Evaluation of four pilot Safety & Health Awareness Days (SHADs) for motor vehicle paint sprayers

HSL/2006/11

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EXECUTIVE SUMMARY

OBJECTIVES

Isocyanate exposure is the biggest known cause of occupational asthma in the UK and vehicle paint sprayers are the work group at most risk. Specialist Occupational Hygiene inspectors in HSE’s Field Operations Directorate (FOD) have set up a three year national intervention programme aimed at:

- Improving the control of isocyanate exposure in Motor Vehicle Repair (MVR) by 2008, with a view to reducing the incidence of occupational asthma in this sector.
- Improving the design of equipment, instruction, training, maintenance and advice to the MVR sector concerning how isocyanates can be controlled.

The range of interventions aimed at influencing the MVR sector includes running a series of safety and health awareness events across the UK. In October to December 2004 HSE conducted four pilot Safety and Health Awareness Days (SHADs) for motor vehicle paint sprayers in four regional locations in Great Britain. The aim of these events was to raise the awareness of motor vehicle repair businesses of the hazards associated with the application of isocyanate paints and how the associated risks can be controlled. The Health and Safety Laboratory (HSL) evaluated the impact of these pilot events.

The aim of the evaluation was to assess the impact of the SHADs in enhancing participants’ knowledge of the risks from isocyanate paints, understandings of how these risks can be controlled, and intention to act upon information provided by the event.

METHOD

An unrelated pre and post intervention design was used to assess participants’ knowledge and understandings of relevant hazards before and after each SHAD. The questionnaires used to assess risk knowledge also contained questions relating to preparedness to act upon the information provided in the SHADs and other aspects relating to the quality and breadth of content.

A total of 240 individuals participated in the four SHADs, representing 172 different MVR organisations. A total of 233 attendees completed the baseline questionnaires, 215 of whom completed the second questionnaire at the end of the event. Questionnaires did not contain any information to identify participants; therefore respondents in the pre and post samples were not matched. All pre and post intervention respondents were included in the data analyses.

MAIN FINDINGS

1. The overall findings indicate that the MVR SHAD events have increased levels of awareness of the hazards associated with sprayed isocyanate based paint application and related risk control measures amongst participating businesses.

2. 72% (167) of attendees were from small firms, 52% (121) from firms employing less than ten people.

3. Prior to the event, 19% (43) of attendees had seen HSE guidance on Isocyanates in MVR.

4. 92% (199) of participants stated that the event had improved their awareness of the health risks associated with two-pack isocyanate paints.
5. Prior to the event, the majority of participants demonstrated an awareness of the risks of asthma and dermatitis, but a significant proportion of respondents erroneously listed a range of health problems not associated with isocyanate exposure.

6. After the event a significant proportion reported increased awareness of the potential for isocyanate exposure associated with subsidiary (non paint spraying) tasks.

7. The events were also successful in raising participants’ awareness of the use of effective control measures to reduce the risk from isocyanate paint. For example:
   - Correct answers to a question on how to check that the spray booth or spray space extraction system is working properly increased from 29% (67) before the event to 68% (146) afterwards.
   - Correct answers to a question on how to test for exposure to isocyanate increased from 2% (4) before the event to 43% (81) afterwards.

8. After the event participants reported decreased levels of confidence that their organisation met health and safety regulations on controlling exposure, indicating that the event had improved awareness of regulations, methods for effectively controlling exposure and highlighted weaknesses in participants existing measures.

9. After the event participants reported increased levels of confidence in the selection of appropriate respiratory protective equipment (RPE); filters for respirators; and spray booth filters. Levels of confidence in selecting appropriate protective gloves were lower after the event.

10. Following the event, 94% (202) of participants stated the intention to take action within their business on at least one aspect of health and safety addressed within the event they attended. The most commonly identified issues for change concerned the adoption of health monitoring of employees; aspects relating to the selection and use of RPE; booth / workshop filters / filtration systems; booth / spray space clearance times and air quality.

11. The majority of participants rated the quality of content and presentation for individual sessions within the event as ‘very good’ or ‘excellent’.

12. The session on booths received the most favourable assessment and was identified by 43% (92) of participants as the element of the event they found most useful. A key feature of this session was that the various demonstrations enabled participants to visualise their potential exposure to a normally invisible hazard (isocyanate).

RECOMMENDATIONS

1. Based upon the evidence of significant enhancement of knowledge of hazards and risk controls imparted, the programme of SHAD events should continue.

2. The HSE project team should review the results of the knowledge questionnaire including qualitative comments from participants to inform decision making over the format and content of future MVR SHAD events. Particular attention should be paid to the provision of additional advice relating to the selection and use of R/PPE.

3. The evaluation questionnaires would benefit from minor revisions so as to enhance their effectiveness in assessing relevant issues.
1 INTRODUCTION

1.1 BACKGROUND

Over a thousand people contract occupational asthma each year in the UK. Amongst the agents responsible, isocyanate exposure continues to be the most frequently reported cause accounting for about 20% of the total (Piney, 2004). Two-pack paints containing isocyanates are used extensively in motor vehicle repair (MVR) for repainting/refinishing vehicles, mainly in primers and lacquers. Sprayed application produces the highest exposures and is one of the main causes of occupational asthma. MVR paint sprayers have an 80 times higher risk of getting asthma compared with the broader UK working population (HSE, 2005).

Specialist Occupational Hygiene inspectors in HSE’s Field Operations Directorate (FOD) have set up a three year intervention programme across Great Britain, aimed at:

- Improving standards of control of isocyanate exposure in MVR by 2008, with a view to reducing the incidence of occupational asthma in this sector.
- Improving the design of equipment, instruction, training, maintenance and advice to the MVR sector on risk control.

The range of interventions aimed at influencing the MVR sector includes running a series of half-day safety and health awareness events (SHADs) across Great Britain. From October to December 2004, the HSE conducted four pilot safety and health awareness raising events aimed at micro (less than 5 employees) and small (between 6 and 50 employees) MVR businesses, at four regional locations (Cheshire, Bristol, Kilmarnock, Hitchin).

The aim of these events was to raise the awareness of motor vehicle repair businesses to the risks from isocyanate paints and how these risks can be controlled. Each event comprised five sessions:

- Health risks and isocyanate exposure
- Booths and spray spaces
- Respiratory Protective Equipment
- Paints and spray guns
- Exposure testing, health checks and other risks

The Health and Safety Laboratory (HSL) were commissioned to evaluate the impact of these pilot events.

The aim of the evaluation was to assess the impact of the SHADs on participants’ knowledge of the risks from isocyanate paints and how these risks can be controlled, and their intention to act upon information provided by the event.

Section 2 of this report details the methodology employed in carrying out the work. Section 3 presents the results of the evaluation. The findings are discussed in section 4 and recommendations are provided in section 5.
2 METHOD

2.1 EVALUATION DESIGN

An unrelated pre and post intervention design was used to assess participants’:

- Knowledge of hazards
- Knowledge of health risks
- Knowledge of risk control and monitoring systems
- Preparedness to act upon information received at the safety and health awareness events.

Questionnaires were developed to gather information from participants at the beginning and end of each event.

2.2 QUESTIONNAIRE DESIGN

The baseline (before) and post intervention (after) questionnaires were designed to address the following key areas:

- Sources of health and safety information
- Awareness of health risks
- Awareness of control measures
- Confidence in controlling exposure
- Intention to act on information received
- Participants’ appraisal of the event

Questions designed to address issues of awareness and confidence was derived from key messages presented within HSE guidance on isocyanates in motor vehicle repair (HSE 2003a-f) and the planned content for the health and safety awareness events.

A key consideration in designing the questionnaires was the need for brevity, given the limited time available during the health and safety events to gather information on the topics of interest. The questionnaires were therefore limited to a double-sided A4 format, each taking approximately 10 minutes to complete.

The questionnaires comprised a combination of closed and open questions. The 'open format' questions required respondents to provide answers in their own terms; by contrast the 'closed format' required respondents to select one or more responses from a fixed number of alternatives (see Appendix 1). Open questions were used where more detailed information was required and when it was not possible to provide responses in a closed format without it being obvious which response was the ‘correct’ one.

The questionnaire was piloted at the first event (Cheshire). This resulted in some minor editorial changes prior to the production of the final version of the final question sets.

2.3 DATA COLLECTION

The baseline questionnaires were distributed to participants when they registered for each of the events and collected before the event commenced. The post intervention questionnaires were distributed to participants at the end of the final session of the event. Participants were offered an incentive of an entry into a prize draw on submission of a completed questionnaire. The prize offered was a spaying visor, donated by a supplier.
2.4 PARTICIPANTS

Table 1 provides details of the number of attendees at each event, the number of organisations represented, and the number of questionnaires returned to the organisers. A total of 240 individuals were registered as attendees at the four health and safety events, representing 172 different organisations. A total of 233 attendees completed questionnaires before the event and 215 at the end.

Table 1: Number of attendees, organisations and questionnaires returned:

<table>
<thead>
<tr>
<th></th>
<th>Cheshire</th>
<th>Bristol</th>
<th>Kilmarnock</th>
<th>Hitchin</th>
<th>All events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisations</td>
<td>22</td>
<td>65</td>
<td>30</td>
<td>55</td>
<td>172</td>
</tr>
<tr>
<td>Represented</td>
<td>37</td>
<td>78</td>
<td>48</td>
<td>77</td>
<td>240</td>
</tr>
<tr>
<td>Registered Attendees</td>
<td>29</td>
<td>72</td>
<td>47</td>
<td>85</td>
<td>233</td>
</tr>
<tr>
<td>Questionnaires</td>
<td>29</td>
<td>68</td>
<td>43</td>
<td>75</td>
<td>215</td>
</tr>
</tbody>
</table>

For the Cheshire event, eight of the participants were from two local colleges; therefore the number of participants from MVR bodyshops was 29. The 29 questionnaires returned appear to have come from these 29 individuals representing 20 MVR bodyshops. For Bristol and Kilmarnock, 78 and 48 individuals attended each event respectively; although a small number of the registered attendees did not complete questionnaires. For the Hitchin event there were 77 registered attendees and 85 baseline questionnaires returned. This discrepancy may indicate that not all attendees returning questionnaires had registered for the event and possibly relates to additional representatives from the organisations that registered.

