

Advisory Committee on Toxic Substances Paper		ACTS/20/2005	
Meeting date:	30 June 2005	Open Govt. Status:	Fully open
Type of paper:	Above the line	Paper No:	ACTS/20/2005
Exemptions:	None		

ADVISORY COMMITTEE ON TOXIC SUBSTANCES

Update on HSE's review of Workplace Exposure Limits (WEL)

A Paper by Teresa Quinn

Cleared by Steve Coldrick on 26 May 2005

Issue

1. Update on HSE's review of the 15 WELs (plus flour dust) identified for review as part of HSC/E's work on the new Occupational Exposure Limit (OEL) framework.

Timing

2. Routine.

Recommendation

3. That ACTS agrees the recommendations for taking forward the work on the 16 WELs as set out in the Annex and in summary in para 10 below.

Background

4. In October 2003, HSC published proposals to introduce a new OEL framework. The proposals shift emphasis from setting specific limits only towards good practice on controlling exposures underpinned by a single type of OEL, the Workplace Exposure Limit (WEL), which should not be exceeded. In addition, for carcinogens and sensitisers, exposure should be controlled as low as reasonably practicable (ALARP). The new OEL framework was agreed by ACTS on 8 July 2004 (ACTS/20/2004)¹ and came into force on 6 April 2005.
5. During the development of the new OEL framework, HSC/E gave a commitment to ACTS to review 15 Maximum Exposure Limits (MELs) (now WELs). ACTS had concluded that, with improvements in control technology, it should be reasonably practicable to control many of these substances to a lower value. In the Consultative Document (CD189), it was proposed and later agreed that these be taken forward into

¹ Further background information on the new OEL framework is available in ACTS/27/1998, ACTS/36/2001, ACTS/43/2002, ACTS/24/2003 & ACTS/04/2004.

the new system as WELs but be flagged as needing review to determine the appropriateness of the limit values.

6. In addition, following consideration of a paper on the review of the WEL and STEL (short term exposure limit) for flour dust in March 2004 (ACTS/05/2004), HSE gave a commitment to consider further the WEL for flour dust established in 2001. Further background information on this is available in ACTS/32/2000 and HSC/01/13.

Argument

7. Reducing exposures to hazardous substances is a fundamental objective of the Disease Reduction Programme (DRP). It is one of the key programmes in contributing to HSC/E's Strategy and in reducing occupational ill health by 6% by 2007/08. The purpose of the DRP is to enable HSE to better prioritise and better target its resource for action on those substances/work processes/industries of greatest concern.
8. In early 2004, HSE carried out a preliminary assessment of the original 15 WELs. This identified: the key health effects on which the original MEL was set; an indication of EU activity; information on exposures; and recommended prioritisation. Since carrying out the preliminary assessment, we have further reviewed this work in the light of the DRP and of ongoing activities in GB and/or in Europe.
9. In carrying out this review, we considered whether:
 - there was work in hand or whether work was completed;
 - the review of the limit value should be considered in the context of wider concerns for that substance, eg in a project under the Disease Reduction Programme;
 - we should wait the outcome of activities in Europe in setting a limit value and/or reviewing a substance under the Existing Substance Regulations;
 - carrying forward a review in GB would duplicate work in Europe; and
 - there were possible political sensitivities in taking forward work ahead of European action.
10. The attached table contains an analysis of our considerations and makes recommendations under three headings: work completed or work in hand; WELs within the scope of the DRP; and other actions. In summary, it recommends:

Work completed or work in hand

- MMMFs – no further action. WEL for Refractory Ceramic Fibres (RCFs) is in place. EH64 amended.
- Carbon disulphide and 2-ethoxyethanol – no action ahead of an EC proposed limit.

WELs within the scope of the Disease Reduction Programme

- Acrylonitrile, Arsenic, Buta-1,3-diene, Formaldehyde, Trichloroethylene – take forward as part of the prioritisation exercise under the Cancer Project. In the case of Formaldehyde, also await the outcome of the EC's Scientific Committee on Occupational Exposure Limits (SCOEL) deliberations.
- Rubber process dust and Wood dusts – the Project Leader of the Cancer Project to consider the value of reviewing these WELs to feed into the prioritisation exercise.
- Flour dust, Isocyanates, Silica and Wood dusts (soft and hard) – continue planned work in the context of the Respiratory Project under the DRP.

Other actions

- Dichloromethane (DCM) and Styrene – await an EC proposed limit but in the meantime discuss voluntary action with the relevant industries.

