety criteria.



With the use of the collected data, a guide was also written for safety management procedures. The guide is divided into the following three parts:

- Part 1 concerns ensuring safety during the planning phase of the project

- Part 2 presents safety management on the construction site
- Part 3 provides examples of how to deal with the most prominent aspects of the work environment on the construction site.

Part 1 of the guide has primarily been written for the client or owner, whereas the other two sections are primarily meant for the main contractor. The procedures for the main contractor are divided into two main groups: (i) how to plan for safety and (ii) how to ensure that the plans for safety are realized. The procedures presented cover those contained in the European Union's directive on construction safety, but they also include some not covered by the directive.

The analysis of serious accidents and accidents involving deaths showed the need for (1) better organized work practices, (2) communication, (3) familiarity with the work environment, (4) safety rules and (5) control.

A series of overheads and a video have been created as supplements to the guide. The video attempt to describe the "cooperative" idea behind the guide. The popularity of the guide and its supplementary material has shown that there is a great need for such aids.

## **Discussion and Conclusions**

Workplaces where employees of several employers work simultaneously are increasing in many types of businesses and are no longer solely found in the construction industry. This is a new challenge for safety. The owner of the workplace must be sure that the outside employers and their employees are fully aware of the risks and hazards of the workplace. Under such circumstances the owner or the client form the backbone of safety management. A study of similar circumstances has been started in another industry.

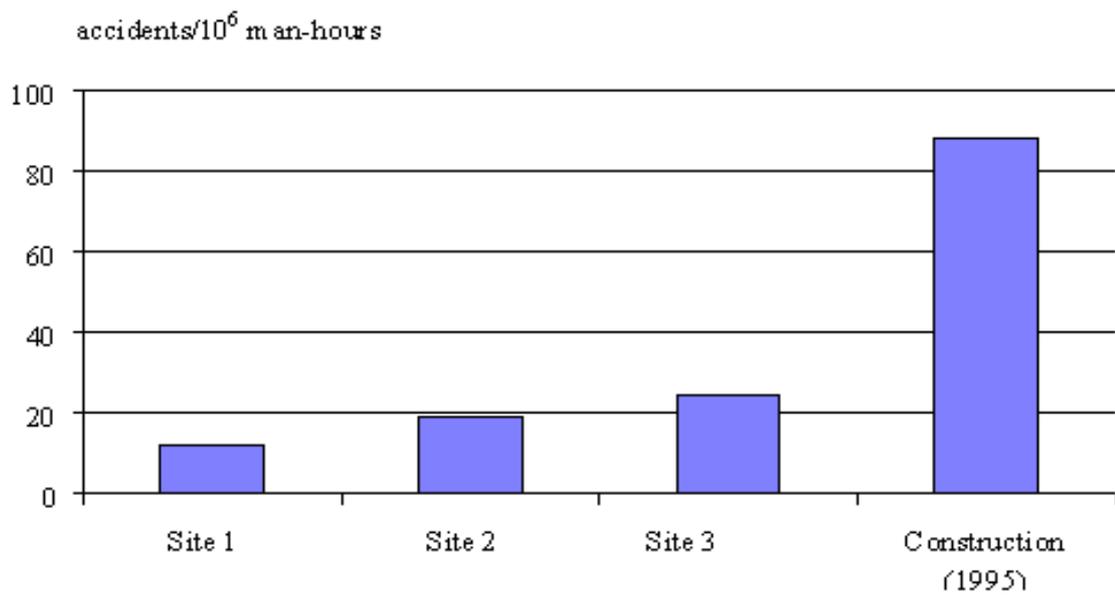


Figure 1. Accident frequency on the three good sites and in construction in general in 1995.