

Approaches to Occupational Health Based on Participatory Methodology in Small Workplaces

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Received August 31, 2005 and accepted November 24, 2005

Abstract: An intervention based on the methodology developed by the International Labour Office, the Work Improvement in Small Enterprises (WISE) was carried out to improve work condition of small-scale enterprises and the informal sector in the Philippines, Thailand and Japan. Through the evaluation of the efficacy of the approaches based on participatory methodology, it is concluded that the method is an efficient measure to improve work condition in small workplaces. It is also pointed out that the activities of supporting experts such as introduction of the methodology and evaluation of the activity are necessary. The important roles of the experts are 1) to encourage managers and workers to sustain the activities for work improvement, 2) to analyse the effectiveness and problems of the implemented improvements, 3) to give appropriate suggestions for the further improvement, and 4) to get materials for demonstrating the effectiveness of WISE activities on improving work conditions and productivity to other managers and workers who have not participated in the activity.

Key words: Work improvement, Occupational safety and health, Small-sized enterprise, Informal sector, Participatory activity

Introduction

Small-sized enterprises and the informal sector play an important role in economical development through creating employment, developing a pool of skilled and semi-skilled workers, and supplying material components and sub-assemblies to large enterprises^{1, 2)}. The work condition in small workplaces is usually poor compared with that in large-sized enterprises and the workers are often forced to work under poor occupational safety and health conditions. Generally speaking, it is difficult to develop occupational health activities in small workplaces because of the lack of knowledge on occupational health and technical support from the outside, financial problems, and so on.

On the other hand, there are advantages in improving work

conditions of small workplaces. One advantage is that most managers of small enterprises are the key decision-makers in the enterprise and the improvement of working conditions can be carried out quickly if they decide to implement the improvement. Another advantage is that the relationship between the manager and workers is often closer, so that cooperation of the manager and workers is easy. Therefore, it is expected that the work condition at small workplaces will be improved, if adequate support for the managers and workers of such workplaces is provided from the outside³⁻⁹⁾.

Purpose

The purpose of this study is to define the necessary supports for the managers and workers to improve working conditions in small workplaces and the informal sector.

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Table 1. Improvements planned and implemented during the WISE training courses in the Philippines between 1994 and 1996

Technical Area	Planned	Implemented	To be done
Material Storage and Handling	409 (19.9)	364 (21.1)	45 (13.4)
Work-station Design	167 (8.1)	134 (7.8)	33 (9.8)
Productive Machine Safety	166 (8.1)	142 (8.2)	24 (7.1)
Control of Hazardous Substances	116 (5.6)	97 (5.6)	19 (5.7)
Lighting	250 (12.1)	225 (13.1)	25 (7.4)
Welfare Facilities	482 (23.4)	373 (21.6)	109 (32.4)
Premises	239 (11.6)	196 (11.4)	43 (12.8)
Work Organization	185 (9.0)	150 (8.7)	35 (10.4)
Environmental Protection	46 (2.2)	43 (2.5)	3 (0.9)
TOTAL	2,060 (100)	1,724 (83.7)	336 (16.3)

(%)

Subjects and Methods

An intervention based on the methodology developed by the International Labour Office, the Work Improvement in Small Enterprises (WISE)^{1, 2)} was carried out to improve work condition of small-scale enterprises and the informal sector in the Philippines, Thailand and Japan. The principles of the methodology were:

1. Encouraging participatory activities
2. Giving practical advice,
3. Finding low cost solutions,
4. Finding productivity enhancing solutions,
5. Focusing on achievement and avoidance of criticism,
6. Using examples of local practices found in the other sections of the factory and neighboring factories.

The program was composed of following activities:

1. Setout meeting: A setup meeting was organized to introduce the characteristics of the methodology and initiate the activity for improvement. In the meeting, the activities such as hazard identification, risk evaluation including action checklist application, group discussion on work improvements and creation of action plans were carried out.
2. Implementation of the improvements: After the setout meeting, the enterprises that participated in the project tried to improve the work condition based on the action plans proposed at the setout meeting.
3. Check of the implemented plan: After starting the activity for the improvement, accomplishment of the activity was checked and readjusted by the manager and workers receiving the supports from specialists, if necessary and available.
4. Evaluation of the activity: One year after starting the improvements, the results of the improvements were reviewed and new action plans for the next year were discussed.

Results and Discussion

Activities in the Philippines

In the Philippines, the WISE project was implemented as a national flagship project for improving work condition in small- and medium-sized enterprises. During the setout meetings of the projects, 2,060 improvements were proposed and 1,724 (83% of the proposed plans) improvements were implemented during the training in 1994, 95 and 96 as shown in Table 1. Most of the improvements were planned during the training period and implemented immediately. Another characteristic of the implemented improvements in the project was that the improvements in various WISE technical areas were planned and implemented.

Figure 1 shows an example of the implemented improvements during the WISE training courses in the Philippines. In the improvement activity, a partition was newly introduced to isolate the noisy workplace from other workplaces. The noise level under the closed door condition was reduced by 6 dB(A) comparing to the condition with an opened door. As the noise levels in the separated area were increased, the workers working with the noisy machine started to wear earmuffs to protect themselves from the noise. The partition was put in by the workers, so that the cost for the improvement was very little.

Activities in Thailand and Japan

In Thailand and Japan, similar projects were planned and implemented. The projects aimed at preventing work-related musculo-skeletal disorder using ISO/TS 20646¹⁰⁾ of which methodology was based on the WISE methodology. In the projects, working conditions were checked using the Action Oriented Checklist proposed in the ISO/TS 20646. By using the methodology, many improvements with a wide view point were planned and implemented. Furthermore, improvement plans not directly relating to the work-related musculo-skeletal disorder were also proposed and implemented.