Link to HSC Strategy

11. The Disease Reduction Programme (DRP) is one of the key programmes in contributing to HSC/E's wider FIT3 Programme (Fit for work, Fit for life, Fit for tomorrow) which seeks to reduce occupational ill health by 6% by 2007/08. Therefore, if agreed, those substances that are carcinogens and sensitisers will be considered in the wider context of the DRP. In the case of the carcinogenic substances, the benchmarking exercise² under the Cancer project will help us to develop our knowledge about their use and control. We should then be better informed to prioritise and develop the most effective interventions in contributing to reducing occupational ill health.


Communication Plan

12. This paper and agreed action will be placed on the ACTS website and we will write to key stakeholders.

Evaluation Plan

13. Those WELs which will be considered as part of the DRP will be evaluated in progress reports on specific projects.

Consultation

14. There has been wide consultation within HSE, including toxicologists, occupational hygienists and the DRP Project Leaders in developing these recommendations for reviewing the 16 WELs. We would now welcome ACTS comments. 

² The benchmarking exercise will provide HSE with an evidence base. It includes a review of the burden of cancer epidemiology, exposure patterns, control mechanisms and information on potency of carcinogens.

Costs and Benefits

15. Not applicable. See para 16 below.

Financial/Resource Implications for HSE

16. Reviewing limits is very resource intensive and so these proposals focus on making the best use of HSE's resource in reducing occupational ill health from exposure to hazardous substances.

Environmental implications

17. None.

European implications

18. For seven of the 16 WELs, the EC's Scientific Committee on Occupational Exposure Limits (SCOEL) has reviewed or is in the process of reviewing the limit values. For these substances, we are recommending that we should await the EC proposal before taking action. In some cases, this is to avoid the possibility of further reviewing the limit value within a few years of establishing a new GB limit; particularly if the EC limit is significantly different from the GB limit.

Other implications

19. None.

Action

20. ACTS are invited to consider and comment on HSE's recommendations for taking forward the review of the 16 WELs.

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Table of 16 WELs (including Flour Dust)

Work completed or work in hand		
Substance	Issues/Activities considered	Recommendations
Carbon disulphide <i>UK limit 10ppm, 32mg.m⁻³ 8-hour (hr) time weighted average (TWA) Sk</i>	The European Commission's (EC) Scientific Committee on Occupational Exposure Limits (SCOEL) has recommended a health-based limit of 5ppm (8-hr TWA) and it is on a list of candidate substances for 3 rd Indicative Occupational Exposure Limit Value (IOELV) Directive.	Await confirmation that SCOEL's recommended limit will be carried forward into the proposed 3 rd IOELV Directive (likely end 2005) and then start work on gathering information for the RIA. Action – await EC proposal
2-ethoxyethanol <i>UK limit 10ppm 37mg.m⁻³ 8-hr TWA Sk</i>	Discussions ongoing in SCOEL and although there is no agreed recommended limit the latest SCOEL SUM suggests a limit value of 5ppm and notes that a biological limit would be needed. It is on the list of candidate substances for 3 rd IOELV Directive.	As SCOEL activities are still on-going we should delay any action. If it appears on the proposed 3 rd IOELV Directive then work will start on gathering information for the RIA. Action – await EC proposal.
MMMFs <i>UK limit 5mg.m⁻³ 8-hr TWA</i>	New WEL for RCFs (1fibre/ml, 8-hr TWA). However, the mineral wools industry challenged whether there was still a need for a WEL for mineral wools – industry have been advised that there are no plans to look at this ahead of work in Europe. EH64 amended to remove references to carcinogenicity and clarify that this EH64 did not apply to RCFs. Ongoing review by SCOEL.	HSE has fulfilled its commitment to amend EH64 and other HSE documents to address industry concerns. No need for action at this time ahead of a European Commission (EC) proposal. If a proposed limit appears on the 3 rd IOELV Directive information on uses, controls, etc will be needed for an RIA. Action – await EC proposal

