

WORKING GROUP ON ACTION TO CONTROL CHEMICALS

WATCH/MIN/2005/3

Meeting date: 5 – 6 October 2005**Open Gov. Status:** Fully Open**Paper File ref:****Exemptions:****WORKING GROUP ON ACTION TO CONTROL CHEMICALS**

Minutes of the 5th meeting of the Working Group on Action to Control Chemicals held on 5th and 6th October 2005 at the Health and Safety Laboratory, Buxton and the Palace Hotel, Buxton respectively.

Members Present

Steve Fairhurst (Chair)
 Steve Bailey
 Steve Binks
 Robin Chapman
 David Farrar
 Tony Fletcher
 Alastair Hay
 Rosemarie Hutchinson
 Len Levy
 Steve Williams

Invited Additional Experts Present

Robin Fielder (HPA)
 George Kowalczyk (HPA)
 Alison Gowers (EA)
 Phillip Lewis (formerly CIA)
 Professor Ian Grierson (University of Liverpool)
 Professor Faith Williams (University of Newcastle)
 Karen Niven (Occupational Health and Safety Advisory Service)

Apologies

Mark Nieuwenhuijsen
 Ted Smith
 Jon Ayres (Univeristy of Aberdeen)
 Martie Van-Tongeren (Manchester University)
 Helen Casstles (Liverpool John Moores University)

Officials Present

Nicola Gregg (Secretariat)
 Mike Costigan (Secretariat)
 Katherine Fuller (Secretariat)
 Rob Turner
 John Groves
 John Cocker
 Sam Bradbrook (day 1 only)
 Peter Ellwood (day 1 only)
 Gareth Evans (day 1 only)
 Steve Maidment (day 1 only)
 Damien McElvenny (day 2 only)
 Catherine Boyle (day 2 only)
 Richard Lomax (day 2 only)
 Jo Elms (day 2 only)
 Donald Adey (day 2 only)
 Peter Ridgway (day 2 only)
 Andy Garrod (day 2 only)

Day 1: 5th October 2005, Health and Safety Laboratory, Buxton**1 Administrative issues**

1.1 The Chairman welcomed everybody to day 1 of the 5th meeting of the Committee.

1.2 WATCH secretary Nicola Gregg went through some administrative issues relating to the running of the Committee:

- Declarations of Interest were requested from ad hoc members of the Committee attending on Day 1 by the end of the meeting.
- She asked if expense forms with receipts could be sent to the Secretariat as soon as

	<p>possible or at the latest within one month of the meeting.</p> <ul style="list-style-type: none"> – In accordance with the guidelines for government scientific advisory committees WATCH is required to hold an Open meeting periodically. She asked if any members had experience regarding how such meetings have been run by other committees and if so to let her know, either during the meeting or in correspondence after, of any suggestions.
1.3	<p>Adoption of agenda</p> <p>WATCH Members agreed to adopt the proposed agenda (WATCH/Agenda/2005/3), relating to day 1 of the meeting.</p>
2	New & emerging issues
2.1	<p>Background</p> <p>The Chairman introduced the item by reminding members that according to the Code of Practice for Scientific Advisory Committees (COPSAC) WATCH is required to identify, on a regular basis, new and emerging issues in its particular areas of responsibility and whether or not, in its opinion, they may require scientific advice or research. WATCH had received recent papers and discussions on this responsibility (WATCH/2004/12 and discussion at January 2005 WATCH meeting). Following a request by the WATCH secretariat in the summer 2005, WATCH members, including the ad-hoc members for this specific session, and HSE staff had proposed topics for consideration as potential new and emerging issues.</p>
2.2	<p>Twelve topics had been identified and are briefly described in WATCH/2005/19 Annex 1. A short 5-minute presentation to WATCH members was given by the proponent of each topic. A number of the presentations concerned REACH and posed questions about which organisation(s) should take forward REACH-related matters. In this context the Chairman advised the Committee that DEFRA had invited organisations to submit business cases to deliver the Competent Authority (CA) role on behalf the UK in relation to the proposed EU REACH Regulation by the end of September 2005. To this end, HSE has been part of a joint bid submitted by the Environment Agency. DEFRA requested that bids should have a single gateway to access the CA structure and therefore the bid projects the CA as being the Environment Agency, with HSE providing a substantial input and span of responsibility. Once a decision on the CA has been made it is expected that the responsibility for UK input to further EU negotiations, particularly in the area of detailed technical issues and approaches, will pass to the CA. The lead for negotiations on broad policy aspects of the Regulation will remain with DEFRA. A decision on the organisational structure that will deliver the CA role is expected to be taken by DEFRA before the end of 2005.</p>
2.3	<p>WATCH members were then asked by the Chairman to consider the issues described and rank them in terms of high, medium or low priority with respect to being considered a 'new and emerging issue' that merits further action.</p>
2.4	<p>Prioritisation of issues</p> <p>WATCH members felt that the twelve topics should be regrouped into nine themes and on the basis of this new grouping prioritised the themes. The three highest priority issues were considered to be:</p> <ul style="list-style-type: none"> (i) Future impact on hazard classification and risk management (OELs, risk assessment, COSHH Essentials) of chemicals resulting from the implementation in the EU of the envisaged new legislation on chemicals known by the acronym REACH and the Globally Harmonized System of classification and labelling of chemicals, known as GHS (includes topics 3, 5 and 10 as described in WATCH/2005/19 Annex 1). (ii) Developing a strategy for evaluating the effectiveness of Workplace Exposure Limits and the effectiveness of risk management achieved using generic control approaches i.e. COSHH Essentials (includes topics 1 and 9 as described in WATCH/2005/19 Annex 1). (iii) Development of improvements in and/or guidelines for exposure data assessment (topic 12 as described in WATCH/2005/19 Annex 1).
2.5	<p>In accordance with the agreed procedure for this item, for those topics deemed to be of the highest priority the Chairman then asked WATCH members to recommend:</p> <ul style="list-style-type: none"> (i) what action needs to be taken? (ii) how might that action be carried out?

	<p>(iii) which individual/organisation is most appropriate for taking the action forward?</p> <p>(iv) what is an appropriate timeframe for this action?</p>
2.6	<p>Impact of REACH and GHS on classification and risk management</p> <p>It was felt that this topic was of greatest priority. A WATCH member commented that in his opinion the introduction of REACH and GHS would have a significant impact on current approaches used to manage risks from chemicals in the workplace. The adoption of the GHS scheme will result in changes to SDSs, new symbols and labelling phrases in the workplace, new hazard classifications that will impact on COSHH Essentials and conflict between or duplication of requirements under different pieces of legislation, e.g. between REACH and the Chemical Agents Directive. Another member commented that in his opinion risk management under REACH could require the consideration of appropriate control regimes for approximately 30 000 substances and the derivation of Derived No-Effect Levels (DNELs) for each of them. It was important to identify the body responsible for influencing developments and activities in these areas.</p>
2.7	<p>In reply another WATCH member said that his understanding was that under REACH the responsibility to classify and conduct risk assessments will lie with companies who are placing the substances on the market. Much of the work required to classify and apply appropriate symbols and safety phrases will be prescribed by EU Competent Authorities (CAs). However, derivation of DNELs is a change from existing requirements and input into the negotiation of how this is done may be valuable. The derivation of DNELs will influence regulatory decisions across all sectors of the human population potentially exposed to a substance and the need for a UK government-wide approach to exert influence in this area was highlighted by another WATCH member. It was felt that WATCH could help with future discussions on deriving DNELs and the approach used for human health risk assessment under REACH.</p>
2.8	<p>A further comment was made that more consideration needs to be given to translating the information that will be provided by REACH, and the GHS classification scheme, into workplace protection. Therefore, guidelines on how chemical users should interpret and implement such information will be required.</p>
2.9	<p>The Chairman then reminded members that no decision by UK government about HSE's involvement (with the Environment Agency) in the delivery of REACH had yet been taken. He said that it would be appropriate to await this decision before determining how best to further these issues. He suggested tabling an agenda item for the February 2006 WATCH meeting describing the latest position on REACH, the agreed CA structure for the UK (assuming that this would be known by then), who the key players are and where the difficult issues are likely to arise. A WATCH member suggested that regardless of the CA decision, under REACH issues related to the occupational situation might still need to come to WATCH.</p> <p>[ACTION: HSE to produce a paper describing the latest state of play on REACH and the agreed UK CA structure (assuming that this would be known by then) for the February 2006 meeting.]</p>
2.10	<p>WATCH members then thought that it might be a good idea if WATCH could discuss the issues raised with the key players involved in REACH negotiations at the February meeting. One member qualified this by commenting that the scale of this topic might merit a dedicated meeting. The Chairman responded by suggesting that at the February WATCH meeting members should discuss the latest state-of-play on REACH and the issues involved. Following this, if it seemed appropriate, a stand-alone meeting could be arranged at which the issues could be explored in-depth and discussed with some of the key players.</p>
2.11	<p>As it is likely that negotiations on REACH will be moving quickly, but WATCH only meets three times a year it was felt by members that REACH issues may arise and be finalised before WATCH has chance to respond. The Chairman therefore proposed that if, after the analysis in February, it seemed appropriate, a system could be devised allowing WATCH members to provide their perspectives and input into issues arising between WATCH meetings. There was agreement from members to this potential course of action.</p>
2.12	<p>Evaluating the effectiveness of WELs and COSHH Essentials</p>

