

Health and Safety Executive Board			HSE/10/94
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Delivering for health: HSE action on occupational respiratory diseases

Purpose of the paper

1. To update the Board on progress since March 2010 in delivering the priorities on tackling respiratory disease risks arising from exposure to hazardous substances etc, as set out in the paper presented in March *Delivering for health – a future work plan in response to HSE’s healthier workplaces strategic goal* (HSE/10/34).
2. To draw the Board’s attention to the advice of the Advisory Committee on Toxic Substances (ACTS) on this issue.

Background

HSE activities on causes of occupational respiratory disease

3. Estimates suggest that at least 12,000 people die each year because of past exposure to hazardous substances during the course of their work. The largest cause – more than 4,000 deaths – is asbestos, which is subject to a specific programme of action and not covered in this paper. The remaining 8000+ deaths per annum are due to exposure to a wide range of hazardous substances resulting in cancers, COPD and other serious lung diseases. Although these numbers are a result of past exposure, evidence indicates that workers are still being exposed today and are therefore still at risk. We continue to monitor mortality data; data up to 2000 suggests reassuring improvements in most of the risks studied; the exceptions were asbestos-related disease and nasal cancer in wood working occupations.
4. In March, the Board highlighted the importance of gaining industry support in tackling this occupational disease challenge, and discussed the principle of a best-mix approach, incorporating initiatives developed by industry with support from HSE, as well as inspection and enforcement activities. These activities are aimed at influencing at-risk groups to change behaviours in ways that reduce exposures. The Board agreed that HSE should focus its resources on sensibly targeted, pragmatic and limited interventions in areas where the risks are higher and where there is a reasonable prospect of success. Paper HSE/10/34 suggested priority activities as below:

Industry/sector group	Key activities	At risk population
Construction workers – tasks involving exposure to silica/other harmful substances	Kerb/paving/block-cutting, stonemasonry, stone floor laying, tunnelling, demolition, chasing out/repointing.	90,000 general kerbcutting operatives, 30,000 road construction workers. Almost 50% of occupational cancer deaths are amongst

		construction workers. Over 600 annual lung cancer deaths in construction workers due to silica exposure. 8000 workers with breathing difficulty or disorder.
Foundry workers	Those associated with generation of dusts and fumes, and others due to materials used, or created by the processes	Estimated 22,500 workers may potentially be exposed to nickel compounds, silica and other substances presenting risk of cancers, silicosis
Engineering - welding	Arc, oxy-acetylene, resistance welding.	79,000 workers exposed to welding fume – ongoing work to identify numbers involved in higher risk activities.
Quarry workers	Mining of high-silica stone. Sand pits, clay pits. Blasting, breaking, crushing and screening.	Around 88,000 employees mainly in major companies but number of SMEs, with around 35,000 with potential for silica exposure.
Stoneworkers	Work in fixed premises, work on high silica , cutting, grinding, chiselling	Approx 8000 stoneworkers, a large percentage of whom are potentially exposed to silica above WEL
Building and maintenance activities presenting asbestos exposure risk	Tradesmen – e.g., plumbers, electricians, joiners, carpenters	1.8 million employed in relevant trades. At least 500,000 commercial premises contain asbestos. Around 1000 asbestos deaths/year amongst building maintenance trades.

- Other sectors/activities presenting significant risks of occupational disease include agriculture, woodworking, bakeries and the motor vehicle paint-spraying industries.
- Cross-HSE activity has been targeted at specific industries and activities, because either there is a large population potentially exposed, or there is evidence of high levels of exposure. Paragraphs 9 to 16 below contain further detail of HSE’s activities. Over the last six months, HSE has been developing a sector-based approach for its future work, as part of the wider health and safety system, to deliver the Board’s Strategy. This aims for a more coordinated and integrated cross-HSE approach to agreeing priorities and deploying resource on significant health and safety issues. This will of course be informed by the Board’s review for Ministers of HSE’s approach to workplace health and safety, in the light of SR10 and Lord Young’s Report *Common Sense Common safety*.

