STEWARDSHIP AWARD 1999

IROTEC LABORATORIES

Irotec Laboratories were the first winners of the Solvent Stewardship Award, which has been developed by ESIG to promote and share best practice in the use of solvents. This in-depth case study demonstrates how Irotec has made significant steps in managing their solvents. The various practices they have employed will assist other solvent using companies to comply with the requirements of the Solvent Emissions Directive.

Background

Established in 1992, and recently acquired by Cambrex Corporation, Ireland-based Irotec Laboratories (ISO9002 accredited) specialises in the production of bulk pharmaceuticals and active ingredients for the pharmaceutical industry. Their state-of-the-art facilities enable the company to develop safe, efficient and environment friendly processes for transfer to their pilot and multi-purpose production plants. Solvents are used throughout their processes; in purification, as reaction mediums, in crystallisation, in phase separation and for cleaning where multi-product equipment is used. The combination of both the expansion of the company and the increasing legislation had indicated to site management, the requirement for new methods for managing their solvent use. Two key areas were identified, solvent storage and the abatement of solvent emissions.

Solvent Storage

The original tank farm had stored relatively small quantities of solvents, as only a few products were being manufactured on the site. However, the expansion of the production facilities for the manufacture of 25-30 different products, resulted in a significant increase in both the number of solvents and drums (>800 per month) being used. Site management identified a need to minimise drum handling, storage, sampling, washing and disposal, and the number of split loads arriving by tanker.In 1997, Irotec added four modern 40m^3 tanks, three to store virgin solvents (e.g. acetone, ethyl acetate and toluene) and one for solvent waste. The installation of the new tanks has enabled solvents, previously stored in drums, to be added directly from the tanks into the reaction vessels, thereby reducing solvent handling and occupational exposure for operators, and reducing fugitive emissions. The use of monitoring equipment on the tanks (e.g. low level alarms), also ensures better material management. The inclusion of a tank for waste has enabled a significant improvement in waste segregation. The decrease in the number of drums used per month (to about 400), has allowed space to be freed up in the site's drumstores, enabling the introduction of a strict policy of drum segregation based on the primary hazard (flammable, toxic and corrosive) for both virgin and waste material. Other measures incorporated at the same time as the new tanks to improve safety, were the addition of a loading gantry for waste solvent, and a sampling gantry for virgin solvent. The introduction of these changes were made over a 1.5 year period using an outside engineering company, with an investment of about £300,000 (Irish). The investment has continued since the award was made in early 1999, with an expansion of one of their older tanks to meet their increasing demand for solvents. In addition six new similar tanks were installed to service a new production building brought on-line in 1999.

Abatement of Solvent Emissions

Prior to the upgrade of the tank area, solvent vapour from the manufacturing plants and the tank area was collected and fed to a simple water scrubber. The new abatement system comprises a new vent collection header system, a water based scrubber system, a thermal oxidiser and a single discharge point fitted with VOC monitoring equipment.