	<p>WATCH members felt that the timescale for this theme was not as urgent as priority (i). A WATCH member described the need for a piece of research to be performed in order to gather the necessary data to compare the stringency and adequacy of workplace control achieved using the new Workplace Exposure Limit (WEL) system with the control achieved using the old Occupational Exposure Limit (OES/MEL) system. The proposal to evaluate the WEL system could focus on the seven criteria developed by the OEL Framework Group which it was intended would be satisfied by any new OEL system. An HSE member added that the proposed research would provide a picture of what is happening currently within the workplace, giving an insight into people's understanding of the systems, the types of control measures being used and whether or not working conditions are conforming to what is recognised as Good Practice. Additionally, on the basis of this information, forecasts about what might happen in industry in the future might also be facilitated.</p>
2.13	<p>Another WATCH member thought it was important also to consider those substances that previously had an OES but do not, under the new system, have a WEL, in order to understand how people are now controlling these substances. In response to a question, the Chairman reminded WATCH about the commitment by HSE to review 15 or 16 substances with WELs that formerly had MEL status but said that there were no plans to expand this exercise to include additional substances.</p>
2.14	<p>A further WATCH member thought that any research performed on the new WEL system should be structured by size of sector and company to obtain a more precise picture of occupational behaviours.</p>
2.15	<p>The Chairman indicated to WATCH that HSE had no current plans to undertake such a piece of work; if WATCH felt that it should be done then the onus was on the Committee to advocate and scope the research in a submission to HSE. There was agreement from WATCH members that a research specification should be drafted by a small group of 2-3 WATCH members led by Prof. Len Levy. The specification would then be submitted to HSE by the end of January 2006.</p> <p>[ACTION: Prof. Levy to chair a small drafting group of WATCH members to prepare a research specification by the end of January 2006.]</p>
2.16	<p>Exposure data assessment</p> <p>A WATCH member commented that the quality of exposure data is a recurring problem, affecting the interpretation of epidemiological studies and the consequences of such interpretation for limit-setting processes, the assessment of priorities for control and the choice of risk management measures. He indicated that several options are available in order to address this problem. One might be to improve the EASE model for exposure prediction. Another member commented that this idea was explored last year at a meeting at the Institute of Occupational Medicine but at that time it appeared that no money was available to develop the ideas. An HSE member commented that in order to further develop EASE, which is an exposure prediction system designed for EU-wide use, a new database of exposure information including data from other European countries would be required to obtain a sufficiently large dataset to facilitate improving the system in a robust, reliable manner. He explored this idea further by suggesting that the way forward was firstly to collect all existing data into a central data set. Secondly, he felt that consideration should be given to how best to combine the real-life data, with data obtained from exposure models, in a system which could deliver the most reliable exposure assessments possible.</p>
2.17	<p>A WATCH member indicated that information about the context (i.e. under what conditions) the exposure data was collected was needed in order to be able to interpret exposure data properly. Two WATCH members indicated that there were a number of initiatives currently ongoing to try to address this issue in Europe, including within industry. An HSE member also indicated that HSE was currently looking into how HSE could improve its intelligence gathering by combining HSE-gathered exposure information with that obtained from external stakeholders. The Chairman then proposed that a short state-of-play paper should be prepared for the February 2006 WATCH meeting. WATCH members agreed to this approach.</p> <p>[ACTION: HSE to prepare a paper of the ongoing initiatives to improve exposure data assessments for the February 2006 WATCH meeting.]</p>
2.18	<p>Discussion on the remaining themes</p> <p>To complete the agenda item the Chairman then invited members to provide brief comments on the</p>

	remaining themes considered to be of lesser priority. Two issues were identified particularly as warranting attention:-
2.19	Firstly, a WATCH member noted that the current WEL for beryllium of 0.002 mg/m ³ (8-hour TWA) may warrant early re-consideration, given the availability of new evidence to suggest that workers might be adversely affected at levels lower than the current UK standard and the proposed further reduction of the ACGIH TLV to 0.00002 mg/m ³ (8-hour TWA). Further details on this issue were described under topic 7 in WATCH/2005/19 Annex 1.
2.20	The second issue was raised by another WATCH member, who noted that substitution decisions could potentially lead to the introduction of alternative substances that may cause different, but significant, health effects in comparison with the substance being replaced. Examples of this issue have been described under topic 8 in WATCH/2005/19 Annex 1.
2.21	The Chairman noted these comments. He thanked the ad-hoc WATCH members for their useful contributions to this item. The content and output from this session would be captured in an 'new and emerging issues' report from WATCH into HSE's 'horizon-scanning' system; and the information would also be fed into the thinking about HSE's future agenda on chemicals and ill-health.
	Day 2: 6th October 2005, Palace Hotel, Buxton
3	Administrative issues
3.1	The Chairman welcomed everybody to day 2 of the 5 th meeting of the Committee.
3.2	WATCH secretary Nicola Gregg went through some administrative issues relating to the running of the Committee: <ul style="list-style-type: none"> - Declarations of Interest were requested from ad hoc members of the Committee attending on Day 2 by the end of the meeting. - She asked if expense forms with receipts could be sent to the Secretariat as soon as possible or at the latest within one month of the meeting.
3.3	The Chairman informed WATCH Members that ad hoc Members had been invited to provide additional expertise to the discussions on: colour vision (Professor Ian Grierson, University of Liverpool); dermal absorption (Professor Faith Williams, University of Newcastle); and Cidex-OPA (Dr Karen Niven, Occupational Health and Safety Advisory Service). During these items, the status of the invited experts is identical to that of permanent WATCH Members. In addition, 4 industry delegates from Advanced Sterilization Products would join the discussion on Cidex-OPA.
3.4	Adoption of agenda WATCH Members agreed to adopt the proposed agenda (WATCH/Agenda/2005/3), relating to day 2 of the meeting.
3.5	Declarations of interest WATCH Members declared interests in the items on colour discrimination (Robin Chapman, David Farrar, Steve Williams), isocyanates (Robin Chapman), Cidex-OPA (Robin Chapman) and dermal penetration (David Farrar).
3.6	Minutes of the 4th meeting Members had agreed the minutes of the 4 th meeting (WATCH/MIN/2005/2) by correspondence.
4	Biological monitoring of isocyanates
4.1	The Chairman began by asking Andrew Garrod (HSE Occupational Hygiene Unit) to introduce this item to the Committee.
4.2	Introduction: Role of the BMGV for isocyanates Andrew Garrod began by reminding WATCH members that this item was a continuation of the discussion from the January 2005 WATCH meeting. The package presented to WATCH had been updated with new data to support a proposal for a biological monitoring guidance value (BMGV) for isocyanates based on urinary diamines. He emphasised the intention that the proposed BMGV should be viewed as an indicator of exposure and would not be a statutory limit. In addition, the

	proposed BMGV would not be associated with a health-assuting occupational exposure limit, nor would it relate to the health surveillance criteria within COSHH Regulation 11. The proposed role of the BMGV would be solely to indicate the adequacy or otherwise of control measures; it would be of most relevance to Regulation 10 of COSHH, covering exposure monitoring.
4.3	In terms of the potential uses of the BMGV, Andrew Garrod gave the example of an employee relying on a respirator to control his exposure to isocyanates. In this case, he argued that biological monitoring is almost the only reasonable method available to establish whether the control measures are performing adequately. He noted that biological monitoring could also be used to identify whether exposures are occurring by routes other than inhalation (dermal/ingestion).
4.4	The Chairman then asked WATCH members for comments on the Action Points in paragraph 16 of the cover paper which invited WATCH: <i>(i) To agree that BMGV would aid the interpretation of biological monitoring results, and (ii) To agree a biological monitoring guidance value (BMGV) of 1 µmol urinary diamines/mol creatinine, released by hydrolysis of protein conjugates of HDI, TDI, MDI or IPDI. The basis for this BMGV is that a concentration of urinary diamines at or below this level is associated with good control of exposure.</i>
4.5	Discussion on the relationship between the BMGV and airborne concentrations A WATCH member noted that the proposed BMGV is equivalent to the body burden that would result from exposure to an airborne concentration of isocyanates 1/20 th of the WEL and asked whether there was an argument for reducing the airborne limit? Another WATCH member replied that the urinary measurements used to form the basis of the proposed BMGV were taken from people who were wearing respirators; therefore, the BMGV would be a measure of the effectiveness of the respiratory protective equipment rather than the ability to control the concentration of isocyanate in workplace air. Several WATCH members also commented that the relationship between the concentration of isocyanates in air and the urinary diamine level was not particularly strong.
4.6	HSE agreed with these comments and pointed out that this is the reason why the equivalence tables included in the documentation for the January 2005 WATCH meeting had now been removed. HSE considered that it is not valid to suggest that the proposed BMGV represented control of airborne exposure to a fraction of the MEL. The basis for the BMGV is the 90 th percentile of the urinary diamine measurements taken from workplaces where there is already considered to be good control systems in place.
4.7	A WATCH member asked if free and unreacted amines present in the urine could also be present in the mixture of isocyanates used in spraying motor vehicles and therefore contribute to the lack of linearity between the urinary diamines and airborne levels of isocyanates? HSE responded that this is not likely to be the case.
4.8	Discussion on Action Point [i] A WATCH member indicated that in his view there is a role for biological monitoring as part of the “tool kit” to ensure that isocyanate exposures are adequately controlled and that the BMGV will aid in the interpretation of biological monitoring results. He felt that the purpose of the proposed BMGV had now been clarified and biological monitoring had been positioned as a tool that gives an indication of whether significant exposure has occurred. As such he argued that this has to be beneficial to occupational health professionals.
4.9	Other WATCH members agreed with this statement and, consequently, WATCH agreed Action Point [i].
4.10	Discussion on Action Point [ii] <u>The BMGV and “good control”</u> A WATCH member commented that throughout the documentation presented to WATCH there are hints that the proposed BMGV represents adherence to good practice; and that adherence to good practice would prevent isocyanate-induced asthma. He felt that the thinking and linkage between these two ideas needs to be clarified.
4.11	Another WATCH member queried what appeared to be conflicting messages about good control in the cover paper and in the guidance on biological monitoring for isocyanates presented in Annex 1 of the documentation. Paragraph 12 of the cover paper suggests that if exposures are well-controlled,