ACTS’ perspective and advice on ‘dust’

- ACTS members have acknowledged that HSE is tackling the issue of respiratory health in a number of priority areas, but are concerned that exposure to respiratory hazards in the workplace more generally requires attention. See paragraphs 19-24, and the Annex for more detail.

Argument

HSE activities on respiratory disease risks

Targeted Partnerships in Five Key Areas

8. The key to sustained reduction in exposure in the course of work activities is achieving behavioural change. Using our criteria and available evidence, we are working with key partners in sectors/activities with an identified higher risk of exposure. These are construction, foundries, welding, quarries and stone working – activities, which present significant risk of exposure to known harmful substances such as silica and carcinogenic chemicals. In each area, industry representatives are steering the development and delivery of targeted initiatives to raise awareness of the risk, and to change behaviours, leading to reduced exposure, with input from HSE. The timing of outputs/outcomes from these partnerships is to a significant degree in the hands of the stakeholders, who include employers, employee groups, training organisations, trade associations, trade unions, contractors, suppliers, charities and others with the capacity and influence to drive change.
9. The work to set up the partnership teams comprising the right people and to gain their commitment to take action on the issue has been successfully delivered over the last 12 months. This has resulted in influential individuals from businesses and other organisations committing to work together and contribute to making improvements happen.
10. The continuing commitment of the partners will be vital in ensuring the success of the initiatives in these key high-risk areas. It is even more important that we support external organisations to “be part of the solution” now we are operating in a time of significantly reduced public funding. This approach also fits well with the coalition government’s preference for seeking improvements using non-regulatory means.
11. As part of HSE’s contribution to this work, research was commissioned into the attitudes and behaviours of workers regarding respiratory risks. This insight will help the partnership teams to identify key issues, highlight similarities and differences in sectors and assist them in developing appropriate solutions. In addition, the groups can draw on a number of HSL research reports commissioned over recent years (see this web page for links to some of the key ones: <http://www.sro.hse.gov.uk/PublicPages/SearchResults.aspx?query=dust>)
12. In addition, HSE proposes to develop educational training packages, for delivery through vocational courses, in a number of occupations where respiratory disease risks are higher – stoneworking, welding and motor vehicle repair. Stakeholders in these sectors have indicated that intervening at this formal ‘pre-employment’ stage is an important step to changing attitudes and behaviours in future.
13. Stakeholder initiatives are starting to be delivered. For example, The Welding Institute is producing an updated DVD training product, and The Association of Welding Distributors ran information events for welders in November. In quarrying, a major company is developing a video case study on a real life case of silica exposure and running a series of events for workers on the risks of exposure to silica.
14. Commonly used means of controlling airborne exposures are local exhaust ventilation (LEV) and respiratory protective equipment (RPE), albeit that the latter

is very much a last resort. Evidence gathered over recent years indicates that both are often poorly implemented in practice. HSE has therefore joined with businesses and other organisations to identify how to bring about better understanding of the basics about LEV and RPE e.g. how to check LEV works properly and the importance of face-fitting RPE. This should help dutyholders, particularly SMEs, to improve their control regimes, by simplifying topics that many find complex and difficult to understand. It could also reduce costs to business, in that they will facilitate effective compliance without needing to rely on potentially expensive health and safety consultants for support. The RPE initiative is still in its early stages, but has delivered research into the behavioural factors influencing RPE use, which will support the development of specific outputs. The LEV initiative has delivered a new suite of targeted guidance material, a website and a programme of inspector training, which has led to significantly increased enforcement action against poor performers.

15. HSE is currently working with stakeholders to review and update its guidance on health surveillance (HS) for respiratory disease. The aim is to provide practical advice on what constitutes cost-effective HS, where it is necessary as the ultimate test of control.