2.5 DATA ANALYSIS

Questionnaire data were entered into an SPSS (Statistical Package for the Social Sciences) database for analysis. Responses to open questions were categorised based upon content, however, this was not possible in the case of two questions where difficulties were encountered in coding responses: ‘what parts of the booth extraction system should you check regularly?’ and ‘what checks/test should be done to check the air flow and air quality to air fed masks?’. HSE Occupational Hygiene staff assisted with the appraisal of responses to the free format questions designed to assess hazard knowledge and understandings of risk control.

Questionnaires did not contain any information to identify participants; therefore respondents in the pre and post intervention samples were not matched. All pre and post intervention respondents were included in the data analyses. For quantifiable data, frequency tables were produced and, where appropriate, formal tests of significance (Chi-square and Mann-Whitney U) were applied to assess the degree of changes in participants’ responses between the pre and post intervention assessments. The non-parametric, Mann-Whitney U test was applied because the distributions of responses on the numerical scales were skewed towards one end of the scale (See Bryman and Cramer, 1997).
3 RESULTS

3.1 OVERALL FINDINGS FROM QUESTIONNAIRES

This section presents the findings from the baseline and post intervention questionnaires for four pilot health and safety awareness events, combined. A detailed breakdown of results for individual events is provided in Appendix 2.

The findings presented in this section are organised according to the six key areas addressed by the questionnaires:

- Sources of health and safety information;
- Awareness of health risks;
- Awareness of control measures;
- Confidence in controlling exposure;
- Intention to act on information received; and,
- Participants’ appraisal of the event.

3.2 DEMOGRAPHIC INFORMATION

Figure 1 provides a breakdown of proportionality of the sample by size of business. Of the 233 participants, the majority of these were from small businesses, 52% (121) of them employing less than 10 staff and 20% (46) of them employing between 11-50 staff.

![Figure 1: Size of business/company for participants returning questionnaires]

Figure 2 provides a breakdown of the participants’ role in their businesses for the 233 participants that returned questionnaires at the start of the event. The majority of participants were owners or employee/sprayers, 30% (70) and 29% (67) respectively.

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1 Numbers of participants are presented in brackets.
3.3 SOURCES OF HEALTH AND SAFETY INFORMATION

The baseline questionnaire asked participants whether they had seen HSE guidance on isocyanates in MVR and explored their use of other sources of health and safety information. 19% (43) of participants reported that they had that they had seen HSE guidance on isocyanates in MVR. Participants at the Cheshire event were asked where they had seen this guidance, responses included the HSE website, Trade magazines, Trade Associations, Local Authorities. Although participants at the other three events were asked what guidance they had seen, only two specifically referred to the MVR guidance control sheet MR02 and one participant mentioned a ‘print out for each substance’, presumably the product data sheet. Other responses referred to the internet/website; HSE visits; trade association; and supplier.

Figure 3 provides details of the primary sources of health and safety information used by participants.
Suppliers were identified as a source of information by 51% (120) of the participants. HSE’s website, inspectors and ‘infoline’ were identified as sources of information by 24% (57), 15% (34) and 7% (17) of participants respectively. Other noteworthy sources of information participants had used included, trade press and consultants. Additional sources of information specifically mentioned by participants included: supervisor, colleagues, college, and in-house health and safety department.

Participants were asked what key point they would like covered during the event. The main areas suggested were: legislation; health risks and effects; and how to check and maintain controls. Two respondents from the Hitchin area indicated that they had heard about the content of the event prior to attending, possibly from attendees at one of the other events; specifically they indicted they would like to see the ‘model/toy cars’ used to demonstrate clearance times for spray booths and spaces.

### 3.4 AWARENESS OF HEALTH RISKS

The post intervention questionnaire presented the following question: ‘This event has improved my awareness of the health risks associated with two-pack isocyanate-based paints’.

Figure 4 illustrates the distribution of responses. 92% (199) of participants either 'agreed' or 'strongly agreed' with this statement, i.e. that the event had improved their of awareness of health risks associated with isocyanate paint.

![Figure 4: This event has improved my awareness of the health risks associated with two-pack isocyanate-based paints](image-url)
Figure 5 provides a breakdown of responses to the baseline question: *How many of the following health problems can be caused by isocyanate-based paint?*. Multiple responses were permitted to this question.

![Figure 5: How many of the following health problems can be caused by isocyanate-based paint?](image)

The most widely cited health problem was asthma, which was identified by 92% (214) of participants. It is perhaps surprising that this figure is not higher as the linkage between isocyanate exposure and occupational asthma was highlighted in the letter of invitation to participating businesses. 77% (179) of the sample identified skin disease. Asthma due to respiratory sensitisation and dermatitis are the two primary health concerns associated with isocyanate for HSE (HSE 2003a-f).

A notable proportion of participants also identified a number of health problems not likely to result from exposure to isocyanate-based paint, 60% (140) erroneously cited ‘cancer’ and 54% (127) ‘blood poisoning’.

Figure 6 provides details of responses to a question presented in the baseline and post-intervention questionnaires. Participants were asked to identify which MVR bodyshop tasks, other than spraying, can cause significant isocyanate exposure. Multiple responses were permitted for this question.

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2 The HSE project officer advised that the non-spraying tasks currently regarded as more likely to cause significant isocyanate exposure are: baking; spray-gun cleaning; small area repairs; and dry-flattening or sanding.
Figure 6: Apart from spraying what are the other significant causes of isocyanate exposure?

After the event there was an increase in the number of participants selecting three of the four tasks considered by HSE to constitute a likely cause of significant isocyanate exposure (baking and dry-flatting or sanding, and spray gun cleaning).

- For baking and dry-flatting or sanding the change in proportion of participants selecting these tasks was found to be significant (Chi-square p<.01).
- There was a significant decrease (Chi-square, p<.05) in the number of participants selecting small area repairs, which is the fourth task considered likely to cause significant isocyanate exposure.
- For three of the four tasks considered least likely to cause significant isocyanate exposure (mixing paint, brush painting roller painting) there was a significant decrease (Chi-square p<.01) in the number of participants identifying them as significant causes of exposure.
- There was no change in the number of participants identifying wet-flatting as a significant cause of isocyanate exposure.

3.5 AWARENESS OF CONTROL MEASURES

Participants were asked in the baseline and post intervention questionnaire: 'How do you know that the booth or spray space extraction system is working properly?'.

This was an open question allowing participants to provide their own answer, rather than selecting from a range of options provided. Figure 7 illustrates an increase in participants
providing correct responses (i.e. perform smoke test/negative pressure/air flow assessment)\(^3\) from 29% (67) before the event to 68% (146) afterwards and a decrease in incorrect and non-responses. These changes are statistically significant (Chi-square, p<.01).

![Graph showing changes in percentages before and after the event.]

**Figure 7:** ‘How do you know that the booth or spray space extraction system is working properly’?

A small number of responses in the incorrect category indicated that some participants rely on visibility and smell to judge the presence of isocyanate. Examples of responses, mostly from before the event, included: ‘sniff’, ‘I can see it when I am spraying’, and ‘visual mist clearance’. Further details of incorrect responses are provided at appendix 2.

A further open question presented in the baseline and post intervention questionnaire asked: ‘How can you check that isocyanate exposure is properly controlled?’.

Note - this question was not presented in the Cheshire baseline questionnaire; therefore the results from the post intervention questionnaire for Cheshire have been excluded and the results presented in figure 8 relate to the other three locations (N = 203 before; N= 186 after).

Figure 8 shows an increase in participants providing correct responses (biological monitoring/urine test)\(^4\) from 2% (4) before the event to 43% (81) afterwards and a considerable decrease in the number of non-responses. These changes are significant (Chi-square, p<.01). The proportion of incorrect responses increased after the event and a high proportion of these were from participants giving ‘smoke test’ as the answer. There were also indications from responses to this question that that participants rely on visibility and smell to check that exposure to isocyanate is properly controlled.

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\(^3\) Smoke test, negative pressure and air flow were agreed with the HSE project officer as correct responses to this question.

\(^4\) Biological monitoring and urine test were agreed with the HSE project officer as correct responses to this question.
**Figure 8**: How can you check that isocyanate exposure is properly controlled?

Participants were asked in the baseline and post intervention questionnaire: ‘With the booth running, when is it safe to remove your air fed respirator/visor in the booth after spraying’.

The range of response options and participants’ responses are presented in figure 9. The vast majority of participants responded that it was safe to remove their air fed respirator/visor after 5 minutes. There is a slight increase in the proportion of respondents indicating that the booth takes 5-10 minutes to clear and a decrease in participants selecting either shorter or longer clearance times, although this difference is not statistically significant.

**Figure 9**: With the booth running, when is it safe to remove your air fed respirator/visor in the booth after spraying?

5 COSHH MVR Control Guidance Sheet MR02 states that isocyanate vapour takes 10 minutes or more to clear. The HSE project officer advised that most booths would clear within 5 minutes.
The following three graphs illustrate the results from questions presented in the baseline questionnaires only due to the constraints of questionnaire length. Figure 10 presents the responses selected by participants to a question asking how often a ventilation engineer should check their booth. The vast majority of participants responded that the booth should be checked within 14 months, though only 22% (51) selected the time interval specifically recommended by HSE\(^6\).

![Bar chart showing frequency of booth checks](image)

**Figure 10**: How often should a ventilation engineer check your booth?

Participants were asked: *Where should you store respirators/visors?*

Figure 11 show that 80% (186) of participants indicated that they should be stored outside the booth, for example, in a bag, box or cupboard. 35% (81) of participants specifically referred to clean/protective storage. Incorrect responses included: ‘inside the mixing room’, ‘inside the booth’, ‘in the paint store’ and an unspecified ‘safe place’.