WELS within the scope of the Disease Reduction Programme (DRP)		
Substance	Issues/Activities considered	Recommendations
Acrylonitrile <i>UK limit</i> $2\text{ppm } 4.4\text{mg.m}^{-3}$ 8-hr TWA Sk (Carcinogen)	Identified within the Cancer project under the DRP. Being profiled as part of a benchmarking exercise to review potency, usage, exposure, control methods, etc in order to identify priorities for action beyond 2006. Exposures appear to be well controlled and the principles of good practice and ALARP under the new OEL framework apply.	It would be difficult to divert resource in reviewing this WEL at this time if exposures are well controlled. Action – take forward as part of benchmarking exercise under DRP Cancer project to determine further action.
Arsenic <i>UK limit</i> 0.1mg^{-3} 8-hr TWA (Carcinogen)	Identified within the Cancer project under the DRP. Being profiled as part of a benchmarking exercise to review potency, usage, exposure, control methods, etc in order to identify priorities for action beyond 2006. Reductions in occupational exposure as a result of restrictions on use. Expert Panel on Air Quality Standards (EPAQS) is reviewing arsenic later this year with a view to setting an air quality standard for the general public. The principles of good practice and ALARP under the new OEL framework apply.	It would be very resource intensive for HSE to review because we have no up-to-date position on the toxicology. Action – take forward as part of the benchmarking exercise under DRP Cancer project to determine further action, if possible taking into account the work of EPAQS.
Buta-1,3-diene <i>UK limit 10ppm,</i> 22mg.m^{-3} 8-hr TWA (Carcinogen)	Identified within the Cancer project under the DRP. Being profiled as part of a benchmarking exercise to review potency, usage, exposure, control methods, etc in order to identify priorities for action beyond 2006. ESR report concluded that occupational exposure rarely exceeds 5ppm. The principles of good practice and ALARP under the new OEL framework apply. SCOEL also considering quantitative risk assessment (QRA).	Proceed with reviewing this substance in the context of the benchmarking exercise. Action – take forward as part of the benchmarking exercise under DRP Cancer project to determine further action.

<p>Flour dust <i>UK limit</i> 10mg.m^{-3} 8-hr TWA Sen</p> <p>(Asthmagen)</p>	<p>An ACTS working group has been set up to develop a strategy for improving compliance with the WEL and to review the WEL and STEL. The work of this group focuses on working with partners to improve control of flour dust (and control of exposure to amylase dust) across the piece.</p> <p>Due to other priorities under the Disease Reduction Programme (DRP) this group has not met since March 2004. However, this work is now being taken forward as a matter of urgency.</p>	<p>The priority at this stage is to progress the action plan for implementing compliance with the existing WEL in working closely with the industry and then to consider the contribution of revising the WEL.</p> <p>Action – to progress as planned under the DRP and to report back to ACTS with an evaluation at the end of the 2-year life of the working group.</p>
<p>Formaldehyde <i>UK limit</i> 2ppm 2.5mg.m^{-3} 8-hr TWA 2ppm 2.5mg.m^{-3} short-term exposure limit (STEL)</p> <p>(Carcinogen)</p>	<p>Identified within the Cancer project under the DRP. Being profiled as part of a benchmarking exercise to review potency, usage, exposure, control methods, etc in order to identify priorities for action beyond 2006.</p> <p>WATCH has considered the question of carcinogenicity and agreed that it is a carcinogen but the incidence is about 1 case per year. It is also being considered by SCOEL – latest SCOEL/SUM recommends 0.2ppm (8-hr TWA), 0.4ppm (STEL). There is a possibility that this could also appear in the 3rd IOELV Directive.</p>	<p>WATCH's deliberations, data presented for EU reclassification and data considered by SCOEL could feed into the Cancer project benchmarking exercise.</p> <p>If a proposed limit appears on the 3rd IOELV Directive information on uses, controls, etc will be needed for an RIA.</p> <p>Action – to await the outcome of SCOEL's deliberations or the outcome of the benchmarking exercise under DRP Cancer project, to determine further action, whichever comes first.</p>

<p>Isocyanates <i>UK limit</i> 0.02mg.m^{-3} <i>8-hr TWA</i> 0.07mg.m^{-3} <i>STEL</i> <i>Sen</i></p> <p>(Asthmagen)</p>	<p>Identified within the DRP Respiratory project. Significant cause of occupational asthma. The incidence of occupational asthma attributed to isocyanates has not fallen since 1980s.</p> <p>Hence, it is a high priority under the DRP and there is a major initiative to control exposure to isocyanates in one of the key sectors – motor vehicle repair body shops.</p> <p>SCOEL is also reviewing isocyanates and it is not clear at this stage whether it will be able to recommend a health-based limit. If it can, it is also unclear whether individual OELs, OELs for di and mono isocyanates, or a generic OEL for all isocyanates will be recommended.</p> <p>The principles of good practice and ALARP under the new OEL framework apply.</p>	<p>The key sectors exposed to isocyanates are small firms and micro businesses and HSE has evidence that limits are not well understood in this sector. The interventions under the Respiratory Project are tackling awareness and control in other ways.</p> <p>Action – continue work under the Respiratory Project.</p>
<p>Rubber process dust <i>UK limit</i> 6mg.m^{-3} <i>8-hr TWA</i></p> <p>(Carcinogen)</p>	<p>Identified within the Cancer project under the DRP. Being profiled as part of a benchmarking exercise to review potency, usage, exposure, control methods, etc in order to identify priorities for action beyond 2006.</p> <p>In addition, IARC has agreed to carry out a review of this process (it may take 3 years).</p> <p>The Netherlands is establishing an exposure database and this could be used to assess exposures. Information gathered in an up-to-date review of the rubber process dust limit would assist the DRP Cancer project with its prioritisation work.</p> <p>The principles of good practice and ALARP under the new OEL framework apply.</p>	<p>The value of reviewing the WEL in contributing to the benchmarking exercise should be considered under the Cancer project.</p> <p>Action –to consider the feasibility of reviewing the WEL as part of the benchmarking exercise under the Cancer project. If not possible within the timescales, then await the outcome of the benchmarking exercise to determine further action.</p>