Operational and Sector Activities

16. Many FOD regions are undertaking initiatives targeting specific occupational disease issues. For example, ESE region is planning a project on silica exposure in kitchen worktop manufacturers; the Midlands region will target crystal-glass manufacturers; and the East region has a project on LEV in woodworking. More generally, improving FOD's enforcement of health issues is a specific initiative proposed under the Improving Enforcement Project (Board paper HSE/10/54).
17. In Construction Division (CD), a supply chain initiative on the dangers of respirable crystalline silica in kerb, block and pave cutting has demonstrated significant success e.g. one major equipment manufacturer has launched a new cut-off saw for cutting stone and concrete featuring a novel electronic control system to optimise water supply for dust suppression. In addition, CD is developing a set of risk management standards in partnership with Constructing Better Health (the national scheme for occupational health in the construction industry). Work is also underway with HSL to get a better view of the specific construction activities that produce the highest respiratory risks.
18. There are examples of initiatives across other sectors such as the 'Healthy North West' initiative running to March next year looking at the design, installation, use and maintenance of LEV in manufacturing. It includes a specific long latency disease initiative targeting stoneworkers, welding shops, foundries, woodworking, soldering etc. Other activity includes work on exposure to flour dust (a strong cause of asthma) in bakeries, and on grain dust across all industries to identify tasks with high exposures. There is also a SLIC initiative across EU Member States on risk evaluation for SMEs using chemical substances. It targets paint spraying in MVR, exhaust fumes, used oils and solvents/adhesives.

Limited toxicity, poorly soluble dust

19. ACTS has advised over several years that HSE should consider a generic campaign aimed at raising awareness of the effects of occupational exposure to

limited toxicity, poorly soluble (sometimes previously referred to as 'nuisance') dust in the workplace. The Annex summarises the advice of ACTS and WATCH.

20. HSE's approach (as described earlier in this paper) is to focus on developing tailored solutions with stakeholders in specific industries with higher risks from exposure to respirable substances. Whilst a general awareness campaign on 'dust' might complement this more targeted activity, HSE believes it is unlikely in itself to have sufficient impact in areas where there is not specific targeted activity. With constrained resources also to take into account, HSE cannot make a case for a generic campaign at this time.
21. The COSHH Regulations definition of a hazardous substance includes dust of any type (not being a substance classified under CHIP or assigned a Workplace Exposure Limit) in concentrations of 10mgm^{-3} (inhalable) or 4mgm^{-3} (respirable) or more (both as an 8-hour time-weighted average). The Chemical Agents Directive (CAD), which COSHH partially implements, does not refer to these figures. ACTS and its Working Group on Action to Control Chemicals (WATCH) has for some time been considering how to progress the issue of dust exposure, including the appropriateness of these threshold figures. A summary of recent relevant ACTS/WATCH discussions is contained in the Annex to this paper.
22. In late 2004 HSE commissioned a study by the Institute of Occupational Medicine into coalmine dust as a benchmark for low toxicity poorly soluble dust. HSE's assessment of the findings in 2006 was that the average additional loss (over normal age-related loss) of lung function after a 40-year working life exposure to 4mgm^{-3} (respirable) was of no clinical significance or health concern for most individuals, but there was a distribution of effects with some individuals being more severely affected. Hence a moderate proportion (around 12%) of workers would develop larger losses in lung function of a magnitude that would raise concern for occupational health. In 2007 WATCH, while noting that significant effect on lung function at 4mgm^{-3} was apparent, agreed with HSE's assessment, and agreed that it was valid for a number of other poorly soluble limited toxicity dusts. WATCH presented these views to ACTS in May 2007, when ACTS also discussed a paper setting out HSE's priorities for action on respiratory disease. ACTS confirmed they were generally content with the priorities presented.
23. WATCH also considers that the evidence it has examined suggests exposure to any poorly soluble dust in the dose range for which information is available will affect lung function in a roughly linear fashion, and that it was not possible for WATCH to identify a lower threshold below which there would be no lung function decline. The literature reviewed by WATCH only considered in detail kaolin and carbon black, in addition to coalmine dust, and did not extend to assessing the numbers or types of workplaces where these and other such dusts may be found.
24. In August, TUC representatives on ACTS recommended to trade unions that they should follow a lower precautionary standard of 2.5mgm^{-3} and 1.0mgm^{-3} respectively, pending any change to the UK standard. HSE believes that the evidence suggests that only limited benefits would accrue from reducing this threshold and that it would not therefore be seeking to do this in pursuit of a long-term reduction in respiratory disease. Other EU member states apply similar levels for this type of dust.
25. HSE is not aware so far of the impact of the ACTS TUC members' action.

