Healthy Workplaces Good Practice Awards 2018-2019

CASE STUDY

Controlling worker exposure to dangerous substances in the manufacture of household appliances

COMMENDED

ORGANISATION/COMPANY	COUNTRY	SECTOR	TASKS
Gorenje, d.d.	Slovenia	Manufacturing	Plastic coating, chrome plating, other tasks in household appliance manufacture

Source: Gorenje, d.d.

Background

Gorenje, d.d., Velenje, Slovenia, is the parent company of the Gorenje Group, a leading European manufacturer of household appliances. It is committed to a systematic and participative approach to safety and health and eliminating risks from dangerous substances. It uses an occupational safety and health management system and has in place committees and councils that provide a platform for discussing important guidelines, objectives and programmes for safe and healthy working, and suggesting improvements.

The company strives to replace hazardous substances with less hazardous ones, decrease the number of chemicals used and reduce worker exposure to hazardous substances in its workplaces. It performed

a systematic analysis of potential workplace risks and identified several areas for improvement: the exposure of workers in the company's plastics facility to high levels of hazardous solvents; the use of carcinogenic hexavalent chromium (Cr^{6+}); deficiencies in the monitoring and recording of the more than 1,200 chemicals used; the lack of consideration given to the effects of ototoxic substances; and inadequate biological monitoring.

Source: Gorenje, d.d.

Aims

- To replace carcinogenic Cr^{6+} with the safer, non-carcinogenic alternative trivalent chromium (Cr^{3+}).
- To reduce the exposure of workers to hazardous organic solvents at the company's plastics facility.
- To implement a more systematic approach to monitoring chemicals in the company, incl. biomonitoring of exposures, and keeping records up to date.
- To identify ototoxic substances — that is, substances that can cause hearing disorders — used by the company and perform appropriate risk assessments.
- To ensure that appropriate biological monitoring is carried out.

What was done and how?

The company explored possible solutions to the issues identified by taking a holistic approach involving management, workers and their representatives, and a multidisciplinary team of experts (including an authorised medical officer).

In the plastics facility, systems and work practices for printing were reviewed. This led to the removal of two of three conveyer belts for drying and the purchase of three closed and vented machines for automated printing to reduce worker exposure to organic solvents.

In addition, the company's chrome-plating method was reviewed and a process for replacing carcinogenic Cr^{6+} with less harmful Cr^{3+} was designed, costed and tested on a small scale.

The company recognises that keeping appropriate records and safety data sheets is essential for effectively assessing the risks posed to workers by hazardous substances. To ensure that it is well equipped to do this, it upgraded its software system to a comprehensive business information system. The environment, health and safety management (EHS) module of this software allows workers to actively participate in adapting processes to meet specific needs.

Using this module, and in line with EU and national legislative requirements, the company identified three ototoxic substances to which workers were exposed: styrene, toluene and xylene. When combined with noise, exposure to these solvents increases the risk of occupational hearing loss. The locations of substance use and workers potentially at risk were identified, and subsequent monitoring of noise levels and substance concentrations carried out.

In 2014, the company assessed that its occupational health provider had not been carrying out biological monitoring appropriately. Therefore, it appointed a new provider. Since then, several steps have been implemented to ensure that biological monitoring is carried out in a responsible, professional and systematic manner.

What was achieved?

By adapting processes in its plastics facility, the company reduced the number of workers exposed to hazardous substances. By 2017, it had also reduced the concentration of toluene from 51.5 % of the Slovenian limit value to 18.3 %. This has reduced the risk not only of occupational illness but also of fire and explosion.

The EHS module of the new software was successfully implemented. This has allowed the company to gain a better overview of the chemicals it uses and introduce a procedure for the approval of new chemicals, providing traceable data on quantities, hazards, supply, storage, transport and waste management along the entire chain, taking into account national and European regulations. It has been able to cut the number of chemicals used from 1,200 to 840, and suitable safety data sheets can now easily be accessed electronically by all workers.

From its analysis of levels of and duration of exposure to ototoxic chemicals and noise levels, the company has been able to confirm that exposure at their workplaces has no adverse effects on workers' hearing. Moreover, by using its improved approach to biological monitoring, it has convincingly demonstrated that limit values are not exceeded for any worker. Systematic monitoring will continue to ensure that worker health is protected.

Source: Gorenje, d.d.

Success factors and challenges

Worker exposure to hazardous substances was addressed in a systematic way that involved management, experts from relevant fields, and workers and their representatives, leading to the successful implementation of improved systems and processes, and demonstrable improvements in safety and health conditions.

To date, despite extensive investigation and testing, the company has not been able to replace Cr^{6+} with Cr^{3+}. However, the company did put a considerable amount of effort into finding an alternative, and involved workers and their representatives and trade unions in the process. It is still committed to finding a solution, even though workers are currently exposed to levels of this carcinogen that are far below the limit value specified in EU legislation. In the meantime, those workers who are exposed to Cr^{6+} are kept well informed of its potential hazards and how to manage them, and regular biological and concentration level monitoring is carried out.

Transferability

The multidisciplinary and participatory approach adopted by the company to identify, monitor and address the risks posed to workers by dangerous substances is fully transferable to other companies in the manufacturing sector. The company actively shares its knowledge and experience with other Slovenian employers by visiting other companies and attending symposiums, conferences and roundtable meetings. The example is also transferable to other Member States.

Costs and benefits

The measures taken by the company have minimised the number of workers exposed to dangerous substances and the level of dangerous substances used. In doing so, the company has reduced risks to worker safety and health.

Key features of good practice example

- The company takes a holistic approach to monitoring exposure to hazardous substances in its workplaces.
- Solutions to problems identified are developed through collaboration between management, workers and their representatives, and a multidisciplinary team of experts.
- The company has successfully implemented technological solutions in its plastics facility, a software system for managing and monitoring chemical use, and a systematic approach to biological monitoring.
- Real improvements are demonstrated: reductions in the number of chemicals used, the number of workers exposed and the levels of exposure.
- The company continues to search for new ways to improve worker safety and health, going above and beyond legislative requirements, and shares its knowledge with other companies.

Further information

Further information can be found at www.gorenje.com

'The company is committed to a systematic and participative approach to safety and health and eliminating risks from dangerous substances.'