![Bar chart showing respirator/store responses](image)

**Figure 11**: Where should you store respirators/visors?

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\(^6\) COSHH MVR Control Guidance Sheet MR02 states that a competent ventilation engineer should examine the system every 14 months.
Participants were asked: ‘How often should you check the air flow and air quality to air fed masks? At least once every…’

Figure 12 shows that the majority 51% (119) of participants indicated that the air flow and air quality should be checked at least once every 6 weeks. 22% (51) of participants selected the time interval specifically recommended by HSE7.

3.6 CONFIDENCE IN CONTROLLING EXPOSURE

Participants were asked in the baseline and post intervention questionnaires: ‘How confident are you that your company meets health and safety regulations on controlling exposure to two-pack isocyanate-based paint?’.

Figure 13 illustrates participants’ responses.

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7 COSHH MVR Control Guidance Sheet MR02 states that air flow and air quality to air-fed RPE should be checked at least every three months.
Figure 13 shows that 70% (164) of participants indicated they were 'confident' or 'very confident' (response 4&5) before the event and 59% (128) indicated they were confident after the event. This apparent decreased confidence that their company meets health and safety regulations is statistically significant (Mann Whitney U Test, P<.05).

The following four graphs present results from questions in the baseline and post intervention questionnaires which asked participants how confident they feel about selecting equipment to control exposure (respirators; filters for respirators; protective gloves; spray booth filters). Figure 14 shows an increase in the proportion of participants who were 'very confident' about selecting the right type of respirator after the event from 44% (102) to 68% (146). The difference in confidence is statistically significant (Mann Whitney U Test, P<.01)

![Figure 14: How confident are you about selecting the right type of respirator?](image)

Figure 15 shows an increase in the proportion of participants who were 'very confident' about selecting filters for respirators from 35% (82) before the event to 53% (113) after. The difference in confidence is statistically significant (Mann Whitney U Test, P<.01)

![Figure 15: How confident are you about selecting filters for respirators?](image)
Figure 16 illustrates a decrease in the proportion of participants who were confident about selecting protective gloves after the event. The difference in confidence is statistically significant (Mann Whitney U Test, P<.05).

![Confidence in Selecting Protective Gloves](image)

**Figure 16:** How confident are you about selecting protective gloves?

Figure 17 illustrates an increase in the proportion of participants after the event who were ‘very confident’ about selecting filters for inside spray booths from 36% (85) before the event to 48% (104) after. The difference in confidence is statistically significant (Mann Whitney U Test, P<.01)

![Confidence in Selecting Filters inside spray-booths](image)

**Figure 17:** How confident are you about selecting filters inside spray-booths?

The wording for the above four questions was altered following the Cheshire event, from ‘Not at all/very confident’ to ‘Much less/much more confident’. However, the proportions of respondents in each of the response categories appeared to be sufficiently consistent across each event to support the comparisons presented in the above four graphs. Figure 18 also presents the results of the after questionnaire for Bristol, Kilmarnock, and Hitchin. Overall, the findings presented in figure 18 are consistent with those above, in that after the event participants felt more confident about selecting respirators; filters for respirators; and filters for inside spray booths. Participants were less confident about selecting protective gloves.

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3.7 INTENTION TO ACT ON INFORMATION RECEIVED

In the post intervention questionnaire only, participants were asked a number of questions concerning their intention to act on information they had received during the event. Figure 19 presents the responses indicating that 93% (200) of participants ‘agreed’ or ‘agreed strongly’ (responses 4&5) that the event encouraged them to take further action to control exposure to isocyanate-based paints in their workplace.

94% (202) of participants answered ‘yes’ to a question specifically asking whether they intended to take action within their business on something they had seen or heard on the day. Participants were also asked to give details of these intended actions. Intended actions were predominantly concerned with conducting checks of: health; RPE; filters; clearance times; and air quality. Further details of intended actions are provided in appendix 2.
Figure 20 illustrates responses to a question asking how likely participants think they are to carry out their intended action. 92% (187) of participants considered it was ‘likely’ or ‘highly likely’ (responses 4&5) that they would carry out this action.

![Figure 20: How likely is it that you will carry out this action?](image)

An additional question asked participants to identify anything that might prevent them taking action. The two main barriers to action identified were cost and time.

### 3.8 PARTICIPANTS’ APPRAISAL OF EVENT

The post intervention questionnaire contained a number of questions to elicit participants’ views on the quality of the event. The following five graphs present responses in relation to the content and presentation of each of the five sessions in the event: health risks and isocyanate exposure; booths and spray spaces; respiratory protective equipment; paints and spray guns; exposure testing, health checks and other risks.

Figure 21 illustrates participants’ appraisal of the health effects session for which a considerable majority gave ratings of ‘very good’ or ‘excellent’ for content and presentation, 82% (177) and 79% (169) respectively.

![Figure 21: Participants’ appraisal of health effects session](image)
Figure 22 illustrates participants’ appraisal of the booths & spray spaces session for which a considerable majority of participants gave ratings of ‘very good’ or ‘excellent’ for content and presentation 86% (183) and 86% (184) respectively.

Figure 23 illustrates participants’ appraisal of the RPE session for which the majority of participants gave ratings of ‘very good’ or ‘excellent’ for content and presentation, 68% (147) and 67% (144) respectively.
Figure 24 illustrates participants’ appraisal of the working with paints session for which the majority of participants gave ratings of ‘very good’ or ‘excellent’ for content and presentation, 62% (133) and 62% (134) respectively.

![Content and Presentation Ratings](image1)

**Figure 24:** Participants’ appraisal of working with paints session

Figure 25 illustrates participants’ appraisal of the exposure testing; health checks and other risks session for which the majority of gave ratings of ‘very good’ or ‘excellent’ for content, 79% (169) and 76% (164) respectively.

![Content and Presentation Ratings](image2)

**Figure 25:** Participants’ appraisal of exposure testing; health checks and other risks session
Figures 26 and 27 show parts of the event participants said they found most useful and least useful. Some participants identified more than one part or topic. Figure 26 shows that the booths session was rated as most useful by a notable proportion of participants, 43% (92).

![Figure 26: Which part of this event did you find most useful?](chart)

Figure 27 indicates that the session with the highest proportion of participants indicating they found it to be least useful was the paints session, 16% (34). It is noteworthy that 12 of the 14 respondents indicating that they found the RPE session to be least useful attended the Hitchin event.

![Figure 27: Which part of this event did you find least useful?](chart)

Appendix 2 provides more detailed qualitative comments from participants regarding the reasons for identifying sessions as most or least useful. Participants’ responses to a question at the end of the ‘after’ questionnaire asking for any additional comments are also provided in Appendix 2.
4 DISCUSSION

This section provides a brief discussion of the key findings presented in the results section. The overall findings indicate that the safety and health awareness events have increased awareness of motor vehicle repair businesses to the risks from isocyanate paints and how these risks can be controlled.

Details regarding the size of businesses attending the event indicate that 72% (167) of attendees were from small firms, 52% (121) from firms employing less than ten people. These small firms, particularly the smallest MVR businesses constitute the main target population for the safety and health awareness events. HSE believes that people in these businesses are most at risk and the hardest group to reach (Piney, 2004). The questionnaires did not identify whether participants were members of trade associations. This could be addressed in evaluation questionnaires for future events.

A relatively small proportion, 19% (43), of attendees indicated that they had seen HSE guidance on Isocyanates in MVR. This highlights the need for these health and safety awareness events to communicate key messages on controlling exposure. Other sources of health and safety information that were identified are potential routes for communicating health and safety information. Comments from a small number of individuals attending the final event asking to see the ‘toy/model’ car, indicates that some of the information from the events may percolate to other (non-attending) businesses within the MVR community.

There is good evidence that these pilot events have been successful in raising awareness of the health risks associated with two-pack isocyanate paints for the vast majority of attendees. For the most part. Participants were already aware of the two key health problems associated with isocyanate paint, however, the questionnaire did not explore whether they could correctly identify relevant symptoms. There appears to be some confusion regarding other potential health effects as participants identified a range of other health problems they believed to be caused by isocyanate-based paints. Participants’ awareness has also increased in relation to non-spraying body shop tasks considered to be significant causes of isocyanate exposure. There appears to be some confusion over the status of small area repairs, which more participants before the event rated as likely to cause exposure.

The events have also been effective in raising participants’ awareness of the necessary control measures to reduce the risks from isocyanate exposure. Key messages that have been successfully communicated to participants include: ‘how to check that the booth or spray space extraction system is working properly’, and ‘how to check that isocyanate exposure is properly controlled’.

Questions presented in the baseline questionnaire provided an indication of participants’ level of awareness, but not whether this had changed following the event. The vast majority of participants were aware that they should not store RPE in the spray booth; however, a large proportion did not specifically refer to a location that keeps RPE clean. Questions asking about time intervals for checks on booths and RPE elicited responses that were generally within the required time period, but less than a quarter of participants selected time intervals recommended by HSE. This highlights a limitation of questions offering a range of time intervals to choose from, in that participants may not know the correct one but select a reasonably conservative looking answer. This also appears to have been an issue with the responses give to the question regarding booth clearance time.
The decrease in participants’ confidence in relation to their organisation’s compliance with health and safety regulations on controlling exposure indicates that the event had improved awareness of health and safety regulations on controlling exposure and identified weaknesses in their existing measures. The information provided during the events has improved participants’ confidence to select respirators; filters for respirators; and spray booth filters. Participants were less confident about selecting protective gloves. The session on the risk to skin was quite brief and although risks were identified there appears to be a need for more information on protective gloves.

The events appeared very successful in encouraging participants to take risk control improvement action following the event. Participants’ responses were also very positive in relation to the likelihood of them carrying out the specific actions they had identified in relation to their own organisations. Participants were further encouraged to take action by the provision of action plans. HSE intends to conduct follow up visits to participating businesses in one of the SHAD locations to establish what proportion of attendees have actually carried out their intended action.