Action

26. That the Board;

- Notes and endorses the progress HSE is making to deliver the agreed priorities on respiratory diseases risks.
- Notes the proposal by ACTS for a generic campaign on dust, and HSE's view that this should not be pursued at this time (paras 19-20);
- Notes the action of the TUC representatives on ACTS in recommending trade unions follow an interim level for the allowable levels of dusts not assigned a specific exposure limit, and the basis for HSE's view that this should not be supported (paras 21-23).

Paper clearance

27. Cleared by SMT on 1 December 2010

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ACTS and WATCH Perspective and Advice

1. The definition of a substance hazardous to health in COSHH is:
 - a. substances listed in CHIP (Chemicals (Hazard Information and Packaging for Supply) Regulations 2009) as very toxic, toxic, harmful, corrosive or irritant;
 - b. substances assigned a WEL;
 - c. biological agents;
 - d. dust of any kind (except dust which is a substance within a) or b)), when present at or above a concentration in air of 10mgm^{-3} (inhalable) or 4mgm^{-3} (respirable) time-weighted average over 8 hours. [Such dust below these concentrations is not therefore subject to COSHH]
 - e. any substance (not falling under points a) to d)) that, because of its chemical or toxicological properties and the way it is used or is present in the workplace, creates a risk to health;
2. The levels in d. were taken from figures developed over 50 years ago by the American Conference of Government Industrial Hygienists (ACGIH), based on expert opinion, rather than any health-based criteria. The Chemical Agents Directive (CAD), which COSHH partially implements, does not refer to these figures. However, other EU member states also apply controls to low toxicity dust (sometimes referred to as 'inert' or 'biologically inert') using similar threshold figures.
3. ACTS and WATCH have previously considered evidence of harm arising from occupational exposure to various types (coal dust, kaolin and carbon black) of limited toxicity, poorly soluble dust. In summary:
 - In 2004, WATCH reported on several studies showing a decline in lung function at dust exposures below 10 and 4mgm^{-3} for inhalable and respirable respectively. These studies included exposure to coalmine dust, kaolin and carbon black. However, it was not possible in any of the studies for WATCH to identify a "threshold" level of exposure below which there would be no dust-induced decline in lung function.
[WATCH/2004/11 June 2004 – *Occupational Health Significance of Dust Induced Declines in FEV1* – <http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/100604/p11.pdf>]
 - WATCH discussions in October 2005, concluded that the targeted approach HSE was advocating for combating COPD was the most appropriate to pursue, although combining it with a broad-brush approach should not be ruled out.
[WATCH/MIN/2005/3 October 2005 (Item 6) – <http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/051005/minutes.pdf>]
 - In February 2007, WATCH was asked to consider how to progress the issue of 'nuisance dusts'. It was provided with HSE's assessment of the report by

the Institute of Occupational Medicine into the effects of coalmine dust and a comparison with other similar dusts. The committee was advised that HSE's view at that time was that the findings meant that there would on average be a negligible loss of lung function after a working lifetime average exposure of 4mgm^{-3} . Further, that this modest lung function, coupled with the shallow dose-response curve, meant that HSE considered only limited health benefit would accrue from reducing the exposure threshold. As such, this would not be a priority in the work being undertaken in HSE on respiratory disease reduction. WATCH agreed with HSE's assessment of the IOM information. This was subsequently reported to ACTS in May 2007, where ACTS also considered a paper outlining HSE's priorities for action in this area, and confirmed they were generally content with these priorities.