	<p>the urinary diamine concentrations should be < 0.5 µmol /mol creatinine. However, within the guidance, in the section entitled “<i>What do I do if I have a result above the guidance value?</i>”, referring the proposed BMGV of 1 µmol urinary diamines/mol creatinine, it is stated that “...because the guidance value is based on the value found in 9 out of 10 samples in places with good control it is likely that 1 in 10 values will be above the guidance value even in places with good control.” HSE replied that the statement in the cover paper is in error and should be discounted in favour of the statement in Annex 1. The WATCH member agreed with this position. A different WATCH member suggested including a statement in the guidance that if a biological monitoring result is above 1 µmol urinary diamine/mol creatinine then in the first instance the emphasis should be on repeating the test to secure confidence in the measurement made.</p>
4.12	<p>Another WATCH member suggested indicating in the guidance that biological monitoring does not replace the need to consider air monitoring. In addition, he raised an issue regarding the proposed BMGV value of 1 µmol urinary diamines/mol creatinine and asked whether industries currently controlling exposure to a level lower than this may misunderstand and “relax” controls, allowing biological monitoring results to move up to this value? HSE responded that in its opinion this would not happen; in the majority of urine samples there was no detectable diamines. The problem industries are those where surface coatings are sprayed (for example, construction and motor vehicle repair) and the guidance is being targeted at these industries.</p>
4.13	<p><u>Implications of the BMGV for human health</u></p> <p>A WATCH member commented that any wording for the guidance needed to put the relevance of a high test result into some sort of perspective and suggested as a basis, something along the lines of “...the test shows what recent exposures have been like and, if the level is higher than the BMGV, the subject needs to be aware that repeated high exposures may increase the chance of occupational asthma, which may stop an individual working.” However, another WATCH member sounded a note of caution about introducing health statements to go alongside the BMGV.</p>
4.14	<p>On the subject of what the urinary diamine concentration means to an individual’s health, a different WATCH member asked if there was any evidence of respiratory sensitisation having occurred with this level of diamines in the urine? Another WATCH member commented that if subjects were already sensitised, then further exposure at similar levels would trigger an asthma attack. HSE responded that there are not enough data to derive a robust dose-response relationship for isocyanate-induced asthma in relation to urinary diamines.</p>
4.15	<p>A WATCH member commented that in securing good practice it was not just the physical control measures but also the behaviours of the workers that were important. HSE agreed that this is an important issue, particularly as once an unsafe behaviour has become established it is difficult to change. Consequently, biological monitoring is a way of monitoring whether good control measures are being adopted by employees in every respect.</p>
4.16	<p><u>Outcome of discussion</u></p> <p>With these points in mind, the Chairman asked WATCH for its position on Action Point [ii]. WATCH recommended the proposed BMGV value with the proviso that it is not a direct indicator of good practice but a reference point and that measurements above this level should trigger further investigation.</p>
4.17	<p>Discussion on the frequency of conducting biological monitoring for isocyanates</p> <p>A WATCH member commented that if the purpose of biological monitoring and comparison of the results with the BMGV is to detect failures of control, then urine testing as infrequently as once a year seems inappropriate. HSE responded that the thinking about the timing of the testing was influenced by experience of the motor vehicle repair industry, where health surveillance is carried out once a year. It was felt that biological monitoring could be undertaken at the same time, so as not to present an added burden. However, another WATCH member commented that an exposure event of concern could well have occurred at some time previous to this and one would have missed such an event; if the results of the annual biological monitoring test were below the BMGV, this could lead to a false sense of security about the exposure experience of a worker.</p>
4.18	<p>The Chairman asked if this situation is not the same as that for airborne exposure monitoring where there is no stipulation as to how frequently measurements should be made? HSE felt that in relation</p>

	to the timing of biological monitoring there are a couple of instances where it will be particularly useful. Firstly, if there is reliance on respirators with an event such as cleaning up a large spill, biological monitoring will indicate whether the respirator has worked effectively. Secondly, in a small motor vehicle repair workshop, realistically, it is unlikely that air monitoring would be being undertaken or that there is any routine monitoring of equipment. If there is a continuing leak biological monitoring is a simple inexpensive way of identifying this occurrence.
4.19	Overall, WATCH suggested that in implementing a biological monitoring programme, to begin with frequent analyses should be undertaken until there was confidence in the control measures in place. At this point, undertaking biological monitoring once a year might then be considered adequate. HSE agreed to amend the guidance to reflect this point. [ACTION: HSE to amend the guidance on frequency of biological monitoring, to reflect this discussion]
4.20	General comments on the biological monitoring guidance for isocyanates (Annex 1) A WATCH member commented that there is a need to put something into the guidance to explain in some depth that biological monitoring provides supplementary information to other ways of assessing the control of exposure (for example, performing regular checks on respirators).
4.21	Another WATCH member suggested that there were some inaccuracies in the draft guidance and that he would correspond with the HSE authors on this. The Chairman asked that any other comments that members had on the draft guidance associated with the BMGV (Annex 1 of the documentation) should be sent in to HSE (to the WATCH Secretariat or directly to Andrew Garrod).
4.22	HSE also indicated that the draft guidance sheet prepared for COSHH Essentials on urinary monitoring for isocyanate exposure would be circulated to WATCH members for information. [ACTION: HSE to send WATCH members the relevant COSHH Essentials guidance sheet for information]
4.23	General discussion on biological monitoring A WATCH member referred to Andrew Garrod's assertion that the BMGV and biological monitoring is considered to be unconnected to the health surveillance requirements under the COSHH Regulations, and commented that there is unease felt by industry about what BMGVs and biological monitoring in general is to be used for.
4.24	He continued that although there is a list of BMGVs in EH40/2005, there is now no definition of different types of biological monitoring values nor is the basis given for any particular value. He was uncomfortable about the potential for misunderstanding that this creates. He suggested that this may be a general issue that WATCH should work on in the future ie, a better understanding of a wider role for biological monitoring; revisiting the definitions of biological monitoring guidance values; producing more comprehensive guidance on what biological monitoring is and what it can be used for?
4.25	A WATCH member suggested that another general issue for the Committee to consider was the interpretation of biological monitoring results that are greater than the BMGV. The Chairman asked for clarification on what it was envisaged that the end product of this should be? The WATCH member replied that such guidance should be aimed at health professionals, explaining what the results of biological monitoring mean.
4.26	Another WATCH member suggested that more clarity is needed surrounding the conduct of biological monitoring. He felt that biological monitoring should be carried out when someone starts a new job, when employers should be emphasising good practice and the importance of following it in controlling exposures. Performance of biological monitoring at this time would also be helpful to establish on record a "baseline" value for an individual.
4.27	The Chairman asked WATCH members to send in their issues on biological monitoring to Nicola Gregg in order that the need for this topic to be considered at a possible future meeting can be assessed by the Secretariat.
4.28	Overall outcome of this item The Chairman summed up the discussion. In relation to the Action Points set out in the cover paper,

	<p>WATCH agreed:</p> <ul style="list-style-type: none"> • that a BMGV would aid the interpretation of biological monitoring results, and • that the BMGV should be set at a concentration of 1 µmol urinary diamines/mol creatinine, released by hydrolysis of protein conjugates of HDI, TDI, MDI or IPDI. The basis for this BMGV is that a concentration of urinary diamines at or below this level is associated with exposure management conditions corresponding to “good control”. <p>In addition, HSE would amend the guidance presented in Annex 1 of the documentation to reflect the views of WATCH. Members were offered the opportunity to send in to the WATCH Secretariat any comments on biological monitoring issues in general, which would inform on the need for any future WATCH discussions on this topic.</p>
5	Colour discrimination
5.1	<p>Background</p> <p>The Chairman began by formally welcoming Prof. Ian Grierson from Liverpool University who was invited to the meeting as an ad-hoc member with expertise in colour discrimination testing. Also present for this item were Dr Richard Lomax and Dr Peter Ridgway (both regulatory toxicologists from HSE’s Industrial Chemicals Unit) who were the principal authors of the paper on occupational exposure to organic solvents and colour discrimination (WATCH/2005/14 Annex 1). He reminded the Committee that this issue was carried over from the May 2005 WATCH meeting, at which members had difficulty in reaching a position on how to interpret and utilise, in a risk management context, data from tests of colour discrimination capability, specifically in relation to workers exposed to styrene. He thanked Prof. Grierson for his excellent informal presentation to WATCH members on the previous evening, covering the general features of colour discrimination testing. He then invited the Committee to consider Action Point [i] of the cover paper, to ‘reach a position on the interpretation of the results from colour discrimination tests, with respect to significance for health’ and Action Point [ii] ‘apply its position to styrene, determining how its conclusion compares with the current UK occupational risk management position for this substance’.</p>
5.2	<p>Colour discrimination testing and styrene</p> <p>Prof. Grierson indicated to the Committee that the area of particular professional interest to him involved issues regarding the quality and reliability value of the available colour discrimination tests. He noted that within this particular scientific field there was no clear agreement on the significance of minor changes in colour vision to human health, although a view was now emerging that minor effects may not be inconsequential, whereas the tendency some years ago had been to dismiss such findings. He further added that HSE’s paper on solvents and colour vision provided a good summary and interpretation of the available literature. The observation that styrene has effects on colour vision is based largely upon the use of a single type of test for colour vision. He indicated that each test for colour vision has particular limitations and in view of this the use of a battery of tests would be better, in which a number of different tests were used to explore the consistency of results in supporting a precise diagnosis of the colour vision defect claimed.</p>
5.3	<p>A WATCH member commented that, as there is currently no scientific evidence that findings of subtle changes in colour discrimination suggest an adverse effect of significance to health on either the central nervous system or the brain, or indeed the retinal cones themselves, in his view it would be sensible to monitor the development of this scientific field for some time into the future before attempting to use such data in a risk assessment or risk management context.</p>
5.4	<p>A further WATCH member felt that further prospective research monitoring currently exposed worker populations and their colour vision discrimination ability over future time periods may help in this respect.</p>
5.5	<p>The Chairman then responded by asking WATCH if it considered colour vision testing and data to be a ‘new and emerging’ issue, rather than an established toxicological endpoint to be used in hazard assessment?</p>
5.6	<p>A WATCH member suggested that this issue could be considered alongside others where similar discussions are ongoing about how to interpret observed changes associated with chemical exposures e.g. neuro-behavioural testing. Another WATCH member responded by suggesting that colour vision discrimination test data wasn’t really a new issue; rather, it is an existing one that is</p>

