

Using our brains to save and improve the lives of workers

Reducing Exposure to Isocyanates in Motor Vehicle Repair



The Client

Health and Safety Executive (HSE)

The Problem

HSE identified that asthma was a major cause of ill-health in the motor vehicle repair (MVR) industry. Two-pack paints are used extensively in primers and lacquers and although the paints are ideal for vehicles, the isocyanates in them present risks to operators, especially during application when spray mist and vapours containing isocyanates may cause asthma or worsen an existing condition.

What we did

To address the lack of awareness of the potential risks among employers and sprayers, HSE inspectors worked with us and trade associations to develop simple and clear guidance. This was delivered through a series of multi-media presentations at Safety and Health Awareness Days (SHADs), 28 of which were held across the country in a sustained campaign between 2004 and 2007.

A range of experts provided information at these events about the hazards and risks associated with spraying isocyanates and how to control exposure to prevent ill-health. A video of an interview with an asthma sufferer brought home the life-changing consequences of the condition. Scale models developed by our ventilation specialists used a smoke generator to show how ventilation systems in spray enclosures work and how long it takes for paint mist to clear after spraying. Industry speakers gave presentations on paints and equipment, and an HSE Inspector gave a clear message about legal requirements. Scientists from our biological monitoring team distributed sampling kits, enabling sprayers to collect a urine sample after spraying for analysis of isocyanate metabolites using an analytical method developed by HSL. This provided a simple check on whether the exposure controls were working properly.



Outcome/Benefits

Overall the SHAD campaign was highly successful – post-event questionnaires by our work psychologists show improved awareness, with well over 90% of attendees pledging to make improvements. Quantitative data from urine samples show that exposure levels were lower in workers who had attended the SHAD events than those who had not. Where levels of isocyanate metabolites in urine were above the Biological Monitoring Guidance Value, the sprayer was advised to look again at control measures, make improvements and repeat the test. These follow-up samples revealed lower levels of metabolites and a reduction in exposure.

A further significant demonstration of the effectiveness of the campaign has come from recent HSE statistics, showing that incidence of occupational asthma in vehicle spray painters, along with associated costs in 2004 - 2006 was approximately half the rate of 2001 - 2003.