Before improvement: Noisy work (grinding) was performed in a big room and other workers were exposed to the noise. The noise level at the place where a door was newly built was 92 dB(A) under the condition of the door opened.



After improvement: The noisy work site was separated from other workers with partitions, and PPE was provided to the workers at noisy work site. The noise level at the same place with closed door was reduced to 86 dB(A).

Fig. 1. An example of the work improvement for reducing noise levels at a workplace.

The Technical Specification (TS) is composed of five basic rules for reducing local muscular workloads:

1. Reduce workloads from lifting and carrying,
2. Improve working posture and motion with great efforts,
3. Use appropriate devices or tools, and jigs or fixtures,
4. Avoid monotonous and repetitive work, or continuous heavy workloads and
5. Improve work environment such as thermal conditions and illumination

Under these five rules, practical and easy understanding sub-rules are introduced. The sub-rules are as follows:

1. Reduce workloads from lifting and carrying
 - a) Use carts, hand-trucks and other wheeled devices or rollers, when moving materials.
 - b) Use conveyers, hoists and other mechanical means of transport.
 - c) Divide heavy weights into smaller lightweight packages, containers or trays.
 - d) Handle a heavy item by two persons.
2. Improve working posture and motion with great efforts
 - a) Adjust the working height for each worker at elbow level.
 - b) Eliminate tasks that require bending or twisting.
 - c) Reduce tasks requiring holding of the hands or arms above the shoulder level.
 - d) Place frequently used materials and tools within easy reach.
 - e) Provide standing workers with chair or stools for occasional sitting.
3. Use appropriate devices or tools, and jigs or fixtures
 - a) Use jigs and fixtures to make machine operation stable, safe and efficient.
 - b) Choose tools requiring minimum force for operation or alternatively suspended or counterbalanced ones.

- c) Use a light hand tool with the gravity centre at near the palm of the hand.
- d) Provide hand support when using precision tools
4. Avoid monotonous and repetitive work, or continuous heavy workloads.
 - a) Consult workers on improving working-time arrangements.
 - b) Introduce work rotation system.
 - c) Insert short breaks or physical exercise.
 - d) Provide short and frequent pauses.
 - e) Arrange for resting corners easily accessible and provided with good furniture and refreshing drinks.
5. Improve work environment such as thermal conditions and illumination
 - a) Protect the workplace from excessive heat and cold, especially cold wind from air conditioners.
 - b) Provide sufficient lighting for workers.

The project started for five factories in Thailand and three factories in Japan from 2003, and is still on going. The follow-up research for the companies, that started the project in 2003, was conducted one year later. At six out of eight factories, the follow-up survey was conducted. Total of 51 improvements, 83.3 improvements per enterprise in average, were accomplished during the one year as shown in Table 2.

Figures 2 and 3 are the photos to show the examples after improvements in the factories during the training courses.

Figure 2 shows the case of a working-height adjusting system for the data entry work. Workers can easily adjust the height of the keyboard and visual display for VDT work. An electronic system was introduced to adjust the working height easily. So, workers can easily adjust the table height in adequate level and reduce the risk of work-related diseases such as back pains and occupational neck-shoulder-arm

Table 2. The implemented improvements during the projects in Thailand and Japan

Area of the improvement	Number of the improvements accomplished after one year
1. Reduce workloads from lifting and carrying	19 (37.3%)
2. Improve working posture and motion with great efforts	8 (15.7%)
3. Use appropriate devices or tools, and jigs or fixtures	8 (15.7%)
4. Avoid monotonous and repetitive work, or continuous heavy workloads	4 (7.8%)
5. Improve work environment such as thermal conditions and illumination	3 (5.9%)
6. Others	9 (17.6%)
Total	51 (100.0%)



Working posture before the improvement



Working posture after the improvement

Fig. 2. An example of the VDT worktable improvement.

Before the improvement, the height of the keyboard and CRT screen was difficult to adjust, so that operators were forced to work in bad working posture. After the improvement of the table, operators can easily adjust the height to work in adequate posture.



Before the improvement



After the improvement

Fig. 3. An example of the improvement of working height of a conveyer-line.

Before the improvement, workers were forced to keep deep bending postures during the welding work. After the improvement, workers can avoid such stressful posture with the elevated conveyer-line.

syndromes.

In the case of the improvement shown in Fig. 3, working height is adjusted by increasing the height of conveyer-lines. In the new condition, workers can avoid deep bending posture

and reduce the risk of lower back strain during the welding work. The improvement was implemented by the engineers of the factory, so that the cost for the improvement is minimized.

Summary of the Results

The results of these projects indicate:

- Once participatory activity for work improvement being introduced, many low-cost improvements from various viewpoints were implemented.
- Approaches based on participatory methodology such as the WISE approach could improve workloads and productivity in many cases.
- In some cases, however, improvement was not achieved. In such cases, review of the activity is important for getting better solutions.
- Most of the entrepreneurs were satisfied with the results of the approaches based on participatory methodology.

Conclusion

Through the evaluation of the efficacy of the approaches based on participatory methodology, it is concluded that the method is an efficient measure to improve work condition in small workplaces. It is also pointed out that the activities of supporting experts such as introduction of the methodology and evaluation of the activity are necessary. The important roles of the experts are:

- Encouraging managers and workers to sustain the activities for work improvement,
- Analysing the effectiveness and problems of the implemented improvements,
- Giving appropriate suggestions for the further improvement, and
- Getting materials for demonstrating the effectiveness of WISE activities on improving work conditions and productivity to other managers and workers who have not participated in the activity.

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