	now receiving regulatory attention. A further member added that these types of issue are likely to be encountered with increasing frequency and rigorous guidance on how to interpret the information, especially in relation to whether the effects should be considered to be adverse or not, is required.
5.7	A WATCH member then questioned if HSE has considered whether or not direct exposure of styrene vapour to the eye was a significant route of uptake. Peter Ridgway responded that HSE has considered this as a possible route of styrene uptake but its contribution to the total body burden arising from exposure to airborne styrene has been impossible to quantify. Richard Lomax added that one study was available in which effects on colour vision were demonstrated in workers who were using respiratory protective equipment and therefore only exposed via the eyes, suggesting absorption through the eye. However, this study was not well designed and therefore the evidence is not conclusive. Prof. Grierson responded that the general scientific view is that the eye is generally resistant to substance absorption.
5.8	The Chairman then asked the committee to consider the first sentence in the last paragraph on page 5 of WATCH/2005/14 Annex 4 ' <i>studies on colour vision provide a sufficiently consistent body of evidence to support the view that styrene does cause an impairment of colour discrimination relative to age-matched controls.</i> '
5.9	A WATCH member commented that the statement now appeared to be too robust, and the sentence should be altered to reflect that most studies on colour vision discrimination performed in styrene-exposed workers have relied on the use of a single colour vision test. As the understanding now is that a battery test approach is recommended to properly characterise any colour discrimination effects, it is inappropriate to describe the data on styrene as being ' <i>a sufficiently consistent body of evidence</i> '. Other WATCH members signified their agreement.
5.10	The Chairman then summed up the discussion by asking WATCH members if they agreed with the following statement as a response to Action Point [i]: WATCH concluded that in relation to the potential effects of exposure to industrial chemicals on colour discrimination, many of the available studies are not sufficiently robust to reliably characterise the scale and nature of an effect. Results from such studies are of interest, but this is a developing field and it would be premature to regard current 'positive' test data as signifying a clear adverse health effect. Members agreed with this position.
5.11	He then continued and asked the Committee whether they were happy with the statement on colour vision and styrene as described in the last paragraph on page 5 of WATCH/2005/14 Annex 4, providing that it will be amended to indicate that the findings are not robust, as only a single colour vision test rather than a testing battery approach was used in most of the studies. Members agreed with this position as a response to Action Point [ii]. [ACTION: HSE to reword this part of the summary of the ESR risk assessment for styrene.]
5.12	Styrene and its WEL A WATCH member then questioned whether the Committee would need to reconsider the Workplace Exposure Limits (WELs) assigned to styrene in view of this discussion.
5.13	The Chairman reminded WATCH that previously styrene had Maximum Exposure Limits (MELs) of 100 ppm (8h TWA) and 250 ppm (15-min) STEL that were set approximately 20 years ago. These were converted to WELs within the new UK OEL framework introduced this year. The values were based on the degree of exposure control achieved by applying what was deemed to be 'good practice' at that time, rather than on an assurance of health protection. HSE has work planned to explore what current good practice controls will produce in terms of exposures to styrene in the workplace. The outcome of this work will be available during the first half of 2006; there is reference to this in the WATCH Secretary's Report. Following this work HSE will then be able to express a view on the effect of applying current good practice controls on styrene exposure and the consequences of this for the styrene WEL values can be reconsidered.
5.14	A WATCH member commented that in his view while it would be prudent to await the outcome of this work, he was concerned that the current UK WELs position was at odds with occupational exposure limits used in other EU Member States. One issue is that styrene currently has a 15 minute WEL value of 250 ppm, when data indicate that acute effects could arise with such exposures. If there is evidence that best practice control has improved in comparison with the situation in the 1980s then

	<p>the WEL values will need re-consideration. Also, as a more general principle if new health data are available which raise doubts about the health protectiveness of current WEL values then that should also trigger a re-consideration. An HSE member responded that in compiling data for the recent ESR review on styrene, industry data had 167 ppm as the maximum concentration found among all of the values recorded for current UK work situations involving styrene.</p>
5.15	<p>The Chairman summed up this part of the discussion by saying that further consideration on the WELs for styrene should await the outcome of the study on current good practice control.</p>
5.16	<p>The Chairman also commentated that this discussion raised the more general issue of when it was appropriate to reconsider the value of the existing WEL(s) for a substance? In response to a comment from a WATCH member he reminded the Committee that a paper had been presented, and a position agreed at the July 2005 ACTS meeting on how to deal with the 15-16 substances that formerly had MEL values and that were assigned WEL status under the new OEL framework but with an undertaking to review their WEL values.</p> <p>[ACTION: HSE to provide to WATCH the paper and the outcome of the ACTS discussion.]</p>
6	Chronic obstructive pulmonary disease (COPD)
6.1	<p>Background</p> <p>The Chairman began this item by introducing Catherine Boyle (a regulatory toxicologist from HSE's Industrial Chemicals Unit) who was responsible for putting the package together for this agenda item. He said that work to reduce the occurrence of chemical-induced long-term respiratory disease forms part of HSE's Respiratory Disease Project, which in turn is part of the Disease Reduction Programme. In relation to long-term respiratory disease, attention is focused upon the specific issue of silicosis and the general area of chronic obstructive pulmonary disease (COPD). He noted that COPD is judged to be a significant occupational health burden in the UK. However, it is difficult to identify the particular occupations and substances that are the primary causes of this burden of disease. To this end, the concept of a prioritisation matrix described in WATCH/2005/15 Annex 1 represents a potential prioritisation characterising the occupations and industries that could pose a threat of causing COPD. From this a judgement could be made on those justifying particular attention. However, already it appears that it will be difficult to populate all of the columns in the table with robust data. An alternative 'broad brush' approach could be developed in which all industries involving significant exposure to dust or gases are addressed. He noted that the paper asked WATCH to consider how best to approach the prioritisation concept and for the views on the 'broad brush' approach to tackling work-related COPD.</p>
6.2	<p>Discussion on the choice of approaches to address the COPD burden</p> <p>A WATCH member complimented HSE on the package. In his view, a focused approach was necessary in order to ensure that a real and sustained impact is made. He noted that in the past, when considering interventions for asthma, a broad general approach was initially taken; whilst this had some success, it was soon felt to be necessary to introduce a more targeted approach (e.g. focus on welders or isocyanates). Although filling in the prioritisation matrix table would be difficult, he felt that it would help to identify where problems might be occurring and/or reveal gaps in the knowledge base. This process may in itself influence the type of approach made to the industries concerned.</p>
6.3	<p>Another WATCH member said it could be that much of the current burden of COPD relates to historical exposures in the 1970s and 80s from the coal, iron and steel industries. These situations are hard to relate to present day industry. However, he felt that relevant information should be extracted from these historical situations and put into the prioritisation table; it might be that predictions about where, why and to what extent COPD might be being caused in the workplace today could be made based on such data. He advocated using the table as a means to highlight relevant historical data which would help to inform on where best to look for information in present day industry.</p>
6.4	<p>A third WATCH member agreed with the focused approach entailing the use of a prioritisation table. However, he felt that consideration should be given particularly to substances commonly used in old industries that have now found new applications that might fall outside of the traditional risk management experience. An example might be the production of granite kitchen worktops where</p>

