IMPROVING EQUIPMENT BY INVOLVING WORKERS TO PREVENT MANUAL HANDLING RISKS IN A PVC PLANT

General information

Country: France

Sector: Manufacturing (PVC products)

Type of organisation: Multinational

Size of organisation: 129 workers at the intervention site

Location: Urban

Job/tasks: Carrying 6-metre PVC planks and dragging loaded containers

Workplace and task characteristics: Manual handling of awkward loads that had to be lifted above the head, dragging loaded containers. The tasks always involved using the same body parts.

Workplace participation measures:

- Use participation to make modifications to solve problems with work equipment.
- Involve workers in elaborating an action plan regarding risk prevention.
- Brainstorm with workers to adapt, change and improve their work equipment.
- Set up working groups. Invite workers to fill in suggestion sheets.

The action

Background

The company is a very large PVC manufacturer. It supplies industrial fitters, suppliers and large do-it-yourself stores, as well as around 100 franchised PVC stockists.

The intervention took place at a plant that employed 129 workers. This plant produces PVC profiles. These are 6-m-long planks that are used for doors, windows, or shutters. The PVC profiles are produced by 28 extruders and treated to give them a better feel. This process is almost fully automated, and production is carried out 24 hours a day, nearly all year round. At the end of the production line, workers must load pieces into pallets to be sent to clients. It is at this stage that the workers were at risk of musculoskeletal disorders (MSDs). The workers had to collect the profiles, lift them above their heads and place them in a container. When a container was full, the workers moved it by dragging to allow the forklift operator to pick it up and drive it to the warehouse. Each worker was responsible for three extruder machines. They had to come and go between the extruders, following the rhythm of the process. The tasks always involved using the same body parts.

Participants and stakeholders

The intervention involved the plant workers, management, especially the plant's industrial director, members of the safety and health committee and the regional health insurance fund.

Participatory approaches, methods and tools

Framework for participation

Continuous improvement and autonomous work teams

The plant's industrial director was committed to the idea that work should be organised so that it is continually improving through innovation. This approach involved pragmatism and trust in those doing the work.

The way the plant operated had been overhauled using small working groups that looked at particular themes and prepared action plans. The plant was reorganised into teams of 18, each led by a supervisor. These independent teams were given complete freedom to pursue their production targets by continuously improving the equipment and their working conditions. If an idea was suitable, it was implemented immediately. The plant awarded the best innovations.

Safety and health committee

Required in all businesses with at least 50 workers, the committee's goal is to promote safety and health at work and improve working conditions. The committee includes a worker representative. It has a number of means at its disposal to fulfil its goals (information, consultation of experts), and worker representatives are permitted time off work to carry out safety duties. These representatives are typically protected from being made redundant.

Suggestion sheets and questionnaires

Workers can fill in suggestion sheets, available in the staff room, to give their ideas for improving on-site working conditions. Safety and health committee members and management examine the suggestions to assess the order of urgency and relevance. The committee receives about 300 suggestions a year. The forms can be submitted anonymously.

Annual performance review targets

During the annual performance reviews, individual workers are also given targets for the year ahead related to improving working conditions.

Equipment modifications to avoid manual handling

One team of workers adapted a machine to avoid having to carry products manually. The machine is an extruder with considerable upgrades installed. To reduce manual handling, the company had previously installed a fully automated robot to carry the profiles to the containers aided by suction pads placed on either side of and above the PVC profiles. However, that system was not secure. If the alignment was not perfect, the pads did not grip the profiles properly and they fell off. Two operators had their fingers crushed because of this.

There was a need to avoid the risks posed by the fully automated machine, and at the same time to avoid the risk of MSDs for the workers doing the manual handling. In all, 90 manual workers assigned to the production facility were involved in this task. Certain profiles weigh three kilograms (kg) per metre each, and every worker was handling on average about 3,600 kg a day.

When discussing measures to reduce this load safely, the company director wanted to hear contributions from all sides, convinced that everyone involved had something to contribute to improving working conditions. The company formed working groups to improve the situation. Alongside the maintenance service, the warehouse teams prepared a list of the most painful movements they are required to make while using the machine. Improvements were gradually made. The workers regularly presented ideas based on their experiences in using the equipment.

The safety and health committee and the regional health insurance fund supervised every stage.

What was achieved

Initially, the container was replaced so that the profiles fell directly into it. However, back problems persisted. It was still necessary to stoop to align the profiles in the base of the tray. Therefore, it was suggested that the base of the container should be made detachable to collect the profiles at shoulder height. One idea led to another, and the packing table was equipped with downward-facing guide bars. The profiles could then slide more easily into the container.

Finally, the working group considered placing the container on a wheeled trolley to make it easier to move. Pulling a standard container requires traction of about 220 kg, compared with 80 kg for the new wheeled system. The working group also positioned operators five centimetres closer to the exit table, making it easier for them to catch any profile that does not fall properly.

Case extracts

The plant's industrial director was committed to the idea that work should be organised to create continuous improvement through innovation. This approach involved pragmatism and a trust in those doing the work. The company philosophy involves continuous work improvement and trusting those on the ground doing the work.

The spirit of innovation seen with this group of workers spread to other production lines.

If an idea was suitable, it was implemented immediately ... [Other] improvements were made gradually, looking at different potential paths and amending things that did not work. The aim was to produce a machine that, by the end of the process, responded perfectly to risk prevention and comfortable use criteria set by users.

Resources, costs and benefits

Support was offered by the Regional Health Insurance Fund. Seven new machines were introduced at a cost of EUR 13,000 per device. The head office also decided that when any new production lines were introduced, they would be equipped with these new machines. However, not every production line could benefit from this system. Four others made small pieces or very flat profiles that required a different manufacturing process and had to be perfectly aligned with containers. No immediate solution to this was found. However, the spirit of innovation seen with the first group of workers spread to other production lines and they will continue to look for solutions.

Analysis

Barriers

No major problems were encountered.

Facilitators

- A company philosophy of continuous work improvement and trusting those on the ground doing the work.
- The company already had in place a system with various components for worker participation in improving working conditions.
- The reorganisation of the production line and establishing autonomous working groups in this area created a promising framework for workers to take the initiative in their working conditions.
- Improvements were made gradually, looking at different potential paths and amending things that did not work. The result was a machine that, by the end of the process, responded perfectly to the risk prevention and comfortable use criteria set by users.
- The involvement of management was fundamental as the manager encouraged workers to present their ideas for improvement.

Transferability

While this is a large company, the basic principle that workers should be involved in continuously improving their work and prioritising workers' ideas to improve work equipment can be applied to any industry or sector.

References and further information

The information on this case was compiled by EU-OSHA. No additional written material is available.

Clergiot, J. (2010), *Travail & Sécurité: La prévention passe par les travailleurs.* Retrieved 15 July 2021, from https://www.travail-et-securite.fr/dms/ts/ArticleTS/TS-TS711page34/TS711page34.pdf