Participants were generally very positive in their appraisal of the events, with the majority rating the content and presentation of individual sessions as either ‘very good’ or ‘excellent’. The session on booths received the most favourable assessment and was identified by a notable proportion of participants as the part they found most useful. This session provided a video visualisation demonstration of factors impacting upon air flows in booths, the level of isocyanate present during and immediately after spraying, and the smoke test to check clearance times in a model booth. A key feature of this session was that the various demonstrations enabled participants to visualise their potential exposure to a non-visible hazard (isocyanate).

---

8 Video visualisation, developed by HSL, combines video recording of workers carrying out specific tasks (motor vehicle paint sprayer) with real time monitoring of their level of exposure (isocyanate).
5  RECOMMENDATIONS

1. Based upon the evidence of significant enhancement of knowledge of hazards and risk controls imparted, the programme of SHAD events should continue.

2. The HSE project team should review the results of the knowledge questionnaire including qualitative comments from participants to inform decision making over the format and content of future MVR SHAD events. Particular attention should be paid to the provision of additional advice relating to the selection and use of R/PPE.

3. The evaluation questionnaires would benefit from minor revisions so as to enhance their effectiveness in assessing relevant issues.
## APPENDIX 1: QUESTIONNAIRES

### BODYSHP Paint Sprayers: Health and Safety Event

West Cheshire College, 27 October 2004

**Before-event form**

- This event will raise your awareness of the risks from two-pack isocyanate-based paints, and how to control those risks.
- What do you know already? We need to know. Please take a few minutes to complete this form and the one later to be entered for the Prize Draw.
- Your answers are anonymous, neither you nor your business can be identified. Please answer all the questions. If you don’t know the answer put ‘don’t know’ or ‘DK’.

1. How confident are you that you meet health and safety regulations on controlling exposure to two-pack isocyanate-based paint? *(circle one number)*
   - Not at all confident ← 1 2 3 4 5 → Very confident

2. How many of the following health problems you think can be caused by isocyanate-based paint? *(circle all that apply)*
   - Blood poisoning
   - Cancer
   - Asthma
   - Heart problems
   - Stroke
   - Skin disease
   - Liver disease

3. How confident are you about selecting each of the following to reduce exposure to isocyanate-based paints? *(circle one number for each)*
   - The right type of respirator
     - Not at all confident ← 1 2 3 4 5 → Very confident
   - Filters for respirators
     - Not at all confident ← 1 2 3 4 5 → Very confident
   - Protective gloves
     - Not at all confident ← 1 2 3 4 5 → Very confident
   - Filters inside spray-booths
     - Not at all confident ← 1 2 3 4 5 → Very confident

4. Which of the following could cause significant exposure to isocyanate? *(circle all that apply)*
   - Mixing paint
   - Brush painting
   - Roller painting
   - Baking
   - Wet flattening
   - Spray-gun cleaning
   - Small area repairs
   - Dry-flattening or sanding:

5. With the booth running, when is it safe to remove your air fed respirator/visor in the booth after spraying? *(circle one)*
   - Immediately
   - 1 mins
   - 5 mins
   - 10 mins
   - 15 mins
   - 15+ mins

6. How long should you leave booth extraction running after spraying/baking? *(circle one)*
   - Not at all
   - 1 mins
   - 5 mins
   - 10 mins
   - 15 mins

*Please turn over to questions on the back of this page*
7. How do you know that the booth or spray space extraction system is working properly? (What do you test?)
____________________________________________________________________________________

8. What parts of the booths and extraction system should you check regularly?
____________________________________________________________________________________

9. How often should a ventilation engineer check your booth? (circle one)
   Every: not at all 3 mths 6 mths 9 mths 14 mths 24 mths
____________________________________________________________________________________

10. Where should you store respirators/visors?
____________________________________________________________________________________

11. a. How often should you check the air flow and air quality to air fed masks? (circle one)
    At least once every: 6 wks 3 mths 6 mths 12 mths not at all
    b. What checks/tests should be done? (Please list)
    __________________________________________________________________________________
____________________________________________________________________________________

12. Have you seen HSE guidance on isocyanates in MVR? (circle one) Yes No
    If yes, where
    __________________________________________________________________________________
____________________________________________________________________________________

13. a. Which of these have you used to get health and safety information? (circle all that apply)
    HSE website  HSE infoline  HSE inspector  Suppliers  Trade press
    Trade web sites  Training providers  Trade associations  Consultants
    b. Other (please give details)
    __________________________________________________________________________________
____________________________________________________________________________________

14. What key points do you want covered in this event?
____________________________________________________________________________________

15. What size is your business/company? (circle the number of employees)
   0-10 11-50 50+ 250+

16. What is your position in the business (circle one): Owner Employee Self-Employed

Thank you for taking the time to complete this questionnaire
Please hand your completed sheet to one of the organisers
BODYP AINT SPRAYS: HEALTH AND SAFETY EVENT

West Cheshire College, 27 October 2004

After-event form

- Please help us to make these days even better by answering the following questions. Some of the questions will help us find out whether the event has improved awareness of controlling the risks from two-pack isocyanate-based paints.
- Put your name on the last sheet, which will be entered in the Prize Draw. Your answers are anonymous, neither you nor your business can be identified. Please answer all the questions and if you do not know the answer put ‘don’t know’ or ‘DIK’.

<table>
<thead>
<tr>
<th>1. This event has improved my awareness of the health risks associated with two-pack isocyanate-based paints? (circle one number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree strongly ← 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. As a result of this event how confident are you that you meet health and safety regulations on controlling exposure to two-pack isocyanate-based paint? (circle one number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all confident ← 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. How confident are you about selecting each of the following to reduce exposure to isocyanate-based paints? (circle one number for each)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The right type of respirator</td>
</tr>
<tr>
<td>Not at all confident ← 1</td>
</tr>
<tr>
<td>b. Filters for respirators</td>
</tr>
<tr>
<td>Not at all confident ← 1</td>
</tr>
<tr>
<td>c. Protective gloves</td>
</tr>
<tr>
<td>Not at all confident ← 1</td>
</tr>
<tr>
<td>d. Filters inside spray-booths</td>
</tr>
<tr>
<td>Not at all confident ← 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. This event has encouraged me to take further action to control exposure to isocyanate-based paints in my workplace? (circle one number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disagree strongly ← 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. a. Will you take action within your business on anything you have seen or heard about today? (circle one) Yes No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please give details:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. b. If yes, how likely is it that you will carry out this action? (circle one number)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlikely ← 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>c. What might prevent you taking this action?</th>
</tr>
</thead>
</table>

*Please turn over to questions on the back of this page*
6. How do you know that the booth extraction system is working properly?

7. With the booth running, when is it safe to remove your air fed respirator/visor in the booth after spraying? (circle one)
   - Immediately
   - 1 mins
   - 5 mins
   - 10 mins
   - 15 mins
   - 15+ mins

8. What parts of the booths and extraction system should you check regularly?

9. How can you check that isocyanate exposure is properly controlled? (What simple test should you do?)

10. Apart from spraying and baking what are the other significant sources/causes of isocyanate exposure?

11. Please indicate what you thought of each session today by inserting a number in each box below:

    | Poor = 1 | Acceptable = 2 | Good = 3 | Very Good = 4 | Excellent = 5 |
    |-----------|----------------|----------|---------------|---------------|
    | Session   | Health         | Booths   | Respiratory   | Working with  |
    |           |                |          | equipment     | paints         |
    |           |                |          |               | Exposure test,|
    |           |                |          |               | Health checks &|
    |           |                |          |               | other risks   |

    | Content   |
    | Presentation |

12. Which part of this event did you find most useful and why?

13. Which part was least useful and why?

14. Please give us any other comments (e.g. other information you would have liked):

15. What size is your business/company? (circle the number of employees)
   - 0-10
   - 11-50
   - 50+

16. What is your position in the business (circle one): Owner Employee Self-Employed

   Thank you for taking the time to complete this questionnaire
BODYSHP PAINT SPRAYERS: HEALTH AND SAFETY EVENT
City of Bristol College, 29 October 2004

Before-event form

- This event will raise your awareness of the risks from two-pack isocyanate-based paints, and how to control those risks.
- What do you know already? We need to know. Please take a few minutes to complete this form and the one later to be entered for the Prize Draw.
- Your answers are anonymous, neither you nor your business can be identified. Please answer all the questions. If you don’t know the answer put ‘don’t know’ or ‘DK’.

1. How confident are you that your company meets health and safety regulations on controlling exposure to two-pack isocyanate-based paint? (circle one number)
   Not at all confident ← 1 2 3 4 5 → Very confident

2. How many of the following health problems you think can be caused by isocyanate-based paint. (circle all that apply)
   Blood poisoning  Cancer  Asthma  Heart problems
   Stroke  Skin disease  Liver disease

3. How confident are you about selecting each of the following to reduce exposure to isocyanate-based paints? (circle one number for each)
   a. The right type of respirator
      Not at all confident ← 1 2 3 4 5 → Very confident
   b. Filters for respirators
      Not at all confident ← 1 2 3 4 5 → Very confident
   c. Protective gloves
      Not at all confident ← 1 2 3 4 5 → Very confident
   d. Filters inside spray-booths
      Not at all confident ← 1 2 3 4 5 → Very confident

4. Apart from spraying what are the other significant causes of isocyanate exposure? (circle all that apply)
   Mixing paint  Brush painting  Roller painting  Baking
   Wet flattening  Spray-gun cleaning  Small area repairs  dry-flattening or sanding

5. How do you know that the booth or spray space extraction system is working properly?
   (What do you test?) ___________________________________________________________________

6. With the booth running, when is it safe to remove your air fed respirator/visor in the booth after spraying? (circle one)
   Immediately  1 mins  5 mins  10 mins  15 mins  15+ mins

Please turn over to questions on the back of this page
7. What parts of the booths and extraction system should you check regularly?

