SAFETY SCIENCE Monitor

Special Edition 1999

Safety in Action
25-28 February 1998

Safety Management
Article 1

VOL 3

INTEGRATED SAFETY MANAGEMENT

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1. INTRODUCTION

The Integrated Safety Management Program (ISMP) as described by Zimolong (1997) is a framework of an organizational development process. It supports and facilitates preventive Health, Safety and Environment (HSE) processes and structures to be integrated into organizations: HSE activities into the daily routines of managers, supervisors, and employees, HSE standards and processes into the life cycle of products, services, and work systems, and finally human resource management principles to establish the process on a long term basis. Effective HSE management means coordinating and controlling a continuous improvement process by setting and adjusting HSE standards.

The successful implementation of HSE standards requires the process to be integrated into the activities of managers and supervisors at all levels of the hierarchy as well as the active participation of employees (Elke & Zimolong, 1996). Control cycles of goalsetting and feedback loops at different levels of the hierarchy support the coordination of activities. Beckmann (1997) describes the key elements of the cycle from a process point of view: formulation and setting of standards, observing and measuring the compliance with the standards, reviewing deviations from standards and providing remedial actions, such as taking personnel consequences or reformulating standards (Fig.1). In the context of Human Resource Management (HRM), the following are crucial instruments for an effective H&S policy (McAfee & Winn, 1989): recruitment, selection and placement of personnel, observing and appraising employee performance, counselling and developing personnel, running incentive programs, training and guiding individuals and groups appropriately (leadership style, Beaumont, 1993). The process-view of HRM integrates organizational demands of an information management approach (Hale et al., 1995) with a motivational view formulated in the goal setting theory of Locke and Latham (1990).

There are considerable differences between companies with respect to the types and completeness of adopted HRM practices. Only a few companies have integrated H&S goals into their policies. Organisations also differ fundamentally in how they control the application of HRM instruments (Snell, 1992). A complete control cycle has the following stages: Deriving of standards, setting, monitoring, measuring and reviewing of standards (Fig. 1). One example of an organizational standard is the annual appraisal of H&S achievements of employees by their superiors or peers. There are also considerable differences concerning the completeness of the incorporated control cycle as well as the procedures implemented to observe and assess the standards (Beckmann, 1997).

2. OBJECTIVES AND METHODS

A research program called 'Integrative Management of H&S' has begun at the Ruhr-University of Bochum in 1995. The goals of the study are the identification of effective practices, processes and structures in HSE-related human resource management, in information management and systems, in life cycle management of products, services and work systems, and in cultural aspects of organizations.

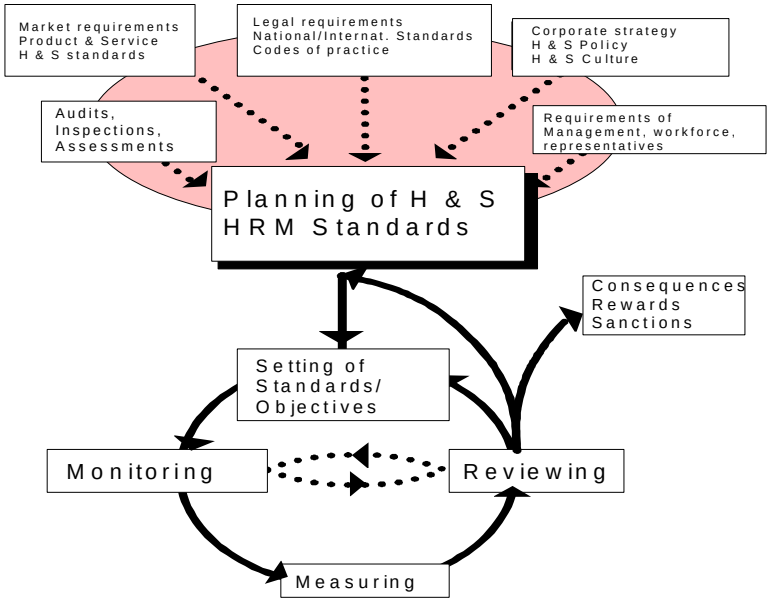

Figure 1: Control cycle in the context of Human Resource Management (HRM, Zimolong & Elke, 1997).

Some research questions address the completeness of stages in the control cycle for each of the human resource instruments and information management practices, and the kind of substitutes companies have developed to maintain an efficient feedback loop.

