

**Case Study:** HSE supports small/medium size chemical company's innovative solution to reduce the risk to workers health.

## Background

Lansdowne Chemicals is a small/medium size specialist chemical manufacturing company based in Oxfordshire.

The company supplies Hydrazine Hydrate for use as an oxygen scavenger of boiler feed water, preventing corrosion damage in high pressure boilers used in the power generating industries and used as a chemical intermediate for a number of different applications.

Under the Chemicals (Hazard Information and Packaging for Supply) Regulations, Hydrazine Hydrate is a Category 2 carcinogen – believed to cause cancer in humans. Whilst under the EU Classification Labelling and Packaging regulations it will carry a category 1B (H350) Carcinogen classification.

## The Problem

The company originally used a manual operation to decant the Hydrazine Hydrate into storage tanks using a hose and lance system. A similar approach was used to prepare Hydrazine Hydrate for supply to customers; manual decanting into containers of various sizes up to 1 tonne intermediate bulk containers.

When HSE inspected the site and assessed both processes, HSE and the company agreed that there was a heavy reliance on both personal protective equipment (PPE) and Respiratory Protective equipment (RPE). The company also had a local exhaust ventilation system on site which would only remove escaping vapours when near the source of exposure, therefore offering a limited level of protection. This was important given that the company had discovered that airborne exposure concentrations during manual transfers were in excess of the assigned regulatory exposure limit for Hydrazine, although no employee was known to be exposed to hydrazine vapour above the regulatory limits.

Substitution - using a less harmful chemical with similar properties was not a viable option for the company as there was no other practicable alternative oxygen scavenger for use in high pressure boilers.

Overall, the potential for worker exposure coupled with a heavy reliance on PPE raised concerns for both HSE and the company.

At the heart of the shared dilemma was the need to minimise the potential for worker exposure to a vital, but harmful chemical.

## The Solution

Lansdowne Chemicals invested £1.6 million in a remarkable engineering solution developed by a leading UK chemical engineering specialist, Haden Freeman Limited. The answer was an automated dilution and filling process that relies on a sealed transfer utilising dry-break couplings.

The result was a completely enclosed and automated handling, transfer and storage system which eliminates the risk of exposure to the company's production staff under normal operating conditions.

### **New opportunities**

By extending the use of its new containers - 25L, 200L Closed Drums systems and 1000L Closed IBC to its customers' sites, Lansdowne was able to market the improved safe delivery and handling capability of its product in eliminating the potential risk of exposure to customers.

The system now allows Lansdowne Chemicals' customers to extract and dispense Hydrazine Hydrate without having to rely on PPE. Another advantage is the fact that the 'bespoke' containers supplied to their customers cannot be tampered with, or opened without the specialised tool. Also, the containers are required to be returned back to the company for refilling-thereby also limiting potential exposure and reducing waste.

By introducing these collective improvements Lansdowne Chemicals believe they have a significant commercial advantage in the European specialist chemical market.

### **The Benefits**

- Lansdowne Chemicals have shown genuine commitment to their Responsible Care Programme, and Product Stewardship responsibilities.
- Near total containment of Hydrazine Hydrate at the Lansdowne Chemicals site has dramatically reduced exposure risks. Furthermore, since Hydrazine is a carcinogen, customers are now enquiring about the closed drum system.
- Investment in an automated dilution system, enables the company to maintain employee numbers whilst increasing the production capacity of the facility by 5-fold.
- Unlike their EU competitors, Lansdowne is now able to offer bespoke dilutions or just in time deliveries, enabling their customers to reduce the risks associated with storing large quantities of hazardous substances.
- The completely enclosed and automated system reduces environmental risks from spillages, and as the 'bespoke' containers have to be recycled this has the advantage of reducing waste.
- Lansdowne's unique closed drum system and investment in a state of the art plant coupled with their extensive knowledge in handling the product has provided a solid marketing platform

### **Key Points**

- Recognition of potential for exposure and consequences of handling a known carcinogen.
- Regulatory assurance and fully inclusive partnership enabling development of an innovative solution.
- Investment in a 'bespoke' engineering design using UK talent and expertise.
- Near total containment reducing potential exposure
- Excellent example of a business taking responsibility - improving safety and improving competitiveness.