8. How often should a ventilation engineer check your booth? (circle one)
   
   Every: not at all 3 mths 9 mths 14 mths 24 mths

9. Where should you store respirators/visors?

10. a. How often should you check the air flow and air quality to air fed masks? (circle one)
    
    At least once every: 6 wks 3 mths 6 mths 12 mths not at all
    
    b. What checks/tests should be done? (Please list)

11. How can you check that isocyanate exposure is properly controlled? (What simple test should you do?)

12. Have you seen HSE guidance on isocyanates in MVR? (circle one) Yes No
    
    If yes, what guidance?

13. a. Which of these have you used to get health and safety information? (circle all that apply)
    
    HSE website HSE infoline HSE inspector Suppliers Trade press
    
    Trade web sites Training providers Trade associations Consultants
    
    b. Other (please give details)

14. What key points do you want covered in this event?

15. What size is your business/company? (circle the number of employees)

   0-10  11-50  50+  250+

16. What is your position in the business (circle one): Owner Employee/Sprayer Self-Employed Other

Thank you for taking the time to complete this questionnaire

Please hand your completed sheet to one of the organisers
After-event form

1. This event has improved my awareness of the health risks associated with two-pack isocyanate-based paints: (circle one number)
   Disagree strongly ← 1  2  3  4  5 → Agree strongly

2. As a result of this event how confident are you that your company meets health and safety regulations on controlling exposure to two-pack isocyanate-based paint? (circle one number)
   Not at all confident ← 1  2  3  4  5 → Very confident

3. As a result of this event how confident are you about selecting each of the following to reduce exposure to isocyanate-based paints? (circle one number for each)
   a. The right type of respirator
      Much less confident ← 1  2  3  4  5 → Much more confident
   b. Filters for respirators
      Much less confident ← 1  2  3  4  5 → Much more confident
   c. Protective gloves
      Much less confident ← 1  2  3  4  5 → Much more confident
   d. Filters inside spray-booths
      Much less confident ← 1  2  3  4  5 → Much more confident

4. This event has encouraged me to take further action to control exposure to isocyanate-based paints in my workplace: (circle one number)
   Disagree strongly ← 1  2  3  4  5 → Agree strongly

5. a. Will you take action within your business on anything you have seen or heard about today? (circle one) Yes No
   Please give details: __________________________________________________________

   b. If yes, how likely is it that you will carry out this action? (circle one number)
      Unlikely ← 1  2  3  4  5 → Highly likely

   c. What might prevent you taking this action?
      __________________________________________________________

Please turn over to questions on the back of this page
6. Apart from spraying what are the other significant causes of isocyanate exposure? (circle all that apply) 
Mixing paint  Brush painting  Roller painting  Baking  
Wet flating  Spray-gun cleaning  Small area repairs  dry-flattening or sanding

7. How do you know that the booth or spray space extraction system is working properly?  
(What do you test?) 

8. With the booth running, when is it safe to remove your air fed respirator/visor in the booth after spraying? (circle one)  
Immediately  1 mins  5 mins  10 mins  15 mins  15+ mins

9. What parts of the booths and extraction system should you check regularly? 

10. How can you check that isocyanate exposure is properly controlled? (What simple test should you do?) 

11. Please indicate what you thought of each session today by inserting a number in each box below:  

<table>
<thead>
<tr>
<th>Session</th>
<th>Health</th>
<th>Booths</th>
<th>Respiratory equipment</th>
<th>Working with paints</th>
<th>Exposure testing Health checks &amp; other risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poor = 1</th>
<th>Acceptable = 2</th>
<th>Good = 3</th>
<th>Very Good = 4</th>
<th>Excellent = 5</th>
</tr>
</thead>
</table>

12. Which part of this event did you find most useful and why? 

13. Which part was least useful and why? 

14. Please give us any other comments (e.g. other information you would have liked): 

15. What size is your business/company? (circle the number of employees)  
0-10  11-50  50+  250+ 

16. What is your position in the business (circle one):  
Owner  Employee/Sprayer  Self-Employed  Other

Thank you for taking the time to complete this questionnaire
APPENDIX 2: DETAILED RESULTS

7.1 DEMOGRAPHIC INFORMATION

Table 1: Size of business/company:

<table>
<thead>
<tr>
<th></th>
<th>Cheshire</th>
<th>Bristol</th>
<th>Kilmarnock</th>
<th>Hitchin</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;10</td>
<td>52% (15)</td>
<td>60% (43)</td>
<td>57% (27)</td>
<td>42% (36)</td>
<td>52% (121)</td>
</tr>
<tr>
<td>11-50</td>
<td>14% (4)</td>
<td>15% (11)</td>
<td>25% (12)</td>
<td>22% (19)</td>
<td>20% (46)</td>
</tr>
<tr>
<td>50-250</td>
<td>17% (5)</td>
<td>7% (5)</td>
<td>6% (3)</td>
<td>3% (3)</td>
<td>7% (16)</td>
</tr>
<tr>
<td>250+</td>
<td>7% (2)</td>
<td>11% (8)</td>
<td>8% (4)</td>
<td>14% (12)</td>
<td>11% (26)</td>
</tr>
<tr>
<td>No response</td>
<td>10% (3)</td>
<td>7% (5)</td>
<td>2% (1)</td>
<td>18% (15)</td>
<td>10% (24)</td>
</tr>
</tbody>
</table>

Table 2: Role/position in the business:

<table>
<thead>
<tr>
<th></th>
<th>Cheshire</th>
<th>Bristol</th>
<th>Kilmarnock</th>
<th>Hitchin</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>38% (11)</td>
<td>37% (27)</td>
<td>21% (10)</td>
<td>26% (22)</td>
<td>30% (70)</td>
</tr>
<tr>
<td>Employee/ Sprayer</td>
<td>48% (14)</td>
<td>26% (19)</td>
<td>30% (14)</td>
<td>23% (20)</td>
<td>29% (67)</td>
</tr>
<tr>
<td>Self-Employed</td>
<td>7% (2)</td>
<td>7% (5)</td>
<td>19% (9)</td>
<td>7% (6)</td>
<td>9% (22)</td>
</tr>
<tr>
<td>Manager (incl. h&amp;s advisor)</td>
<td>-</td>
<td>8% (6)</td>
<td>13% (6)</td>
<td>11% (9)</td>
<td>9% (21)</td>
</tr>
<tr>
<td>Director/ Partner</td>
<td>-</td>
<td>8% (6)</td>
<td>2% (1)</td>
<td>6% (5)</td>
<td>5% (12)</td>
</tr>
<tr>
<td>Employee (non-sprayer)</td>
<td>-</td>
<td>-</td>
<td>6% (3)</td>
<td>2% (2)</td>
<td>2% (5)</td>
</tr>
<tr>
<td>Trainer/assessor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3% (3)</td>
<td>1% (3)</td>
</tr>
<tr>
<td>Non MVR</td>
<td>-</td>
<td>3% (2)</td>
<td>4% (2)</td>
<td>1% (1)</td>
<td>2% (5)</td>
</tr>
<tr>
<td>No response</td>
<td>7% (2)</td>
<td>10% (7)</td>
<td>4% (2)</td>
<td>20% (17)</td>
<td>12% (28)</td>
</tr>
</tbody>
</table>

7.2 SOURCES OF HEALTH AND SAFETY INFORMATION

Table 3: Have you seen HSE guidance on isocyanates in MVR? (B)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheshire</td>
<td>41% (12)</td>
<td>55% (16)</td>
<td>4% (1)</td>
</tr>
<tr>
<td>Bristol</td>
<td>21% (15)</td>
<td>67% (48)</td>
<td>21% (15)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>15% (7)</td>
<td>72% (34)</td>
<td>13% (6)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>11% (9)</td>
<td>74% (63)</td>
<td>15% (13)</td>
</tr>
<tr>
<td>All events</td>
<td>19% (43)</td>
<td>69% (161)</td>
<td>12% (29)</td>
</tr>
</tbody>
</table>

In the following results 'B' indicates questions from the baseline (before) questionnaire and 'A' indicates questions from the post intervention (after) questionnaire. For questions contained in both the before and after questionnaire both sets of data are presented.
If yes – Where/What? (B)

Cheshire - What
- Bodyshop trade magazine (1)
- HSE website (3)
- Local authority (2)
- Trade magazines (2)
- Trade associations (2)

Bristol - Where
- Visit by HSE (2)
- Internet (3)
- Chart on wall (1)
- COSHH (1) & MR02 (2)
- VBRA (1)
- Supplier - paint factor

Kilmarnock - Where
- Print out for each substance (1)

Hitchin - Where
- Free leaflets on website (1)

Table 4: Which of these have you used to get health and safety information: (B)

<table>
<thead>
<tr>
<th></th>
<th>Cheshire</th>
<th>Bristol</th>
<th>Kilmarnock</th>
<th>Hitchin</th>
<th>All events</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSE website</td>
<td>24% (7)</td>
<td>26% (19)</td>
<td>21% (10)</td>
<td>25% (21)</td>
<td>24% (57)</td>
</tr>
<tr>
<td>HSE infoline</td>
<td>-</td>
<td>10% (7)</td>
<td>6% (3)</td>
<td>8% (7)</td>
<td>7% (17)</td>
</tr>
<tr>
<td>HSE inspector</td>
<td>21% (6)</td>
<td>17% (12)</td>
<td>13% (6)</td>
<td>12% (10)</td>
<td>15% (34)</td>
</tr>
<tr>
<td>Suppliers</td>
<td>72% (21)</td>
<td>56% (40)</td>
<td>51% (24)</td>
<td>41% (35)</td>
<td>51% (120)</td>
</tr>
<tr>
<td>Trade press</td>
<td>38% (11)</td>
<td>19% (14)</td>
<td>38% (18)</td>
<td>27% (23)</td>
<td>28% (66)</td>
</tr>
<tr>
<td>Trade web sites</td>
<td>17% (5)</td>
<td>7% (5)</td>
<td>13% (6)</td>
<td>12% (10)</td>
<td>11% (26)</td>
</tr>
<tr>
<td>Training providers</td>
<td>3% (1)</td>
<td>17% (12)</td>
<td>26% (12)</td>
<td>13% (11)</td>
<td>15% (36)</td>
</tr>
<tr>
<td>Trade associations</td>
<td>38% (11)</td>
<td>15% (11)</td>
<td>23% (11)</td>
<td>12% (10)</td>
<td>18% (43)</td>
</tr>
<tr>
<td>Consultants</td>
<td>28% (8)</td>
<td>25% (18)</td>
<td>26% (12)</td>
<td>15% (13)</td>
<td>22% (51)</td>
</tr>
</tbody>
</table>