Studies have been carried out in 16 companies of the chemical industry, their size ranging from 200 to 1.500 employees. Companies with a record of at least 50% less accidents than the average number of their specific risk category have been attributed to the best group. That is, the risk levels of different products have been taken into account. Risk categories as defined by the insurer (BG Chemie, 1996) indicate the levels of risks associated with the production of chemicals (products). In a specific risk category, low-risk companies get a rebate from the insurer, those with high medical and compensatory payments are charged an additional premium. Companies were grouped into a "best" group (n = 7, mean 5.96, range between 1.2 and 11.10 reportable accidents per 1.000 employees) and an "average" group (n = 9, mean 32.90, range 12.4-72.10). Reportable accidents equal to three or more lost days injuries. The average of the whole sample is 22.58, the average of the chemical industry in 1995 is 40.06 accidents. Note that this figure is computed as the mean accident rate of all companies. The officially reported average of the chemical industry is 27.60 accidents per 1.000 workers (BG Chemie, 1996), which is the quotient of all reportable accidents and the total amount of workers (Vollarbeiter).

An HRM questionnaire was given to the Human Resource Departments of the 16 companies. They specified the documented status of the HRM process in the company with respect to recruitment, selection and placement, performance appraisal, training, leadership style, and incentive programs. Additionally, up to 10 interviews with the managers of different departments (production, planning, maintenance and personnel) were carried out at 18 production sites to compare the documented status with the HRM practices actually implemented into the routines of the managers. A rather strictly defined criterion for the "practiced application" was chosen: More than 50 % of the interviewed managers and supervisors must personally confirm that the HRM instrument (selection, appraisal, training etc.) was applied in their company. Otherwise the application of the instrument was coded as not practiced.

3. RESULTS AND DISCUSSION

Until now we have investigated 16 production sites of 14 companies. Two sites of two companies have been included which showed different accident rates, however, worked under the same documented HRM strategy. Fig. 2 presents the profile of the group of the best companies. The differences between documented and practiced application of HRM instruments are obvious. Performance appraisal, leadership style, incentives and benefits for all employees are the most common documented as well as practiced instruments. Less frequent are selection, training and recruitment. Surprisingly low is the application rate of H&S-related training for supervisors and managers. A comparison with the total sample (n = 14 documented, n = 16 practiced) reveals a similar pattern. The most frequently applied instruments are again performance appraisal, leadership style and H&S-incentives for workers, supervisors and managers. The most remarkable difference between the best group and the average group is the application of incentives and benefits for workers, supervisors and managers. The practiced application differs considerably from the documented one. Performance appraisal and incentives for workers, supervisors and managers show the least differences, selection, leadership style and training the greatest differences.

The typical profile of HRM instruments actually applied in the group of the best companies are performance appraisal, incentives and benefits for workers, supervisors and managers and leadership style.

An index reflecting the completeness of the control-cycle of an HRM instrument was calculated ranging between 0% and 100%. If one HRM instrument (recruitment, selection, appraisal, training, leadership style, incentives) matches all five stages of the control-cycle, the completeness index is 100%. The sample of completeness-indices of all HRM instruments defines the HRM profile of a company.