	there is some evidence of an emerging risk of silicosis.
6.5	The Chairman informed the Committee that HSE has also been doing some work to probe the situation in specific industries and is currently undertaking a review of COPD in the construction industry. The review is currently in draft form but is likely to be on the agenda for WATCH to consider at its first meeting in 2006.
6.6	Another member felt that a 'broad brush' and a focused approach should be used together. A 'broad brush' approach would raise awareness amongst all the relevant industries whilst those in which it is judged that there might be a particular high risk or potential total burden of COPD could be targeted for exposure control/reduction activity. He stressed that when choosing targets for intervention HSE should not just choose those that are easy, but consider every area including those where there are real difficulties in intervening effectively. He felt that it might be useful if, for each industry entry in the table, an estimate of the potential contribution to the overall COPD disease burden could be included. Also, as COPD encompasses a spectrum of conditions that can vary in severity, an indication of the anticipated severity of the disease outcome for each situation may also be useful when prioritising.
6.7	Another member commented that he was surprised that more information on incidence and prevalence of COPD in particular industries wasn't available from the Labour Force Survey and perhaps this indicates some potential questions for future surveys. An HSE member responded that COPD is often not self-reported as being work-related in the Self-reported Work-related Illness Surveys. COPD is a long latency disease and in most cases appears in people close to or even after retirement. Therefore, COPD statistics are most reliably obtained from mortality data and, because cigarette smoking is the major cause of COPD in society, can be difficult to relate to occupational exposure, particularly if smoking is prevalent among the group under study. He noted that there was a real absence of clear epidemiological evidence in this area.
6.8	The Chairman then asked the Committee if it agreed with Action Point [i] 'that the focused approach is appropriate for combatting COPD caused by occupational exposure to substances'. WATCH agreed with this conclusion.
6.9	The prioritisation matrix The Chairman then asked WATCH to look at the prioritisation table in WATCH/2005/15 Annex 1 and consider whether this was the most appropriate type of information to collect in order to facilitate the selection of areas on which to focus intervention activity.
6.10	A WATCH member felt that information on the mechanism underlying COPD in any given situation could influence decision-making. For instance, one causative mechanism for a dust might be that macrophages are overloaded, inactivating the natural defence mechanism to remove toxic substances from the lung; in this situation other substances that otherwise would not cause a problem could then instigate a disease process. Another mechanism would be that of substances exerting a direct toxic effect on lung tissue. The mechanism involved might have some influence on the exposure level at which a risk of COPD might be present. An immunological effect might be triggered at substantially lower exposures than a direct toxic effect. The Chairman emphasised that there was no single common mechanism for COPD, a broad term that includes different conditions in different parts of the respiratory tree such as airway inflammation and emphysema, and includes different pathologies.
6.11	A further comment was made by a WATCH member who thought that for any one substance or occupation it would be useful to be able to identify the number of workers exposed to different levels of exposure, to get an estimate of the number workers exposed to dust or gas at levels of genuine concern. However, he was unsure if this type of intelligence was available. An HSE member responded by saying that some such breakdown of information exists for work entailing exposure to flour dust but there is little information for other industries or substances. There was support from WATCH for the notion of work to identify, in particular, areas of UK industry involving high dust exposure levels that might be associated with COPD, which would then lead to initiatives to decrease these exposures. In contrast, for areas of fairly good control there would be little interest in pursuing more stringent controls. One might consider that dust levels were high where the exposure to respirable dust exceeds 4mg/m ³ (8h TWA).
6.12	A further suggestion by a WATCH member was made that the EASE model, or read-across of exposure data from other similar situations should be used to make predictions of exposure levels, where data are lacking. He suggested that this might be particularly important for newer industries as

	there might be no exposure information for them and no easy way of obtaining such data in the short term. A member then suggested that perhaps a 'broad brush' approach might have to be taken for such industries.
6.13	The Chairman then asked WATCH if it could characterise the detail of what the prioritisation matrix should contain? He asked if WATCH could agree that column 1 'occupation/industry' in the prioritisation table should be the starting point? The Committee responded that this seemed appropriate but noted that the column should include some older industries that are now in decline or have disappeared, as well as current or emerging industries, so that comparisons between industries could be made in relation to the data in other columns in the table.
6.14	A WATCH member then suggested that the Surveillance of Work Related Occupational Respiratory Disease (SWORD) scheme morbidity data could indicate where problems are currently arising? An HSE member was doubtful; he noted that SWORD data often only contain a loose definition of the causative agent, and that the number of cases of COPD reported were too few to provide any detailed analyses to inform priority setting.
6.15	The WATCH member then suggested that alongside the industry or occupation, the actual cause of the COPD should be included in the table. The Chairman indicated that in most instances this would be speculation.
6.16	A WATCH member attempted to characterise two possible approaches to prioritisation. One would be to ask which substances are known to have caused COPD e.g. information provided by SWORD and other available statistics. The other would be to assume that exposure to any dust at a relatively high concentration results in COPD. On this basis one can then prioritise on the basis of which industries have the highest dust exposures, regardless of the specific substance(s) involved.
6.17	The Chairman then asked if the Committee agreed with the emerging suggestion that excessive exposure to dust, in general, should be presumed to be a potential cause of COPD? And that therefore, actions should be aimed at industries with high dust exposure and high numbers of workers?
6.18	One member felt that the pattern of exposure needed to be considered; for example, if it was long term, relatively constant exposure or peak exposure? Another member felt that a 'generic, excessive dust' approach might neglect the fact that workers could be exposed to many different types of dust and this might include toxicity issues related to specific properties of specific dusts. A further member felt that a potential contribution from irritant gases should be considered. Therefore, he proposed that a wide-ranging approach to capture the working conditions in current and new industries is required since we do not know where the COPD cases are coming from. An HSE member also responded by suggesting that there is a danger in just controlling the relatively high dust exposures. From the information available we don't know from where the COPD disease burden arises. It could be possible that there is a susceptible element within the occupational population who get COPD at more modest exposure concentrations.
6.19	The Chairman then reiterated the purpose of this work, which is to help HSE to direct the resources available to attack COPD towards the areas judged to pose the greatest potential risk of COPD and where there is also potentially the greatest gain to be realised from intervention. The idea of a prioritisation matrix table is a means of facilitating such judgement and also of justifying the approach taken if subsequent work and the basis for it were to be challenged by others, e.g. a particular industry experiencing intervention activity.
6.20	A WATCH member then felt that within the prioritisation table, column 1 should be 'substance of concern', column 2 'why we are concerned', column 3 'what jobs lead to significant exposure' and column 4 'numbers of people performing the jobs in question'. Another member replied by saying that, in his opinion, many of the substances that are likely to have the potential to cause COPD have already been assessed in some detail by the HSE/WATCH process and a conclusion has been reached on an appropriate UK occupational exposure limit. Therefore, the focus should be on looking at the tasks performed in industry that are resulting in exposure to potential causative agents that are excessive, in comparison with such occupational exposure limits.
6.21	The Chairman then drew WATCH members' attention to table 2 in WATCH/2005/15 Annex 3 that lists substances considered to have the potential to cause COPD. He said that from previous work it should be possible to form an idea for each of the substances listed what levels of exposure are judged not to pose a risk of respiratory tract toxicity and what levels might pose a significant risk.

	<p>From this, a prioritisation exercise could be done based on the size of the workforce exposed at levels where there could be a significant risk. A WATCH member indicated that in the prioritisation matrix in WATCH/2005/15 Annex 1, the existing column 2 'number of workers' should be modified to indicate the numbers exposed to 'excessive' levels of the substance in question.</p>
6.22	<p>The Chairman then suggested that the first three columns in the prioritisation matrix would be: column 1 'agent/process; column 2 'where excessive exposure might arise'; and column 3 'size of workforce potentially exposed to excessive levels'. A HSE member felt that by suggesting that a workforce was 'excessively' exposed there is a danger of determining the priorities for intervention before all of the data are gathered. He felt that it perhaps would be better to consider workforces 'significantly' exposed, such as 10% or more above the highest level of exposure deemed not to pose a threat of respiratory tract toxicity.</p>
6.23	<p>Another comment was that the prioritisation exercise also needs to account for other factors surrounding the substance that may lead to interventions elsewhere; for example, is it an asthmagen that is receiving attention within the 'asthma' element of the Disease Reduction Programme? A further idea to include a column to indicate the robustness of the data was raised and agreed by all WATCH members.</p>
6.24	<p>In response to a comment from a WATCH member to consider indicating situations where intervention would be difficult, a sixth column was then proposed by the Chairman to indicate the perceived ease of intervention.</p>
6.25	<p>Seeing that agreement was emerging on a revised structure for a prioritisation matrix, the Chairman then asked WATCH members if any of them felt that they would be able to help provide data or expertise to populate the table?</p>
6.26	<p>A member commented that hygiene data from substance reviews previously undertaken by HSE and elsewhere could indicate where various different levels of exposure are likely to occur. This data could then be compared to any recent or current data, if available. To obtain more recent data he recommended approaching occupational hygiene consultants working in industry. He also felt that HSE's inspectorate should be able to give an up-to-date view on the various industries involved.</p>
6.27	<p>The Chairman then summed up the discussion and asked WATCH if they could agree the following Action Points;</p> <p>[i] that the focused approach described in WATCH/2005/15/Annex 1 is the most appropriate method to pursue in seeking to combat COPD caused by occupational exposure to substances.</p> <p>[ii a] new column headings had been crafted by WATCH for use in the prioritisation matrix; column 1- agent/process, column 2- where significant exposure might occur ('significant' being above a level judged not to pose a risk of respiratory disease), column 3- possible size of the workforce significantly exposed, column 4- are measures leading to exposure control already being taken under other initiatives?, column 5- robustness of data, column 6- perceived ease of intervention.</p> <p>[ii b] a brief discussion on how to populate the table suggested the use of occupational hygiene consultants and approaching HSE's inspectorate to obtain current perspectives on the industries in question.</p> <p>[ii c] WATCH would await the completion of the matrix before deciding on the best method to prioritise from the data available.</p> <p>[iii] WATCH members considered that alongside this prioritisation exercise, use of a 'broad brush' approach and also the use of very focused industry-specific activity should not be ruled out, particularly if suitable and justified opportunities for either presented themselves.</p> <p>All WATCH members signified their agreement with this summary.</p>
7	Dermal absorption
7.1	<p>Introduction</p> <p>The Chairman introduced Prof. Faith Williams (University of Newcastle) who had been invited to the meeting for this item as an ad hoc expert committee member. He explained that recently the key issue in this paper, the derivation of a percentage value for dermal uptake of a substance, has become a controversial issue in EU chemical risk assessment work and whatever position is taken has significant regulatory consequences for the risk assessment of industrial chemicals and biocides</p>