Other sources of health and safety information (B)

Cheshire
- Straight Set

Bristol
- Boss
- College
- In house health and safety department

Kilmarnock
- MVRA
- SMTA

Hitchin
- From other people that I work with
- PHS audits three times a year
What key points do you want covered in this event? (B)

**Cheshire event**
- Booth filtration; checks
- Changes in legislation; changes in guidelines
- Changes in legislation; key actions; key responsibilities
- Current to proposed legislation
- General
- Greater management awareness
- Improvement; recommendations
- Improvements; recommendations; unknowns!
- Legal implications; staff awareness
- Long term use of two pack paints; health effects
- The unknowns; improvements; recommendations
- Up to date legislation; up to date maintenance

**Bristol event**
- All (3)
- A better understanding of legal obligations and HSE Guidance
- Advice on maintenance
- All general health and safety
- Are we doing enough?
- Awareness or requirement and testing procedures
- Controls to exposure – but all points relevant
- Employee exposure to paints; Risk to employees
- Exposure risks
- Future developments in paints
- General principles of use (2)
- Guidance in monitoring health surveillance; Spray booth checking methods
- Guidance on Health and safety regulations
- Health and safety (2)
- How can you help us?
- How to improve extraction
- How to monitor and reduce the risks from spraying
- How to operate a paint shop correctly
- Improve awareness and knowledge
- Making sure I am compliant with Health and safety measures
- More awareness of what I should be looking out for
- My responsibilities as an employer
- Reinforce what measures we should be taking
- Risks to health
- Safe control of 2k paint in comparison to long term health risks
- Safe working exposures
- Safety aspects related to health and safety
- Spraying safety and isocyanate
- Tests
- The effect this trade is having on my health
- What is regarded as ‘best practice’?

**Kilmarnock event**
- All aspects of health and safety (3)
- Basic health risks
- Employer duty
- Everything generally
- Future compliance
- Future guidelines
- Health
- Health risk assessments
- How best to stay up to date with handling paints
- How to keep staff safe; How to remain compliant
- Isocyanate absorption
- Isocyanate dangers
- Safety (2)
- Safety of products

**Hitchin event**
- All (8)
- Air fed systems; spray booths (2)
- All relevant information on health and safety issues
- Anything is a bonus
- Doctor checks
- Effects of isocyanate paint on the workforce
- Ensure employees are aware of HSE regulations
- Exposure away from spraying
- Full understanding of the causes and concerns of workplace isocyanate – occupant exposure & risks
- General information
- General overview of all isocyanate
- Generally to be more knowledgeable
- Health and safety
- Here to find out about HSE
- How to properly control it if expose to isocyanate
- How to test and keep all employees safe
- Isocyanate exposure checking; dust extraction exposure
- Latest requirements and regulations
- New legislation
- Safety
- Safety aspects; facts; controls
- The effects of isocyanate
- The model cars in the boxes please
- The safety aspect
- The toy car
- Use of isocyanate
- What and where to find correct information
- What effect it has on health; how you can tell other people what it does
7.3 AWARENESS OF HEALTH RISKS

Table 5: This event has improved my awareness of the health risks associated with two-pack isocyanate-based paints: (A)

<table>
<thead>
<tr>
<th></th>
<th>Disagree strongly</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Agree strongly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheshire</td>
<td>-</td>
<td>-</td>
<td>3% (1)</td>
<td>38% (11)</td>
<td>59% (17)</td>
</tr>
<tr>
<td>Bristol</td>
<td>-</td>
<td>3% (2)</td>
<td>9% (6)</td>
<td>23% (16)</td>
<td>65% (44)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>-</td>
<td>-</td>
<td>2% (1)</td>
<td>33% (14)</td>
<td>65% (28)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>-</td>
<td>4% (3)</td>
<td>4% (3)</td>
<td>15% (11)</td>
<td>77% (58)</td>
</tr>
<tr>
<td>All events</td>
<td>-</td>
<td>2% (5)</td>
<td>5% (11)</td>
<td>24% (52)</td>
<td>68% (147)</td>
</tr>
</tbody>
</table>

Table 6: How many of the following health problems can be caused by isocyanate-based paint? (B)

<table>
<thead>
<tr>
<th></th>
<th>Blood poisoning</th>
<th>Cancer</th>
<th>Asthma</th>
<th>Heart problems</th>
<th>Stroke</th>
<th>Skin disease</th>
<th>Liver disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheshire</td>
<td>52% (15)</td>
<td>59% (17)</td>
<td>93% (27)</td>
<td>45% (13)</td>
<td>31% (9)</td>
<td>66% (19)</td>
<td>48% (14)</td>
</tr>
<tr>
<td>Bristol</td>
<td>56% (40)</td>
<td>60% (43)</td>
<td>96% (69)</td>
<td>38% (27)</td>
<td>22% (16)</td>
<td>86% (62)</td>
<td>36% (26)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>45% (21)</td>
<td>55% (26)</td>
<td>98% (46)</td>
<td>36% (17)</td>
<td>21% (10)</td>
<td>77% (36)</td>
<td>32% (15)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>60% (51)</td>
<td>64% (54)</td>
<td>85% (72)</td>
<td>26% (22)</td>
<td>15% (13)</td>
<td>73% (62)</td>
<td>34% (29)</td>
</tr>
<tr>
<td>All events</td>
<td>54% (127)</td>
<td>60% (140)</td>
<td>92% (214)</td>
<td>34% (79)</td>
<td>21% (48)</td>
<td>77% (179)</td>
<td>36% (84)</td>
</tr>
</tbody>
</table>

*Italics* indicate the health problems potentially caused by isocyanate exposure
Table 7: Apart from spraying what are the other significant causes of isocyanate exposure?

<table>
<thead>
<tr>
<th></th>
<th>Cheshire Before</th>
<th>Cheshire After</th>
<th>Bristol Before</th>
<th>Bristol After</th>
<th>Kilmarnock Before</th>
<th>Kilmarnock After</th>
<th>Hitchin Before</th>
<th>Hitchin After</th>
<th>All events Before</th>
<th>All events After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixing paint</td>
<td>83% (24)</td>
<td>21% (6)</td>
<td>88% (63)</td>
<td>62% (42)</td>
<td>83% (39)</td>
<td>56% (24)</td>
<td>78% (66)</td>
<td>65% (49)</td>
<td>82% (192)</td>
<td>56% (121)</td>
</tr>
<tr>
<td>Brush painting</td>
<td>28% (8)</td>
<td>86% (25)</td>
<td>61% (44)</td>
<td>25% (17)</td>
<td>34% (16)</td>
<td>9% (4)</td>
<td>24% (20)</td>
<td>16% (12)</td>
<td>38% (88)</td>
<td>15% (33)</td>
</tr>
<tr>
<td>Roller painting</td>
<td>24% (7)</td>
<td>3% (1)</td>
<td>58% (42)</td>
<td>29% (20)</td>
<td>30% (14)</td>
<td>12% (5)</td>
<td>22% (19)</td>
<td>17% (13)</td>
<td>35% (82)</td>
<td>18% (39)</td>
</tr>
<tr>
<td>Baking</td>
<td>35% (10)</td>
<td>10% (3)</td>
<td>47% (34)</td>
<td>97% (66)</td>
<td>34% (16)</td>
<td>83% (36)</td>
<td>30% (26)</td>
<td>79% (59)</td>
<td>37% (86)</td>
<td>76% (164)</td>
</tr>
<tr>
<td>Wet flating</td>
<td>21% (6)</td>
<td>-</td>
<td>35% (25)</td>
<td>28% (19)</td>
<td>19% (9)</td>
<td>35% (15)</td>
<td>15% (13)</td>
<td>20% (15)</td>
<td>23% (53)</td>
<td>23% (49)</td>
</tr>
<tr>
<td>Spray-gun cleaning</td>
<td>69% (20)</td>
<td>38% (11)</td>
<td>81% (58)</td>
<td>93% (63)</td>
<td>75% (35)</td>
<td>81% (35)</td>
<td>71% (60)</td>
<td>81% (61)</td>
<td>74% (173)</td>
<td>79% (170)</td>
</tr>
<tr>
<td>Small area repairs</td>
<td>52% (15)</td>
<td>86% (25)</td>
<td>60% (43)</td>
<td>53% (36)</td>
<td>62% (29)</td>
<td>42% (18)</td>
<td>65% (55)</td>
<td>68% (51)</td>
<td>61% (142)</td>
<td>49% (105)</td>
</tr>
<tr>
<td>Dry-flattling or sanding</td>
<td>45% (13)</td>
<td>83% (24)</td>
<td>63% (45)</td>
<td>97% (66)</td>
<td>62% (29)</td>
<td>86% (37)</td>
<td>58% (49)</td>
<td>97% (73)</td>
<td>58% (136)</td>
<td>93% (200)</td>
</tr>
</tbody>
</table>

The change (decrease) in the number of participants indicating that mixing paint is a potentially significant cause of isocyanate exposure is statistically significant (Chi Square, p<.01)

The change (decrease) in the number of participants indicating that brush painting is a potentially significant cause of isocyanate exposure is statistically significant (Chi Square, p<.01)

The change (decrease) in the number of participants indicating that roller painting is a potentially significant cause of isocyanate exposure is statistically significant (Chi Square, p<.01)

The change (increase) in the number of participants indicating that baking is a potentially significant cause of isocyanate exposure is statistically significant (Chi Square, p<.01)

