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BETTER SAFETY AT WORK THROUGH PARTICIPATIVE APPROACHES

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1. INTRODUCTION

Two intervention studies were carried out in industry in which a participatory safety program was tested in practice. The goal of both projects was to launch an improvement process leading to a better work environment and safety, as well as to more efficient production. The cooperation partners, a shipyard and a department of a metal product company, represented industries in which the accident rate is above the national average in Finland. In the rapidly changing work environment of a shipyard, e.g. accident hazards arise unexpectedly. Employees' active role is emphasized in the prevention of accidents, in detecting and correcting safety and other problems.

Participation can be utilized for involving people in the improvement process. Participation means joining with others in something, having a share in something. In a planning process, different forms of participation can be identified. In consultative participation, an expert is responsible for the change, but the members of the organization are consulted during the planning process. In a representative form of participation, representatives of the personnel participate in a group work for planning and implementation of a change. In direct participation, everybody is given an opportunity to participate.

The participatory safety program was modeled on the basis of the experiences obtained from the previous study carried out in the 1980s (Saarela, 1991). The model was based on organizational performance management, which has demonstrated its effectiveness in practice (Sulzer-Azaroff et al, 1994).

2. MATERIALS AND METHODS

The shipyard involved in the study employs about 2700 persons. Luxury cruisers, tankers and other ships are constructed at the shipyard. The production process occurs in several production halls starting from steel plates and ending up with the completed ship. The handling of materials plays an important role in the shipbuilding process. The other intervention study was carried out in one department of a company employing 1300 persons and manufacturing metal products. The department involved in the study employs about 200 persons. The products in the factory department were manufactured by using different kind of processing methods. Both enterprises belonged to a large multinational corporation.

The action research approach, combining research and practice and organizational performance management, were utilized in the studies. In the beginning of the projects, a questionnaire survey provided the personnel with the opportunity to participate, to report problems they had identified, and to make suggestions for improvements. Local small groups (altogether 4-9 persons) with managers, supervisors and

workers as members arranged regular meetings and followed a systematic model consisting of identification of problems, setting goals, solving problems, implementing changes, monitoring the results and providing feedback. At the shipyard a small group was formed for each department, and in the factory three small groups were formed in different production areas of the department. In the factory also a steering group was set up for the project while at the shipyard the labor protection manager coordinated the project.

The intervention study at the shipyard was started in three departments at the beginning of 1995 and it lasted about a year and a half. In 1996 when the project was evaluated and reported, it involved more than 10 departments. After that the shipyard continued the improvement process with the labor protection manager as their internal consultant. The project in the department of the metal product factory was carried out in 1996 and it lasted for one year. The researcher helped the small groups to carry out the program, e.g. by providing training and support. At the shipyard altogether 5 and in the factory 2 one-day training and planning seminars were organized for the small groups. In connection with the programs, altogether 900 persons at the shipyard and 200 persons in the factory participated in a two-hour development seminar for informing about the results of the questionnaire survey as well as for discussing the program and safety. 21 such seminars were arranged at the shipyard and 4 in the factory.

The material gathered for the evaluation of the studies included, among other things, all the documents produced by the small groups. In the final phase of the projects, the questionnaire survey was repeated in order to get evaluative information. The response rate in the questionnaire survey at the shipyard was on average 58 % and in the factory 38 %. An evaluation seminar was also held in both companies and the effects of the interventions on accident rates were investigated. The Finnish Work Environment Fund supported the companies with a sum covering half of the costs of the researcher.

3. RESULTS

All the departments of the shipyard participating in the study achieved some improvements and, in addition, excellent examples came up. In one of the best departments according to the questionnaire survey in the beginning of the program, 55 % the respondents reported that housekeeping was fairly good or very good, whereas after one year almost everybody (86 %) was of the same opinion. In addition to the improvement of housekeeping, most of the respondents felt that work was progressing better, hazardous situations had decreased, cooperation had improved, new working practices had been learnt, and job satisfaction had improved.

In the department 72 % of the workers reported that it was easy to achieve improvements; this reflected the innovative organization culture. The small group of the department made observations on their work environment regularly and provided graphic feedback on the results. In the beginning, about half of the items selected by the group for their observation instrument were recorded as correct (index 54 %). After one year the index had risen to 98 % indicating that the department had reached nearly all their goals.

Different kinds of improvements were implemented in the shipyard departments, such as racks for tools and materials, trolleys for materials, boxes for rubbish and scraps. A new type of a material card was developed in order to get the right material in the right place and at the right time. The overall accident rate of the shipyard decreased by 56 % during the two years period (25 % had been set as the goal).

The evaluation indicated that the improvement process had started also in the metal product factory. At the end of the year 38 % of the respondents reported that housekeeping was fairly good or very good, whereas in the beginning only 8 % were of the same opinion. In the department the best results were perceived to relate to the improvement in housekeeping (68 % agreed) and to the decrease in hazardous situations (64 % agreed). The work environment index which was measured regularly by the small groups rose from about 50 % to 75 %. Altogether 62 improvements were implemented during the ten-months period. The improvements were associated with safety, ergonomics, quality, well-being of workers, etc. The improvements included e.g.: racks for lifting devices, shelves for materials, ergonomic improvements in work stations, safety improvements of machines, checking the handtools and purchase of new ones, new numbering system for the profiles and tools, coffee rooms, etc. The accident rate of the department was reduced by 45 % during the one year. Improvement was noted also in delivery reliability, throughput time, productivity and profit. The department was interested in continuing with more demanding development tasks and a new project was started in 1997.

4. DISCUSSION

The implementation of the participatory program led to better safety both at the shipyard and in the factory. The results indicated also that it is possible to improve both safety and efficiency of production at the same time. The initiative in starting the project was taken by the management of both enterprises. The responsibility for improvements was assumed jointly by the management, supervisors and workers. In addition to the representative form of participation utilized in the small groups, direct participation of all employees was encouraged. The questionnaire survey provided everybody the opportunity to report the problems they had identified in their work site and make suggestions for improvements. Everybody could attend the training and development seminars arranged on an interactive basis. The employees could report their problems and bring out their ideas for improvement in the seminar or contact the small-group members of their own production area. In addition the workers could participate in the observation round carried out by the small group. The participation helped the employees to develop ownership of the improvement process.

What was learned from these studies? What accelerates the improvement of safety in practice? The following elements are important:

- Pressure/need to improve
- Top management support
- Line organization responsibility
- Participatory management
- Small groups
- Direct involvement of workers
- A systematic approach:
 - Identification of problems (safety, ergonomics and other)
 - Setting goals (concrete, detailed)
 - Solving problems
 - Organizing improvements (person(s) in charge!)
 - Reactive and active monitoring and providing feedback
- Training and learning
- Encouraging innovativeness
- Step-by-step progress: starting from simple
- Technical and other measures including work practices (the "rules of the game")
- Visible changes fast
- Keeping the improvement process positive, rewarding, interesting and inspiring

The participatory safety program implemented in the study corresponded well with the needs of the companies and provided a useful tool for improving safety in practice.

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