	across the EU. Consequently, the considered opinion of WATCH is sought to arrive at a robust UK regulatory position with particular reference to the Action Point in the cover paper asking WATCH “...to help develop, with HSE, a clear position on how to deal with test substance retained in the stratum corneum, in interpreting <i>in vitro</i> skin penetration studies and deriving an overall dermal penetration value to be taken forward into risk assessment (risk characterisation) work.”
7.2	<p>Professor Williams’ initial perspective</p> <p>Prof. Williams provided the Committee with some background information on dermal absorption. She explained that, <i>in vivo</i>, a substance in contact with the surface of the skin diffuses through the stratum corneum, into the epidermis and then the dermis and then will be transported away from the site and into the body by the systemic circulation. <i>In vitro</i>, studies are performed using an isolated piece of skin; essentially the same process occurs, but once a substance reaches the dermis there is only receptor fluid below. In a good quality study the receptor fluid will have been designed appropriately to be a reasonable parallel to the <i>in vivo</i> situation. When calculating the absorption of a substance one needs to consider how to handle the data that are available for what is still on the surface of the skin, what has evaporated, what is in the stratum corneum, what is in the living skin (epidermis/dermis) and what is in the receptor fluid.</p>
7.3	<p><u>Dermal absorption of non-lipophilic substances <i>in vitro</i></u></p> <p>Following the application of a non-lipophilic substance to the skin, the tendency is for most of the substance that manages to enter the skin to be fully absorbed, leaving relatively small amounts of material still residing in the stratum corneum, dermis and epidermis. Consequently, deciding how to take account of the amount of substance in the stratum corneum is not a major issue for risk assessment.</p>
7.4	<p><u>Dermal absorption of lipophilic substances <i>in vitro</i></u></p> <p>Following application of a lipophilic substance to the skin, there is a tendency for a lipophilic substance to associate with the stratum corneum. Sequential tape stripping can then be used to gather data on material that is present at different depths within the stratum corneum. Tape-stripping data often shows that the concentration of a lipophilic substance usually decreases across the stratum corneum as one approaches the epidermis, ie there is more of a lipophilic substance in the upper layers of the stratum corneum. <i>In vivo</i>, over a period of time (24 – 48 h) the upper layers of the stratum corneum and any substance retained within these layers will slough off. Consequently, the usual practice is to ignore material retained within the topmost layers of the stratum corneum when calculating a dermal absorption value. Material in the lower layers of the stratum corneum closer to the epidermis, is perhaps more available for absorption.</p>
7.5	<p><u>Derivation of the intermediate “50 %” figure</u></p> <p>Prof. Williams referred to paragraph 13 of the cover paper which indicated that a pragmatic resolution to the question of how to accommodate within skin absorption calculations substance remaining in the stratum corneum in <i>in vitro</i> studies might be to assume that 50 % of the stratum corneum material will be available for systemic uptake and the remainder lost via sloughing. The suggestion to use a 50 % figure originated from a study with lindane (Dick & Williams, 1997) in which a comparison was made of skin absorption <i>in vitro</i> and <i>in vivo</i>. Comparisons were made of the amounts of substance present in different sections of the skin and the gradient of substance passing through the stratum corneum. Overall, a reasonably close relationship was found between the <i>in vitro</i> and <i>in vivo</i> data. However, lindane is a lipophilic molecule and so a considerable amount was retained in the stratum corneum; there was comparatively more present in the stratum corneum there in the <i>in vitro</i> study than the <i>in vivo</i> study. In human volunteers, the amount of material present in the stratum corneum following a 6 h exposure period then reduced by 50 % 18 h later. This may be the result of sloughing. Hence one might postulate that, of the total substance contained within the stratum corneum a few hours after application of the substance, perhaps 50 % will be lost to sloughing and 50 % might be available for absorption.</p>
7.6	<p>Since these results were published, other studies have been performed in animals, looking at what happens to material in the stratum corneum following removal of material on the surface, both <i>in vivo</i> and <i>in vitro</i> (these studies investigated the dermal absorption of testosterone, which is not as lipophilic as lindane). The studies showed that <i>in vitro</i>, after removal of substance from the skin surface, the amount of material in the stratum corneum tends to decrease with time and the amount of material present in the epidermis and dermis tends to increase. This confirms that <i>in vitro</i>, material</p>

	present in the stratum corneum could still be potentially available for absorption at a later timepoint and perhaps adds support for the “50 %” pragmatic approach outlined above. However, more sophisticated <i>in vitro</i> studies, employing tape-stripping to establish the concentration gradient across the stratum corneum, have established that only a small percentage (5 – 10 %) of the total content of the substance in the stratum corneum is in the lower layers, near to the epidermis. Therefore perhaps inclusion of even 50 % of the stratum corneum content is a considerable overestimate of substance absorption?
7.7	<p>WATCH discussion: <i>in vitro</i> skin absorption testing</p> <p>The Chairman reminded members that the primary concern in this discussion is the amount of a substance that would actually get into the body <i>in vivo</i> following skin exposure. The <i>in vitro</i> dermal absorption test is designed to simulate “real life” skin exposure and the issue that WATCH is being asked to consider is what percentage figure to take from an <i>in vitro</i> study to calculate an actual body burden, from skin exposure data, for use in human risk assessment.</p>
7.8	<p><u>Choice of receptor fluids</u></p> <p>A WATCH member asked about the case of replicating the <i>in vivo</i> situation by selecting the receptor fluid used in the <i>in vitro</i> tests. For example, some substances entering the bloodstream do not dissolve in plasma but are taken up by binding proteins. Another WATCH member explained that the receptor fluids used <i>in vitro</i> do not replicate such features. She did emphasise that the guidelines for the conduct of <i>in vitro</i> dermal absorption studies state that the interpretation of such studies should not be hampered by solubility issues. It should be ensured that the test substance is readily soluble in the receptor fluid. This is critical – otherwise any material entering the skin is likely to remain there.</p>
7.9	<p><u>Timing issues</u></p> <p>A WATCH member commented that in many <i>in vitro</i> studies a substance is applied to the skin for 24 h; and that the risk assessment process for repeated exposure is looking at skin exposure and body burden daily, ie over 24h. If, in an <i>in vitro</i> study a substance has not moved into the receptor fluid within 24h, one could argue that such a substance does not contribute to a daily body burden. Another WATCH member responded that, in an <i>in vivo</i> situation it is possible that during the next 24 h such material held within the skin could move across into the bloodstream and could add to the body burden. Overall, it was suggested that one important aspect to consider in designing and appraising an <i>in vitro</i> dermal absorption study is how accurately it simulates potential occupational exposures to a substance. For example, it is important to have information on how the substance is being used, how it is being formulated, etc. If relevant occupational exposure data were available, it may help ascertain the length of time a substance might be in contact with the skin – it seems unlikely that workers would experience a 24-hour occupational exposure.</p>
7.10	<p>A WATCH member wondered if absorption would be greater if there were multiple small exposures rather than a single large exposure, even if the total exposure was the same in each case? Is the <i>in vitro</i> test system being tested to the maximum by applying a single exposure? A different WATCH member commented that multiple exposures are difficult to replicate in <i>in vitro</i> studies and went on to explain that absorption through the skin occurs by a process of passive diffusion relating to the concentration of material sitting on the skin. If an infinite dose of a substance is applied to the surface of the skin, there is a relationship between flux through the skin and concentration. If there is not an infinite dose on the surface of the skin then absorption through the skin is not maximised. Provided that this did not become a confounding factor, then it was felt that, if the skin was exposed to a substance as a number of small doses, then the total absorption would be the same as if the same amount in total was administered as one dose. An attempt to address this and other issues led to a recently completed EU project (partly funded by HSE) to look at the correlation between <i>in vitro</i> and <i>in vivo</i> dermal absorption. The project concluded that there are three areas where information is lacking and that need to be explored further:</p> <ul style="list-style-type: none"> • Extrapolation from a single dose to multiple dosing • The influence of changing from one formulation to another • The appropriateness of using to use a structure-activity approach to predict absorption?
7.11	<u>Skin viability</u>