The change (decrease) in the number of participants indicating that small area repairs is a potentially significant cause of isocyanate exposure is statistically significant (Chi Square, p<.05)

The change (increase) in the number of participants indicating that dry-flattling or sanding is a potentially significant cause of isocyanate exposure is statistically significant (Chi Square, p<.01)

*Italics* indicate the potentially significant causes of isocyanate exposure.
### 7.4 AWARENESS CONTROL MEASURES

#### Table 8: How do you know that the booth or spray space extraction system is working properly?

<table>
<thead>
<tr>
<th></th>
<th>Smoke test/negative pressure/air flow</th>
<th>Pressure/volume - meter/gauge</th>
<th>Specialist servicing</th>
<th>Incorrect response</th>
<th>Don't know/no response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Cheshire</td>
<td>34%</td>
<td>65%</td>
<td>21%</td>
<td>10%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(10)</td>
<td>(19)</td>
<td>(6)</td>
<td>(3)</td>
<td>(3)</td>
</tr>
<tr>
<td>Bristol</td>
<td>37%</td>
<td>81%</td>
<td>14%</td>
<td>4%</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td>(27)</td>
<td>(55)</td>
<td>(10)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>21%</td>
<td>58%</td>
<td>17%</td>
<td>16%</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td>(10)</td>
<td>(25)</td>
<td>(8)</td>
<td>(7)</td>
<td>(2)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>23%</td>
<td>63%</td>
<td>11%</td>
<td>12%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>(20)</td>
<td>(47)</td>
<td>(9)</td>
<td>(9)</td>
<td>(4)</td>
</tr>
<tr>
<td>All events *</td>
<td>29%</td>
<td>68%</td>
<td>14%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>(67)</td>
<td>(146)</td>
<td>(33)</td>
<td>(22)</td>
<td>(10)</td>
</tr>
</tbody>
</table>

*The change (increase) in the number of participants providing correct answers (Smoke test/negative pressure/air flow) and decrease in the number incorrect and non responses is statistically significant (Chi Square, p<.01).

**How do you know that the booth or spray space extraction system is working properly?**

Responses coded as incorrect

- Air (2)
- Air content/quality (7)
- Air supply and filtration
- Air system working; filters clean; by seeing how clear it is after spraying
- Air test
- Blows doors open if it isn't
- Booth has own warning system
- Booth has warning systems
- Booth tells me
- Change filters every three months
- Check booth weekly; keep booth clean
- Check emissions daily
- Check filters; check air pressure
- Check for smell
- Check visually daily
- Clean extractor fan
- Clean filters; clean fans
- Doors closing correctly over spray filter
- External air test
- Extraction (5)
- Fans are working
- Filter test patch
- Filter will be blocked extraction; visual inspection; filters
- Filters (3)
- Filters are changed and you can see they are working
- Filters; air lines; pressure correct if door remains closed
- I can see it when I am spraying
- It will be tested
- LEV checks (2)
- Overspray; vapours
- Power supply; extractor fan; if spray gets free
- Replace filters & have them serviced regularly
- Seals; filters; fans
- Sniff
- System on booth
- Test air flow to mask; monitor filters; test air flow to mask
- Test the filters before you start
- Tests
- The booth; all systems; do not use
- The pressure when you open and shut oven doors
- The time taken to extract isocyanate
- Time it takes for the mist to clear
- Time to clear spray mist
- Vacuum from inside booth
- Visual inspection of stacks and air quality
- Visual mist clearance (2)
- Visual test-visible mist clears quickly
- We check the hours on back of oven; check extraction filter; test filters, make sure they work
- When no mist escaped from booth door when extractor is on

**Table 9: How can you check that isocyanate exposure is properly controlled?**

<table>
<thead>
<tr>
<th></th>
<th>Biological monitoring, Urine test</th>
<th>Health surveillance</th>
<th>Lung Function test</th>
<th>Incorrect response</th>
<th>Don't know/no response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Cheshire</td>
<td>-</td>
<td>72%</td>
<td>(21)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bristol</td>
<td>3%</td>
<td>41%</td>
<td>(2)</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>-</td>
<td>28%</td>
<td>(12)</td>
<td>2%</td>
<td>-</td>
</tr>
<tr>
<td>Hitchin</td>
<td>2%</td>
<td>55%</td>
<td>(2)</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>All events*</td>
<td>2%</td>
<td>43%</td>
<td>(81)</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>

Note- this question was not presented in the Cheshire ‘Before’ questionnaire, therefore this event has been excluded from the overall analysis.

*The change (increase) in the number of participants providing correct answers (Biological monitoring, urine test) and decrease in the number non responses is statistically significant (Chi Square, p<.01).
How can you check that isocyanate exposure is properly controlled?

Responses coded as incorrect
- Air purity test (5)
- Air test; Odours
- Booth checks regularly
- Booth pressure
- By competent trainee monitor and review
- By KRN
- By training
- Cartridge inspection
- Check air fed mask is worn
- Check equipment
- Check log
- Clearance time
- COSHH checks
- Ensure booth isn't blowing out air
- Follow health and safety (2)
- Get someone else to
- Gloves kept on extraction
- Insist correct PPE is used
- Inspect filter cartridge; correct mixing
- Keep booth shut when in use
- Keep tight control of H&S procedures
- Make sure oven is clear before mask removal
- Masks; Extraction
- Monitoring confinement of material; Air extraction to be as quick as possible
- Only spray in booth
- Overalls and gloves; Extraction system
- Paint factor done
- Read instruction on tins
- Record
- Regular air quality checks
- Regular training
- Risk assessments (2)
- Service checks; Ensuring negative pressure
- Smell
- Smoke test (47)
- Smoke test; Air flow
- Smoke test; Pressure test booths
- Sniff test
- Sniff test
- Spray in booth only; know your booth works
- Test it
- To check VOC in the products
- Ventilation reports
Table 10: With the booth running, when is it safe to remove your air fed respirator/visor in the booth after spraying?

<table>
<thead>
<tr>
<th>Time</th>
<th>Cheshire</th>
<th>Bristol</th>
<th>Kilmarnock</th>
<th>Hitchin</th>
<th>All events*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Immediate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1 minute</td>
<td>3% (1)</td>
<td>3% (1)</td>
<td>3% (2)</td>
<td>3% (2)</td>
<td>2% (1)</td>
</tr>
<tr>
<td>5 minutes</td>
<td>10% (3)</td>
<td>24% (7)</td>
<td>24% (17)</td>
<td>32% (22)</td>
<td>25% (12)</td>
</tr>
<tr>
<td>10 minutes</td>
<td>34% (10)</td>
<td>38% (11)</td>
<td>37% (27)</td>
<td>40% (27)</td>
<td>15% (7)</td>
</tr>
<tr>
<td>15 minutes</td>
<td>17% (5)</td>
<td>3% (1)</td>
<td>6% (4)</td>
<td>4% (3)</td>
<td>13% (6)</td>
</tr>
<tr>
<td>15+ minutes</td>
<td>21% (6)</td>
<td>28% (8)</td>
<td>26% (19)</td>
<td>19% (13)</td>
<td>38% (18)</td>
</tr>
</tbody>
</table>

HSE project officer - Most booths will clear within 5 minutes; MR02 – 10 minutes or more
*Results not statistically significant

Table 11: How often should a ventilation engineer check your booth? (B)

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Cheshire</th>
<th>Bristol</th>
<th>Kilmarnock</th>
<th>Hitchin</th>
<th>All events*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every 3 months</td>
<td>21% (6)</td>
<td>31% (9)</td>
<td>41% (12)</td>
<td>-</td>
<td>- 7% (2)</td>
</tr>
<tr>
<td>Every 9 months</td>
<td>24% (17)</td>
<td>29% (21)</td>
<td>33% (24)</td>
<td>4% (3)</td>
<td>- 10% (7)</td>
</tr>
<tr>
<td>Every 14 months</td>
<td>45% (21)</td>
<td>34% (16)</td>
<td>13% (6)</td>
<td>4% (2)</td>
<td>2% (1) 2% (1)</td>
</tr>
<tr>
<td>Every 24 months</td>
<td>34% (29)</td>
<td>44% (37)</td>
<td>12% (11)</td>
<td>-</td>
<td>- 12% (10)</td>
</tr>
<tr>
<td>Not at all</td>
<td>31% (73)</td>
<td>36% (83)</td>
<td>22% (51)</td>
<td>2% (5)</td>
<td>- (1) 9% (20)</td>
</tr>
<tr>
<td>No response</td>
<td>35% (81)</td>
<td>39% (90)</td>
<td>6% (15)</td>
<td>3% (8)</td>
<td>17% (39)</td>
</tr>
</tbody>
</table>

*Italics* indicate the correct answer according to MR02

Table 12: Where should you store respirators/visors? (B)

<table>
<thead>
<tr>
<th>Storage Location</th>
<th>Cheshire</th>
<th>Bristol</th>
<th>Kilmarnock</th>
<th>Hitchin</th>
<th>All events*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean/protective storage (outside booth)</td>
<td>34% (10)</td>
<td>48% (14)</td>
<td>-</td>
<td>3% (1)</td>
<td>14% (4)</td>
</tr>
<tr>
<td>Bag/box/cupboard (outside booth)*</td>
<td>29% (21)</td>
<td>43% (31)</td>
<td>8% (6)</td>
<td>3% (2)</td>
<td>17% (12)</td>
</tr>
<tr>
<td>Outside booth or paint area*</td>
<td>32% (15)</td>
<td>43% (20)</td>
<td>4% (2)</td>
<td>2% (1)</td>
<td>19% (9)</td>
</tr>
<tr>
<td>Incorrect response</td>
<td>41% (35)</td>
<td>29% (25)</td>
<td>8% (7)</td>
<td>5% (4)</td>
<td>16% (14)</td>
</tr>
<tr>
<td>No response</td>
<td>35% (81)</td>
<td>39% (90)</td>
<td>6% (15)</td>
<td>3% (8)</td>
<td>17% (39)</td>
</tr>
</tbody>
</table>