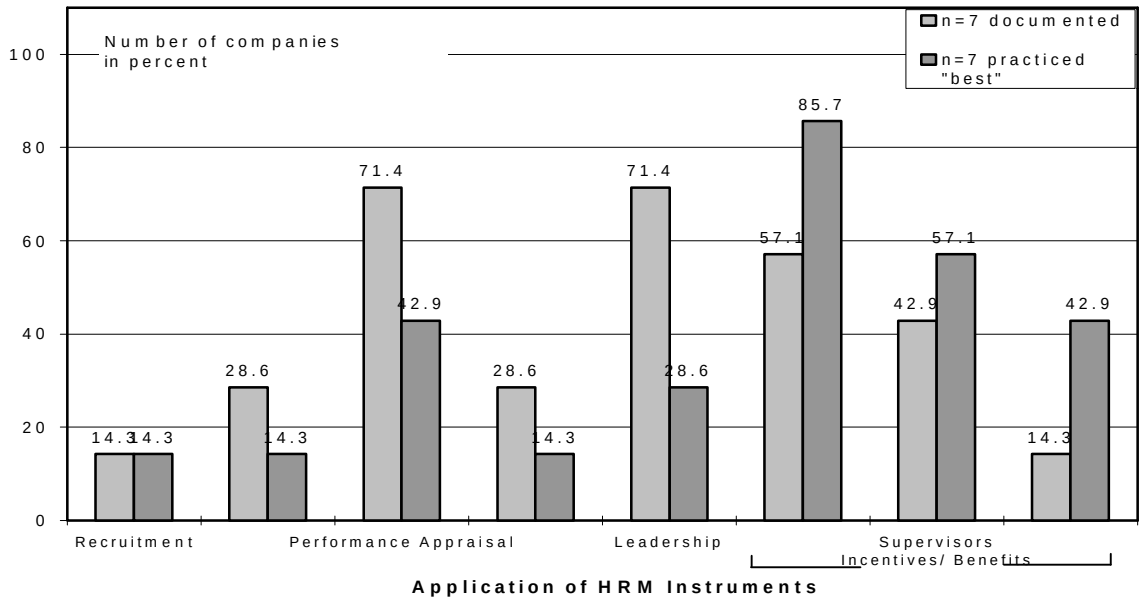

Figure 2: Application rate of HRM instruments (documented and actually practiced) in a sample of 7 companies. The accident rate of the sample lies between 1.2 and 11.1 accidents per 1.000 employees (best group).

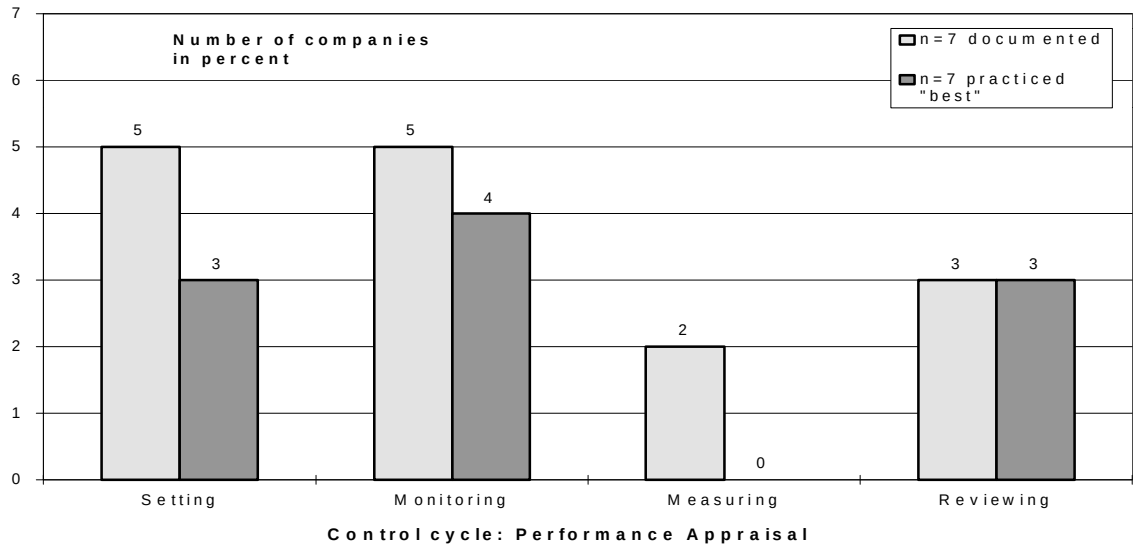

Figure 3: HRM profiles of the control cycle of performance appraisal (the best companies).

Figure 3 presents the data of the best group for the control cycle of performance appraisal. In most companies the application of performance appraisal is monitored, some even review the outcomes and take consequences. As compared to the average group, best companies show a higher percentage of completeness of the control cycle. The measurement of compliance with the standard (measuring) is of minor importance. No major differences between documented and practiced procedures can be observed. The completeness of the control cycle of HRM instruments seems to be an important factor which allows us to separate successful from less successful companies.

The presented results support the view that the best companies have implemented a control-cycle or part of it in HRM. Not all stages of the cycle are used. The best companies have mainly implemented the following stages: Setting, monitoring and reviewing of standards. They scarcely measure the degree of compliance (measuring). Obviously, required computational and statistical procedures are less attractive for companies from a cost-benefit point of view. Presently, we are searching for the kind of substitutes, if any, that have been implemented.

These results have to be confirmed by investigations of further organizations. Special patterns of documented and implemented stages of the control cycle have to be compared for all instruments. The pattern of instruments (such as selection, training, goal-setting, feedback, performance appraisal and incentive systems) combined with the information available in the organization about H&S data are possible answers to questions about the structures and processes of an efficient H&S management system.

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