	<p>A WATCH member asked how the integrity of the skin was assured in the <i>in vitro</i> test? In response a WATCH member commented that the most reliable <i>in vitro</i> studies use human skin. Usually it is obtained following surgery and the issue is whether or not it is stored appropriately prior to use. Therefore the integrity of the skin is checked before performing the test, ideally following OECD guidelines. Where possible the member felt that a standard chemical for which one knows the dermal absorption characteristics should be used as a control in all <i>in vitro</i> tests, to check skin integrity. This should be considered as best practice, but it is unclear whether all laboratories include this in <i>in vitro</i> testing at present.</p>
7.12	<p>Human skin from different parts of the body and different individuals is variable in terms of permeability, with up to an 8-fold variation; therefore, there is a question regarding how many different skin samples to use in a test.</p>
7.13	<p><u>Use of tape stripping</u></p> <p>HSE asked if there was an agreed number of tape strippings that should be taken from a skin sample? A WATCH member responded that <i>in vivo</i>, about 25 strippings are generally performed to establish with confidence the gradient of substance across the stratum corneum gradient. <i>In vitro</i>, if skin is in the system for 24h, then when stripping is performed it is possible that the epidermal/dermal junction breaks down. Hence <i>in vitro</i> it might only be possible to take a smaller number of strips from the stratum corneum.</p>
7.14	<p>The Chairman summed up the discussion on the characteristics of <i>in vitro</i> testing by commenting that HSE and WATCH need to pay more attention than had perhaps been the case up to now to critically appraising the quality of <i>in vitro</i> skin absorption studies.</p>
7.15	<p>Discussion on the Action Point to be addressed</p> <p>A WATCH member suggested that if all or even 50 % of the material present in the stratum corneum at the end of an <i>in vitro</i> skin absorption study is included in deriving a figure for absorbed dose, this is likely to generate an over-estimate of the percentage of a dermal exposure that would be absorbed <i>in vivo</i>. If none of the stratum corneum material is included, then as the best data available, though limited in quantity, suggests that only 5 – 10 % of the material in the stratum corneum is present in the lower layers of the stratum corneum, such an approach would be a better estimate. The use of an intermediate figure between 0 % and 50 % could be problematic, as there is not enough data available to support any particular number to use. WATCH members signified their agreement with this analysis.</p>
7.16	<p>The recommendation was made that if an attempt was made to consider any of the material retained in the stratum corneum in <i>in vitro</i> studies to be included as part of the prediction of percentage dermal absorption <i>in vivo</i>, then it would be important to know the location of the material within the stratum corneum. Consequently, information on the gradient of material through the stratum corneum, obtained by tape stripping, would be important. Using this approach, one could consider including in the calculation of absorbed substance the amount of material in the lower stratum corneum layers. However this data is not usually available in studies published to date. WATCH recommended that, where possible, the gradient of a substance across the different stratum corneum layers should be included as part of an <i>in vitro</i> dermal absorption study report.</p>
7.17	<p>If stratum corneum gradient data were not available (but the <i>in vitro</i> study was considered to have been otherwise well-conducted) WATCH recommended that none of the material remaining in the stratum corneum at the end of an <i>in vitro</i> study (usually of 24 hours duration) should be included as part of the calculation of percentage absorption through the skin.</p>
7.18	<p>Overall conclusions of the discussion</p> <p>WATCH agreed the following points in response to the Action Point in the cover paper:</p> <ul style="list-style-type: none"> • Critical appraisal of <i>in vitro</i> dermal absorption studies is important, to ensure adherence to current guidelines. • If a study is not robust, it might well be appropriate not to use its findings in a risk assessment. • Wherever possible data on the gradient of a substance in the stratum corneum should be extracted from the report of an <i>in vitro</i> study; only the material in the lower layers, near to the epidermis, should be included in a calculation of

	<p>percentage absorption.</p> <ul style="list-style-type: none"> • If a study is robust, but presents the quantity of substance in the stratum corneum as a single aggregate figure, then the material in the stratum corneum should not be included in the derivation of a value for the percentage dermal absorption.
7.19	A WATCH member commented that with the introduction of the OECD guideline for <i>in vitro</i> skin absorption studies, then the data generated in the future from this type of study should be more reliable.
8	Cidex-OPA
8.1	<p>Background</p> <p><u>Presentation by Advanced Sterilization Products</u></p> <p>The Chairman began by introducing David Campbell (European Scientific Director), Alison Barker (European Regulatory Manager), Mark Selby (Chemical Safety Consultant) and Kevin Corrigan (Global Director of Regulatory Affairs) from Advanced Sterilization Products, the manufacturers of Cidex-OPA, who were present for this item. David Campbell gave a presentation to the Committee regarding the use and processing of endoscopes, factors involved in deciding the method of sterilisation and factors influencing workplace risk management advice for users of Cidex-OPA (a 0.55 % solution of ortho-phthalaldehyde, OPA).</p>
8.2	<p><u>Research report evaluating chemical disinfecting agents used in endoscopy suites in the NHS</u></p> <p>The Chairman then introduced Dr Karen Niven (Head of Health and Safety Services, Occupational Health and Safety Advisory Service) who had been commissioned by HSE to deliver a research report which could then be used as the basis of guidance for users (WATCH/2005/17 Annex 2), highlighting the benefits and limitations of use of chemical disinfectants in endoscope decontamination.</p>
8.3	She indicated to the Committee that in her opinion this was a complex area in which her aim had been to develop guidance that staff engaged in endoscopy work in the health services could use to aide their decision making when choosing a disinfectant. The document she had produced set out a two-stage approach designed to encourage wherever possible the elimination of the use of chemicals in endoscope disinfection and sterilisation. The use of the COSHH Essentials framework within the document was intended to help clarify understanding, this framework being easily accessible to health workers.
8.4	The Chairman then asked the Committee to focus its attention on the two Action Points described in the cover paper WATCH/2005/17.
8.5	<p>Exposure to Cidex-OPA</p> <p>A WATCH member asked what was the allergen that caused anaphylactic shock in the 9 reported cases described in WATCH/2005/17 Annex 3?</p>
8.6	Advanced Sterilization Products replied that in total 43 cases of anaphylaxis have been reported worldwide. All cases have been bladder cancer patients who have received multiple cytoscopy examinations in clinics performing manual disinfection of the endoscopes. It was found that in these clinics the recommended cleaning procedure had not been performed correctly, leaving a residual amount of OPA raw material on the endoscope. Therefore, it is suspected that anaphylaxis was the result of sensitisation from contact with OPA.
8.7	Another WATCH member asked whether in the reports of OPA-induced anaphylaxis there was any indication of respiratory involvement? The company replied that tightening of the airway is a classic symptom of anaphylaxis and this was seen in some of the cases.
8.8	Another member asked the company to comment on the position of WATCH, taken in 2002, that, based upon read-across to similar substances, it would be predicted that OPA itself has the potential to cause respiratory sensitisation (asthma)?
8.9	The company responded by confirming that experimental testing shows OPA to be a skin sensitiser and therefore classification of OPA itself with R43 is appropriate. This is stated on the safety data sheet for Cidex-OPA; however, this product is a 0.55 % solution of OPA and in risk management terms, concern for skin sensitisation is low. There have been no reported cases of skin sensitisation

	in users of Cidex-OPA.
8.10	The Committee member then asked for confirmation of the concentration at which OPA is present in commercially supplied preparations used in endoscope suites? Advanced Sterilization Products replied that the major form is a 0.55% OPA-containing preparation. This is a concentration that provides efficient disinfection within a reasonable period of time (5 minutes). If a higher concentration were used then the time required for disinfection would decrease, but an advantage of using a relatively low concentration of OPA in the disinfectant is that it is easier to remove any residual OPA from the endoscope before its next use. A further WATCH member then asked if there was any potential exposure to OPA at a concentration greater than 0.55% OPA? Advanced Sterilization Products replied that there is a more concentrated 5.75% OPA solution that is used in automatic endoscope reprocessors (AERs). An automatic dispenser performs the dilution process to the “in-use” concentration of 0.0575%, thereby limiting human contact.
8.11	A WATCH member also asked whether information alerting users to the potential for sensitisation (of different types) is explicit and clear on the labelling of the product? Advanced Sterilization Products reiterated that on the safety data sheet for Cidex-OPA it is stated that the substance OPA is a skin sensitiser and this is reflected in the risk management recommendations for Cidex-OPA. In terms of respiratory sensitisation, the only relevant statement used within the safety data sheet for Cidex-OPA is ‘may aggravate existing asthma conditions’. The company did not feel it was appropriate to use a statement such as “may cause respiratory sensitisation” when there was no data to suggest that Cidex-OPA has caused such an effect. Cidex-OPA has been used world-wide for 6 years and there have been no reported cases of respiratory sensitisation during this time. In its opinion, this would represent over-classification. Advanced Sterilization Products also indicated that the risk management strategy for Cidex-OPA that it currently advocates would remain appropriate, even if OPA did have the potential to cause asthma. When asked if it would consider animal testing to further explore the asthmagenic potential of OPA, the company representatives replied that no reliable animal test for predicting asthmagenic potential was available. Another WATCH member then questioned whether the labelling and the SDS for the concentrate (5.75% OPA) differ from those used for the 0.55% OPA product. The company replied that for the concentrate an R43 classification (“may cause sensitisation by skin contact”) is used on the label.
8.12	In addition to this, a WATCH member asked if there was any potential OPA exposure in the form of aerosols of the product or exposure to dust? The company replied that potential exposure to OPA in dust form only occurs during manufacture. The company did not expect any exposure to aerosols of OPA in solution during the use of Cidex-OPA, unless the product is used in a way that does not comply with the Advanced Sterilization Products’ recommendations. A further question was whether the company was performing any active health surveillance in endoscopy suites where Cidex-OPA is used? The company replied that it does attempt to monitor the experience of such workers in the EU, USA, Canada, Australia and Japan. In other countries the monitoring is more limited but any complaint reports will be received from all countries using Cidex-OPA as part of post-marketing surveillance.
8.13	Guidance for users of disinfectants The Chairman then asked for views on Action Point [i] in which WATCH is asked to express its opinion on the report by Karen Niven (WATCH/2005/17/Annex 2).
8.14	The company responded by indicating that in its opinion the suggested direction to place Cidex-OPA in COSHH Essentials Hazard Group E (special case) and control approach 4 (special case) should be reconsidered and suggested that all biocidal products for this application should be treated as special cases, not just Cidex-OPA . The company representatives also felt that the clarity of the document would be improved by including descriptions of the hazardous properties of the other commercially available disinfectants, saying that for example, the chlorine-based products are corrosive, toxic via oral exposure and very toxic via the inhalation route of exposure. They also felt that a specified risk management approach for the control of Cidex-OPA in the workplace should be described. To this end they suggested that a template is constructed within the document into which each manufacturer puts its product/risk management information to enable the users of the disinfectants to make a direct comparison of the available products.
8.15	A WATCH member asked if it were not the case that Cidex-OPA would be placed in Hazard Group E, regardless of the applicability of the R42 ‘may cause sensitisation by inhalation’ risk phrase. Karen

