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HSE Horizon Scanning Intelligence Group Short Report

Impact of environmental & other legislation on workplace H & S

1. Issue

Status: Active Monitoring

In general, when dealing with the environmental impact of substances of high concern the tendency has been to focus on specific chemicals, with a view to banning their use or replacing them with more environmentally friendly alternatives. Increasingly, the approach at the EU level is to adopt a more holistic approach when developing new environmental and H&S legislation, breaking down the perceived barriers between these areas. REACH and other legislation[1] will act as a key driver of change, affecting the choice of materials and/or processes used in future in a wide range of industries. This legislation is aimed at both environmental and human health protection and as such its effects are expected to be generally benign. However, it would appear that there are instances where the new regulations and directives have the potential to *adversely* affect health and safety in the workplace and that this may warrant more detailed consideration within HSE.

2. Relevance to Occupational Health & Safety

2.1 Waste Management and Recycling - Directives on ***Hazardous Waste***, ***Landfill***, ***Packaging***, ***End-of-Life Vehicles, Waste Electrical and Electronic Equipment (WEEE)*** etc. are expected to drive a significant expansion in waste collection and recycling activities. It is estimated for example that up to 45,000 new jobs will need to be created in this sector to enable the government to meet its target of recycling 30% of municipal waste by 2010. Given that the industry already has higher than average incident and fatality rates, any such growth in the workforce or recycling activities may be expected to give rise to increasing accident statistics. Similarly, increased exposure to existing and new biohazards and toxic materials from the handling, sorting and dismantling of various types of waste is likely.[2]

2.2 The Electronics Industry - The ***Restriction of Hazardous Substances (RoHS)*** and ***WEEE*** regulations will have a major impact on the Electronics industry. The RoHS Directive restricts the use of materials such as lead, mercury, cadmium, chromium and certain polymers, notably polybrominated fire retardants, while the WEEE Regulations promote re-use, recovery and recycling of components. An example where the RoHS Directive has the potential for adversely affecting worker health & safety is in the introduction of lead-free solder. Although replacing the lead in solder by other materials is clearly beneficial to the environment, the alternatives tend to need higher working temperatures and an increase in the quantity of rosin added to the flux in the solder. As “rosin-based solder fumes are one of the most important causes of occupational asthma in Britain”,[3] an increase in usage of such material must be of concern.

2.3 The Chemical Industry - Substitution of Chemicals of High Concern - The ***REACH*** regulations have been described as the “most significant development in EU legislation in 20 years” and are predicted to come into force from the Spring of 2007

[1] See EA “netregs” site at: http://www.netregs.gov.uk/netregs/legislation/?lang=_e&region=
[2] HSIG Short Report on Recycling, SR002, October 2006
[3] Institution of Engineering and Technology: http://www.iee.org/Policy/Areas/Health/hsb16.cfm

onwards. The legislation provides a broad framework aimed at reducing risks to both the environment and workers but there is no guarantee that alternative, more environmentally-friendly chemicals, which may in future replace existing chemicals of high concern, will not have an adverse effect on workplace health & safety. An example of this is the withdrawal of PFOS (PerFluoroOctaneSulphonate), the use of which is to be banned in consumer goods on environmental grounds. PFOS performs a beneficial function in industrial chrome plating operations, as a mist suppressant to protect workers from exposure to highly carcinogenic hexavalent chromium and a derogation has been necessary to enable its continued use in this application as a means of worker protection.

The recently introduced ***Solvent Emissions Regulations*** are intended to limit the emission of "high VOC" solvents such as certain hydrocarbons, ketones, alcohols and the like into the environment. These solvents find wide application in the manufacture of paints, pharmaceuticals, polymers and adhesives etc. and industries as diverse as printing and agriculture. Options for the substitution of high VOC solvents, which include waterborne formulations, high boiling or ionic solvents, super-critical fluids or radiation-curable systems, may present their own H&S issues, e.g.:

- u-v curable products tend to be based on acrylics, which can cause problems by inhalation
- aqueous systems are prone to bacterial growth, requiring the use of biocides, which may be linked to dermatitis & asthma
- high boiling solvents can give rise to liver & kidney problems via skin absorption.

Another emerging area, for which environmental legislation is a key driver, is "Green Chemistry", where the aim again is to "reduce or eliminate the use and generation of hazardous substances".[4] A basic intention here is to convert biomass (derived e.g. from waste or non-food crops) into a wide variety of chemical products and intermediates. Once again, although the materials involved here may well be more environmentally friendly than those derived from conventional, oil-based feedstocks, they may still have significant workplace risks associated with their large-scale use.

3. Implications

The potential for developing legislation (largely EU and environmentally driven) to impact on workplace health & safety would appear to be an emerging, cross-cutting theme. Directives aimed at tackling environmental and human health protection issues in a more holistic way could have far-reaching effects on a diverse range of industrial processes and are likely to require new or modified guidance and control measures to be developed. In particular, there are concerns that the substitution of substances of high concern by more environmentally friendly alternatives may in some cases give rise to new hazards and adverse occupational health effects.

4. Recommendations

The potential impacts on workplace health & safety of some specific new or expanding technologies and materials as noted above, are clearly in some cases, already appreciated within HSE. However, given the breadth and rapid rate of expansion in the field, it is suggested that continued, proactive monitoring of the wide range of existing and new legislation and its potential to give rise to new workplace risks, is warranted. There is a need to ensure that the findings from such studies are brought to the attention of policy makers in an effective manner, to enable appropriate action to be considered.

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[4] INCA: http://venus.unive.it/inca/research/green_chemistry/index.php