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/220207/minutes.pdf>

ACTS/03/2007 May 2007 – Annual report on the work of the Working Group on Action to Control Chemicals – <http://www.hse.gov.uk/aboutus/meetings/iacs/acts/250507/watch.pdf>

ACTS/01/2007 May 2007 - Advice on priorities that the Health and Safety System should address during 2008/2011 –

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/250507/priorityadvice.pdf>

ACTS/MIN/1/2007 - <http://www.hse.gov.uk/aboutus/meetings/iacs/acts/250507/minutes.pdf>]

- In November 2007, WATCH considered other dusts of this type (carbon black and kaolin) for which there existed a reasonable body of data on consequences of exposure for respiratory function. Although there were a number of variable factors, WATCH concluded that a range of dusts of the 'poorly soluble, limited cytotoxicity' type are predicted to produce reductions in lung function on long-term exposure to 4mgm^{-3} of the same general order as coalmine dust. WATCH suggested further research work and whilst recognising the variability in the data noted that a significant effect on lung function with exposure to 4mgm^{-3} was apparent, and agreed a steer was needed from ACTS on future action.

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/watch/071107/minutes.pdf>]

- In July 2008, WATCH submitted a paper to ACTS. It was accepted that the term 'nuisance dusts' was inappropriate and used instead 'poorly soluble dusts of limited cytotoxicity', and agreed that for each of the dusts examined by WATCH, a significant effect on lung function at levels of 4mg/m^3 respirable dust was apparent. ACTS agreed with the WATCH conclusions. The action from the meeting was for ACTS to advise the HSE Board that they should consider a campaign on securing better control of dust exposure a priority.

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/090708/minutes.pdf>]

- ACTS members emphasised this point again at the July 2010 meeting, and agreed their advice should be put to the Board.

<http://www.hse.gov.uk/aboutus/meetings/iacs/acts/120710/minutes.pdf>]

Action by TUC representatives on ACTS

4. Reproduced below is the statement issued in August by the TUC representatives on ACTS:

“Proposed Interim Dust Standard

Scientific evidence considered by the Advisory Committee on Toxic Substances (ACTS) on the advice of the scientific committee Working Group on Action to Control

Chemicals (WATCH), suggests very strongly that the current UK limits of 10mg/m³ for inhalable dust and 4mg/m³ for respirable dust are not safe.

Research reviewed by WATCH showed that at exposures of 4mg/m³ for a range of so-called low toxicity dusts such as coal dust, kaolin and carbon black, there was still significant evidence of effects on breathing. Effects on lung function were seen at all levels of dust measured with the effect increasing the greater the exposure. Lung function decreased even at exposure levels of 1mg/m³, in the case of coal dust. With some other dusts there is evidence that exposure to values below 1mg/m³ are also harmful.

As an interim measure therefore, the TUC reps on ACTS are recommending to unions that they should follow a precautionary standard of 2.5 mg/m³ for inhalable dust (as opposed to the current 10 mg/m³ standard) and 1 mg/m³ for respirable dust (as opposed to the current 4 mg/m³ standard).

This measure should continue until such time as the UK decides on a new standard for dusts that are otherwise not assigned an exposure limit. It must be stressed that this is a proposed **interim standard**, tighter measures may be needed after further consideration at the UK and European level, but, in the view of the TUC reps on ACTS, this a first, long overdue step

There are some specific dusts which have an HSE standard, or limit, above what we are recommending. In these circumstances, we urge members to insist that employers use the limits we recommend.

Similarly, the Control of Substances Hazardous to Health Regulations (COSHH Regs) reference to substantial quantities of any dust should be defined by the interim standard of 2.5mg/m³ for inhalable dusts and 1mg/m³ for respirable dust.

In pressing for the better control of all dusts, trade unions should refer to any guidance on specific dusts, or specific to dust reduction in the sector where they are operating, or to the general dust guidance produced by the HSE, Guidance Note EH44, 3rd Edition, 1997, "Dust: General principles of protection".

The TUC representatives on ACTS are Alastair Hay, Bud Hudspith, Rob Miguel and Susan Murray"

Bud Hudspith, 2nd August 2010