	Niven replied that this was not the case; if COSHH Essentials were applied based on information from the manufacturer's safety data sheet then Cidex-OPA would be placed into Hazard Group C.
8.16	Several WATCH members then agreed that regarding Cidex-OPA as sitting most appropriately in Hazard Group C was valid. However, one deemed it appropriate to self-classify OPA in relation to skin and respiratory sensitisation potential, the 0.55 % concentration in Cidex-OPA is below the 1 % concentration threshold for the strict requirement to classify a preparation for sensitisation potential based on the recognised sensitisation potential of a component substance. In addition to this, the very low vapour pressure of Cidex-OPA would limit exposure.
8.17	A WATCH member made a further comment that COSHH Essentials does not have to always be the risk management tool employed to ensure adequate control in the workplace. If one is considering a well-contained material whose physical properties limit exposure, such as the case with Cidex-OPA, then following the advice of appropriate product information should be enough to ensure a safe system of work.
8.18	The Chairman then asked Advanced Sterilization Products to reiterate the risk management approach that it advocates for Cidex-OPA, so that WATCH members could reflect on its adequacy.
8.19	Advanced Sterilization Products replied that it stipulates that Cidex-OPA (0.55 % product) should only be used by professionals, with suitable ventilation and operators should use goggles, gloves and gown. The same approach is taken for the concentrated Cidex-OPA (5.75% product) but it is stipulated that it should only be used in a closed system with external ventilation. In addition, instructions on procedures for the maintenance of equipment in which the concentrated 5.75% OPA product is used are provided.
8.20	A WATCH member then asked if there was any potential exposure to OPA during maintenance of the AERs? The company replied that decontamination routines indicate that AERs should be cleaned of disinfectant before maintenance can be carried out. However, Karen Niven said that in her experience maintenance isn't always planned; most frequently it is conducted in response to a spillage from the pipe work of the machines.
8.21	A further comment was made by a WATCH member that the local lymph node assay described in WATCH/2005/17 Annex 4 indicates that OPA is a skin sensitiser even at a concentration of 0.027%. This is below the concentration of OPA in the commercially supplied Cidex-OPA solution. He questioned whether the company had taken into account this finding in its risk management advice? The company responded by indicating that it would recommend the avoidance of skin contact for any biologically active molecule and clearly state in the product information that protective clothing including gloves must be worn. OPA, even at the concentration in Cidex-OPA, stains the skin, which acts as an indicator of exposure.
8.22	A WATCH member then asked Karen Niven for her thoughts on the approach she had outlined in her report, in view of the Committee's discussion. She replied that she was satisfied with the broad approach taken in the report but highlighted the need for input from a panel of relevant professionals, such as infection control specialists, nursing and medical specialists and occupational health and safety specialists, in order to make a balanced decision when selecting a disinfectant for use. At present, in her opinion this is done inconsistently and patient safety and infection control are often given more consideration than the health and safety of the staff.
8.23	A WATCH member commented that COSHH Essentials is principally a generic banding scheme for the control of inhalation exposures rather than skin exposures. It was deliberately designed to allocate substances automatically to Hazard Groups, based on their classification and labelling. Built into it is Hazard Group E for which the requirement to "seek specialist advice" is intended to indicate that there is no automatic and generic answer for what is appropriate for workplace control. In this case specialist advice could be the risk management information provided by Advanced Sterilization Products.
8.24	The Chairman then asked the Committee whether it agreed that the risk management advice provided by Advanced Sterilization Products is the appropriate risk management strategy for Cidex-OPA. Members signified their agreement.
8.25	The Chairman then attempted to capture a summary of the position. COSHH Essentials assigns any entity to a Hazard Group based upon how it is classified and labelled. There is no current EU-wide agreed classification of OPA and so in this case OPA and Cidex-OPA are self-classified by the

	<p>respective suppliers. The legal position of “self” classification means that the classification and labelling used cannot be dictated by the regulatory authorities. Also, as COSHH Essentials is designed such that materials are assigned to Hazard Groups automatically based on how they are classified and labelled, there is no scope for a regulatory process, organisation or committee to assign entities to Hazard Groups on a case-by-case basis using expert knowledge and judgement. Given that Advanced Sterilization Products issues detailed risk management advice for Cidex-OPA that, in the opinion of WATCH, is appropriate to secure safe handling, then it needs to be considered whether portraying the selection of a risk management strategy as a COSHH Essentials situation is the best approach for this situation?</p>
8.26	<p>A WATCH member commented that he would prefer to see that the selection of a disinfection system for endoscopes was presented as a risk-based approach rather than a hazard-based approach. The advocacy of autoclaving, for example, seems to indicate risk-based thinking, whereas chemical disinfectants had been considered from a hazard perspective. Karen Niven replied that COSHH indicates that a hierarchical approach should be taken when making choices, with preference given to substances of low hazard. A useful way forward may be to consider that the appropriate controls for all disinfectants should be determined using specialist advice and to invite all suppliers of disinfectants to stipulate in detail the necessary workplace risk management approach. If this is to occur, Advanced Sterilization Products indicated the need to cover the introduction of any new products into the market in the future.</p>
8.27	<p>The Chairman then asked the Committee if they had any further questions or points regarding the report produced by Karen Niven. No further issues were identified.</p>
8.28	<p>The Chairman summed up the position, that the report produced by Karen Niven in WATCH/2005/17 Annex 3 will not be the final guidance issued by HSE for users of endoscopes. WATCH appreciated the work done by Karen Niven and the research report produced provides a substantial amount of useful information. The discussion of this item by WATCH had raised a number of issues that would now be considered by HSE when producing the final guidance.</p>
8.29	<p>Karen Niven felt that with the benefit of the WATCH discussion some further modification of the research report to accommodate the amendments suggested by the Committee would be beneficial. She kindly offered to do some further work on this.</p>
8.30	<p>The Chairman summed up the discussion in relation to the Action Points in paragraph 18 of the cover paper. In relation to Action Point [i]:</p> <ul style="list-style-type: none"> • WATCH concluded that the research report produced by Karen Niven (“An Evaluation of Chemical Disinfecting Agents Used in Endoscopy Suites in the NHS”) provides a substantial amount of useful information. However, a number of additional issues have been raised which will need to be considered by HSE before the final guidance is published. <p>In relation to Action Point [ii]:</p> <ul style="list-style-type: none"> • WATCH agreed that the risk management advice provided by Advanced Sterilization Products is the appropriate risk management strategy for Cidex-OPA.
8.31	<p>The Chairman then concluded this item and thanked Karen Niven and the Advanced Sterilization Products representatives for their contributions to this item.</p>
9	<p>Interdepartmental Group on Health Risks from Chemicals (IGHRC)</p>
9.1	<p>Background</p> <p>The Chairman asked Prof. Len Levy (IEH Secretariat and WATCH member) to introduce the item. The IEH provides the Secretariat role for IGHRC.</p> <p>Prof. Levy presented to WATCH members a summary of the IGHRC initiative and the 2003-06 work programme.</p>
9.2	<p><u>Guidance document on route-to-route extrapolation</u></p> <p>One of the guidance document projects within the 3-year work programme is on route-to-route extrapolation. The draft document (WATCH/2005/18 Annex 1) was prepared as a guide to be followed when faced with the need to consider extrapolating toxicological data on a substance obtained via one exposure route, in predicting the toxicology of the same substance when exposure</p>

	is via a different route, for which no data exist. WATCH was then asked by the Chairman to comment and/or endorse the document.
9.3	A WATCH member commented that including a couple of worked examples at the end of the document would assist the reader in applying the guidance.
9.4	A different WATCH member commented that in considering extrapolation from oral to inhalation exposure the guidance given was suitable. However, he noted that in the case of relatively non-volatile aerosols specific cases may arise in which the available data suggest using a different approach (i.e. more or less precautionary) and provision for this should be made within the text. Examples of using alternative approaches could be included in any future revisions of the guidance.
9.5	On a similar theme, another WATCH member asked what was the logic behind using different default values for oral to inhalation extrapolation for high oral toxicity and low to moderate oral toxicity substances? HSE replied that the difference in values is based on an assumption that a substance of high oral toxicity is well absorbed, whereas for a substance of low oral toxicity the extent of oral absorption via the gastrointestinal tract is less certain. If a substance is of low to moderate oral toxicity this may be because it is of low inherent toxicity or that it has significant toxic potential but is poorly absorbed. A further WATCH member replied that in his opinion 100% respirable absorption via the respiratory tract should be assumed in both cases. Prof. Levy indicated that particle size is an important factor in predicting absorption via the respiratory tract. However, if an inhalation study has not been conducted, the particle size characteristics of any potential airborne exposure are often unclear, hence the need for guidance and the suggestion in the document to use the cautious assumption of 100% absorption via the respiratory tract. An HSE member responded by indicating that the comment made by EPAQS in document WATCH/2005/18 Annex 2 recognised that not all inhaled particles of a respirable size would in fact enter the body; some particles would be cleared via the mucociliary system and the gastro-intestinal tract. Therefore, assuming 100% absorption from the respiratory tract would be overcautious. Prof. Levy responded by suggesting that the only way to be sure about the situation would be to have all of the relevant data, thereby alleviating the need for extrapolation based on assumptions.
9.6	The Chairman indicated that this document would have a significant impact on HSE in that its approach differs to the one HSE currently uses of assuming, in the absence of toxicokinetic data, 100% oral absorption and 100% absorption via the respiratory tract for all substances where route-to-route extrapolation is needed.
9.7	Overall conclusions of the discussion The Chairman summed up the discussion. WATCH members endorsed the guidance document indicating that it was both helpful and clear. The suggestions made regarding the inclusion of worked examples and the inclusion of a more detailed explanation of the rationale used to extrapolate from oral to inhalation exposure for relatively non-volatile aerosols would be relayed to the author of the guidance for consideration.
10	Date of next meeting
10.1	The next meeting date was set for 1 st February 2006 in Rose Court.
11	AOB
11.1	There were no items of AOB The meeting closed at 15.30.