<p>Silica UK limit 0.3mg.m^{-3} 8-hr TWA</p>	<p>Review of WEL being taken forward in the context of the Respiratory Project under the DRP.</p>	<p>Proceed with work on setting a GB limit value but to be mindful of ongoing work in the EU on a possible social partner agreement.</p> <p>Action – proceed with setting a GB WEL</p>
<p>Trichloroethylene UK limit 100ppm 550mg.m^{-3} 8-hr TWA 150ppm 820mg.m^{-3} STEL Sk. (Carcinogen)</p>	<p>Identified within the Cancer project under the DRP. Being profiled as part of a benchmarking exercise to review potency, usage, exposure, control methods, etc in order to identify priorities for action beyond 2006.</p> <p>Final stages of ESR review – overall use profile declining. Technology appropriate to ensure closed control. Possibility of a EU Marketing and Use restriction for anything other than closed systems and a recommendation for a EU OEL. Some Member States (Scandinavians) either discourage use or have restrictions in place. With good practice industry should be able to control to 20ppm. The principles of good practice and ALARP under the new OEL framework apply.</p>	<p>Action – take forward as part of the benchmarking exercise under DRP project to determine further action.</p>
<p>Wood dusts (hard and soft) UK limit 5mg.m^{-3} 8-hr TWA Sen (Carcinogen and Asthmagen)</p>	<p>Identified within the Cancer and Respiratory projects under the DRP. Under the Cancer project wood dusts are being profiled as part of a benchmarking exercise to review potency, usage, exposure, control methods, etc in order to identify priorities for action beyond 2006. Under the Respiratory project inspection-based intervention looking at controls is ongoing. Possible review of the hard wood dust limit value as part of an EC amendment to the Carcinogens Directive – no firm proposals at this time.</p>	<p>Action – progress existing work to look at controls under the DRP. In addition, to consider the feasibility of reviewing the wood dust WELs as part of the benchmarking exercise under the Cancer project. If not possible within the timescales, then await the outcome of the benchmarking exercise to determine further action.</p>

Other action		
Substance	Issues/Activities considered	Recommendations
Dichloromethane (DCM) <i>UK limit 100ppm</i> 350mg.m^{-3} <i>8-hr TWA</i> 300ppm 1060mg.m^{-3} STEL Sk	<p>Possible EC Marketing and Use restriction for use in paint strippers – exposure data may be available as part of this work.</p> <p>EC commissioning IOM to prepare a draft SCOEL document for SCOEL to consider – due early 2006. EH64 updated in 2002.</p> <p>Widespread use and is difficult to control and so easy to exceed the WEL.</p> <p>ALARP no longer applies under the new OEL framework, however the principles of good practice apply.</p>	<p>If we commit resource to review the GB WEL ahead of a SCOEL recommendation and SCOEL recommend a different limit, the GB WEL may have to be reviewed again within 2-3 years. Ahead of revising the WEL, HSE could approach the main DCM manufacturers to discuss the options for reducing exposures to DCM. Vapour retardant products have been developed by industry.</p> <p>Action – await SCOEL deliberations but in the meantime discuss voluntary action with the industry.</p>
Styrene <i>UK limit 100ppm</i> 430mg.m^{-3} <i>8-hr TWA</i> 250ppm 1080mg.m^{-3} STEL	<p>Currently being reviewed under ESR. UK updating exposure assessment as part of ESR review. identified for review by SCOEL (new on priority list) – no timetable.</p> <p>Styrene boat manufacturers have expressed concern about complying with a lower limit suggesting that a much lower WEL will lead to major problems for industry. The British Marine Federation (BMF) has raised concerns about a lower limit with the Cabinet Office's, Business Regulation Team. DoH's Committees considering mutagenicity and carcinogenicity data and its toxicology is under discussion in Europe.</p> <p>ALARP no longer applies under the new OEL framework, however the principles of good practice apply.</p>	<p>In the light of the possible political sensitivities of proceeding ahead of an EC limit value, the industry should be approached to discuss working in partnership to provide good practice guidance for the boat manufacturing industry and other industries, if necessary.</p> <p>Action – await SCOEL deliberations but in the meantime discuss good practice guidance with the industry.</p>