



Green & Clean

An overview of the environmental legislation affecting cleaning solvents

Introduction

There is increasing pressure to consider the safety of workers and the impact of its actions on the environment. In recent years, several new pieces of legislation have come into force, with more being introduced.

As a company that has a strong emphasis on the environment, as well as occupational health and safety, 3M works closely with its customers to help address new rules and regulations, including chemicals used for cleaning and finishing.

For instance, 3M has introduced a range of Novec hydro-fluoro ethers (HFEs), which provide an excellent performance compared to more traditional cleaning fluids, lower cost of ownership and fall outside the scope of most legislation described here.

This document aims to give users an overview of the main legislation that may affect their use of chemical solvents.

1 Solvents Emissions Directive

The European Union Solvents Emission Directive (SED) places restrictions on the “loss of solvent to atmosphere”, especially solvents that are classified as having ‘CMR’ potential. CMR stands for ‘carcinogenic, mutagenic or toxic to reproduction’. Solvents classed as CMRs include trichloroethylene (more commonly known as Trike) and n-Propyl Bromide (nPB), both of which have traditionally been used in cleaning applications.

What’s the timeframe?

The SED became mandatory on 31st October 2007.

What’s the impact?

In the UK, the SED is administrated by the Health& Safety Executive, which has not placed an outright ban on CMR-classed solvents, but instead, uses the ‘Risk Phases’ defined in the directive as its guide. Basically, if less than one tonne of CMR solvents are used by a company per annum, then that solvent is exempt from SED regulation. However, many companies will exceed that amount and it can be hard to predict volume of use in advance, so solvent purchasers need to look at alternatives. Substitution of CMRs in the shortest possible time is a requirement of the SED.

What’s the solution?

Instead of using traditional solvents, more companies are turning to hydro-fluoro ethers (HFEs), which are not rated as CMRs, and have comparatively low toxicity, so they are not affected by the CMR regulations within the SED. Novec HFEs are also ‘non ozone depleting’

2 F Gas Regulations

These are officially known as the F-Gas Regulations No 842/2006 and are an EU-level directive. The aim of these regulations is to reduce the emission of fluorinated greenhouse gasses. HFC-based cleaning solvents are affected by these regulations. In addition, the F-Gas Regulations stipulate that solvents affected by the F-Gas Regulations are re-captured (in other words, not allowed to evaporate into the atmosphere) for recycling reclamation or destruction.

What’s the timescale?

On 4th July 2009, companies will not be allowed to use greenhouse gasses affected by the Regulations unless they have certified operators in place. Suppliers will also need to ensure that products are labelled clearly as greenhouse gasses.



What's the impact?

From 4th July 2008, companies need to start putting in place strategies to ensure that they comply with the F-Gas Regulations. This includes having qualified staff who are allowed to handle greenhouse gasses identified by these regulations – and everything needs to be in place by July 4th 2009, so the amount of work is not inconsiderable. Chemicals affected with which users will be most familiar are HFC-4310mee and HFC-365mfc, both of which are listed in Annex 1 of the regulations.

What's the solution?

If companies do not want the cost and effort of ensuring that they have qualified operators on-site, or the expense of investing in vapour recovery systems, then they should consider HFEs. Once again, HFEs escape the legislation, because they have lower global warming potential. According to figures from the Intergovernmental Panel on Climate Change (IPCC), HFE-7200, a solvent developed by 3M, has 55 GWP (Global Warming Potential) compared to 1500 for HFC-4310mee, as stated in the F-Gas Regulations.

3 HCFC-141B

This is an outright ban on this solvent, popular for cleaning in aerospace applications. It is one of the outcomes of the Montreal Protocol, seeking to eliminate use of all HCFCs & other ozone depleting substances.

What's the timescale?

The ban comes into effect on 31st December 2008.

What's the impact?

Companies cannot continue to use HCFC-141B at all from the end of 2008, so they must find an alternative and there's not much time left in which to research the market, evaluate suppliers and test performance of available products.

For companies who have not already got replacement plans in place, there is not much time left to devise a strategy, approach suppliers and test the performance of available products.

What's the solution?

HFEs provide a simple alternative, because they are rated as non-ozone depleting and are therefore outside the scope of the ban. In cleaning applications, they are commonly used as part of a co-solvent process (for instance, using a HFE rinsing agent and a solvating agent to clean thoroughly but without risk of damage to delicate components).

4 REACH

REACH stands for the Registration, Evaluation, Authorisation and Restriction of Chemicals) and requires all companies manufacturing or importing substantial amounts of chemicals to register them on one central database. REACH gives the chemicals industry greater responsibility for managing the risk to humans and the environment and to provide safety information across the supply chain. The regulation also calls for a switch from some of the most dangerous chemicals to safer alternatives where they exist.

What's the timescale?

REACH came mandatory from June 1st 2007

What's the impact?

As far as users are concerned, it makes sense to check the REACH status of their current suppliers. Quite considerable resources are required to meet REACH rules, so larger organisations may find it easier than small organisations. It is also important to understand that it is not just the chemical that must be registered, but the intended application too. Substances of Very High Concern (SVHCs) include CMRs and face more stringent requirements within a shorter timescale, as do products considered to have 'high aggregate usage' (in other words, used in considerable volumes).

So, for instance, CMRs must be replaced within three and half years of the REACH directive start date. Pre-registered solvents used in volumes of 1-100 tonnes per year have a grace of 11 years, whereas tonnages of 100-1000 per year have just six years.

What's the solution?

This is not a question of choosing one particular product over another, but making sure to ask all chemicals suppliers what their current REACH status is, and how sure they are of meeting its requirements. All existing 3M products and applications are being pre-registered and further details are available from the company (see contact details below).



5 RoHS

The RoHS Directive stands for “the restriction of the use of certain hazardous substances in electrical and electronic equipment”. This Directive bans the placing on the EU market of new electrical and electronic equipment containing more than agreed levels of lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) flame retardants.

What’s the timeframe?

The RoHS Directive was transposed into UK legislation by means of the RoHS Regulations 2006(SI 2006/1463). These have recently been revoked and replaced by new RoHS Regulations (SI 2008/37), which came into force on 1st February 2008.

What’s the impact?

Producers and importers into the European Union are responsible for ensuring that their products comply with the regulations and that they maintain evidence of that compliance for inspection by the enforcement authority.

What’s the solution?

Clear rules and guidance are available by visiting www.rohs.gov.uk. Another useful link is <http://www.berr.gov.uk/files/file46862.pdf>. For instance, there is a ‘decision tree’ that enables viewers to ascertain what might be affected by the RoHS Directive.

Further information

To find out more about 3M products and how they comply with the legislation and directives listed, please visit www.3m.com/novec or contact 0870 6094639 (if within the Republic of Ireland, please call +353 1 2803555)

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Electronic Products Group

3M United Kingdom PLC

Hudson Road
Bedford MK41 0HR
Tel: 0870 609 4639

3M Ireland

3M House, Adelphi Centre
Co. Dublin, Ireland
Tel: 0870 609 4639