* No reference to clean/protective storage location

**Where should you store respirators/visors?**
Responses coded as incorrect
- In a safe place (2)
- In restroom

40
In the booth
- Paint mixing room
- Paint stores
- Spray bay; mixing room in sealed box;
- Storage bay
- Store room; mixing room;

### Table 13: How often should you check the air flow and air quality to air fed masks? (B)

<table>
<thead>
<tr>
<th>At least once every:</th>
<th>6 weeks</th>
<th>3 months</th>
<th>6 months</th>
<th>12 months</th>
<th>Not at all</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheshire</td>
<td>45% (13)</td>
<td>28% (8)</td>
<td>17% (5)</td>
<td>3% (1)</td>
<td>-</td>
<td>7% (2)</td>
</tr>
<tr>
<td>Bristol</td>
<td>54% (39)</td>
<td>24% (17)</td>
<td>14% (10)</td>
<td>3% (2)</td>
<td>-</td>
<td>6% (4)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>55% (26)</td>
<td>23% (11)</td>
<td>11% (5)</td>
<td>2% (1)</td>
<td>-</td>
<td>9% (4)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>48% (41)</td>
<td>18% (15)</td>
<td>20% (17)</td>
<td>1% (1)</td>
<td>-</td>
<td>13% (11)</td>
</tr>
<tr>
<td>All events</td>
<td>51% (119)</td>
<td>22% (51)</td>
<td>16% (37)</td>
<td>2% (5)</td>
<td>-</td>
<td>9% (21)</td>
</tr>
</tbody>
</table>

*Italics* indicate the correct answer according to MR02

### 7.5 CONFIDENCE IN CONTROLLING EXPOSURE

### Table 14: How confident are you that your company meets health and safety regulations on controlling exposure to two-pack isocyanate-based paint?

<table>
<thead>
<tr>
<th>Not at all confident 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Very confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Before After</td>
<td></td>
<td></td>
<td></td>
<td>Before After</td>
</tr>
<tr>
<td>Cheshire</td>
<td>-</td>
<td>3% (1)</td>
<td>17% (5)</td>
<td>3% (1)</td>
</tr>
<tr>
<td>Bristol</td>
<td>-</td>
<td>4% (3)</td>
<td>7% (5)</td>
<td>10% (7)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>2% (1)</td>
<td>2% (1)</td>
<td>2% (1)</td>
<td>2% (1)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>2% (2)</td>
<td>4% (3)</td>
<td>5% (4)</td>
<td>4% (3)</td>
</tr>
<tr>
<td>All events*</td>
<td>1% (3)</td>
<td>4% (8)</td>
<td>6% (15)</td>
<td>6% (12)</td>
</tr>
</tbody>
</table>

*Difference in confidence (decrease in confidence) before and after the events is statistically significant (Mann Whitney U Test, P<.05)
Table 15: How confident are you about selecting the right type of respirator?

<table>
<thead>
<tr>
<th></th>
<th>Not at all confident</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Very confident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Cheshire</td>
<td>3% (1)</td>
<td>14% (4)</td>
<td>7% (2)</td>
<td>10% (3)</td>
<td>3% (1)</td>
</tr>
<tr>
<td>Bristol</td>
<td>3% (2)</td>
<td>7% (5)</td>
<td>1% (1)</td>
<td>19% (14)</td>
<td>9% (6)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>-</td>
<td>9% (4)</td>
<td>-</td>
<td>6% (3)</td>
<td>7% (3)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>-</td>
<td>2% (2)</td>
<td>3% (2)</td>
<td>14% (12)</td>
<td>4% (3)</td>
</tr>
<tr>
<td>All events*</td>
<td>1% (3)</td>
<td>6% (15)</td>
<td>2% (5)</td>
<td>14% (32)</td>
<td>6% (13)</td>
</tr>
</tbody>
</table>

*Difference in confidence (increase in confidence) before and after the events is statistically significant (Mann Whitney U Test, P<.01)

Table 16: How confident are you about selecting filters for respirators?

<table>
<thead>
<tr>
<th></th>
<th>Not at all confident</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Very confident</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Cheshire</td>
<td>3% (1)</td>
<td>24% (7)</td>
<td>3% (1)</td>
<td>7% (2)</td>
<td>21% (6)</td>
</tr>
<tr>
<td>Bristol</td>
<td>6% (4)</td>
<td>4% (3)</td>
<td>1% (1)</td>
<td>28% (20)</td>
<td>18% (12)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>-</td>
<td>6% (3)</td>
<td>-</td>
<td>17% (8)</td>
<td>9% (4)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>2% (2)</td>
<td>1% (1)</td>
<td>6% (5)</td>
<td>1% (1)</td>
<td>19% (16)</td>
</tr>
<tr>
<td>All events*</td>
<td>3% (7)</td>
<td>5% (18)</td>
<td>8% (1)</td>
<td>1% (3)</td>
<td>20% (46)</td>
</tr>
</tbody>
</table>

*Difference in confidence (increase in confidence) before and after the events is statistically significant (Mann Whitney U Test, P<.01)
Table 17: How confident are you about selecting protective gloves?

<table>
<thead>
<tr>
<th></th>
<th>Not at all confident 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Very confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Cheshire</td>
<td>7%</td>
<td>3%</td>
<td>7%</td>
<td>3%</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(1)</td>
<td>(2)</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>Bristol</td>
<td>3%</td>
<td>6%</td>
<td>4%</td>
<td>6%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(4)</td>
<td>(3)</td>
<td>(4)</td>
<td>(14)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>-</td>
<td>2%</td>
<td>4%</td>
<td>2%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(2)</td>
<td>(1)</td>
<td>(5)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>1%</td>
<td>4%</td>
<td>7%</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(3)</td>
<td>(6)</td>
<td>(10)</td>
<td>(13)</td>
</tr>
<tr>
<td>All events*</td>
<td>2%</td>
<td>4%</td>
<td>6%</td>
<td>7%</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td>(5)</td>
<td>(9)</td>
<td>(13)</td>
<td>(15)</td>
<td>(37)</td>
</tr>
</tbody>
</table>

*Difference in confidence (decrease in confidence) before and after the events is statistically significant (Mann Whitney U Test, P<.05)

Table 18: How confident are you about selecting filters inside spray-booths?

<table>
<thead>
<tr>
<th></th>
<th>Not at all confident 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Very confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>Before</td>
<td>After</td>
<td>Before</td>
</tr>
<tr>
<td>Cheshire</td>
<td>7%</td>
<td>-</td>
<td>10%</td>
<td>3%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td></td>
<td>(3)</td>
<td>(1)</td>
<td>(9)</td>
</tr>
<tr>
<td>Bristol</td>
<td>8%</td>
<td>-</td>
<td>15%</td>
<td>3%</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>(6)</td>
<td></td>
<td>(11)</td>
<td>(2)</td>
<td>(9)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>2%</td>
<td>2%</td>
<td>6%</td>
<td>-</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(1)</td>
<td>(3)</td>
<td></td>
<td>(9)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>4%</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(2)</td>
<td>(3)</td>
<td>(2)</td>
<td>(16)</td>
</tr>
<tr>
<td>All events*</td>
<td>5%</td>
<td>1%</td>
<td>9%</td>
<td>2%</td>
<td>18%</td>
</tr>
<tr>
<td></td>
<td>(12)</td>
<td>(3)</td>
<td>(20)</td>
<td>(5)</td>
<td>(43)</td>
</tr>
</tbody>
</table>

*Difference in confidence (increase in confidence) before and after the events is statistically significant (Mann Whitney U Test, P<.01)
### Table 19: How confident are you about selecting the right type of respirator (A)?

<table>
<thead>
<tr>
<th></th>
<th>Much less confident 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Much more confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristol</td>
<td>-</td>
<td>1% (1)</td>
<td>9% (6)</td>
<td>28% (19)</td>
<td>62% (42)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>-</td>
<td>-</td>
<td>7% (3)</td>
<td>23% (10)</td>
<td>70% (30)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>-</td>
<td>3% (2)</td>
<td>4% (3)</td>
<td>21% (16)</td>
<td>72% (54)</td>
</tr>
<tr>
<td>All events</td>
<td>-</td>
<td>2% (3)</td>
<td>6% (12)</td>
<td>24% (45)</td>
<td>68% (126)</td>
</tr>
</tbody>
</table>

### Table 20: How confident are you about selecting filters for respirators? (A)

<table>
<thead>
<tr>
<th></th>
<th>Much less confident 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Much more confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristol</td>
<td>-</td>
<td>1% (1)</td>
<td>18% (12)</td>
<td>35% (24)</td>
<td>44% (30)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>-</td>
<td>-</td>
<td>9% (4)</td>
<td>35% (15)</td>
<td>56% (24)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>1% (1)</td>
<td>1% (1)</td>
<td>9% (7)</td>
<td>28% (21)</td>
<td>60% (45)</td>
</tr>
<tr>
<td>All events</td>
<td>.5% (1)</td>
<td>1% (2)</td>
<td>12% (23)</td>
<td>32% (60)</td>
<td>53% (99)</td>
</tr>
</tbody>
</table>

### Table 21: How confident are you about selecting protective gloves? (A)

<table>
<thead>
<tr>
<th></th>
<th>Much less confident 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Much more confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristol</td>
<td>6% (4)</td>
<td>6% (4)</td>
<td>37% (25)</td>
<td>27% (18)</td>
<td>24% (16)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>2% (1)</td>
<td>2% (1)</td>
<td>16% (7)</td>
<td>28% (12)</td>
<td>49% (21)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>4% (3)</td>
<td>13% (10)</td>
<td>21% (16)</td>
<td>31% (23)</td>
<td>31% (23)</td>
</tr>
<tr>
<td>All events</td>
<td>4% (8)</td>
<td>8% (15)</td>
<td>26% (48)</td>
<td>28% (53)</td>
<td>32% (60)</td>
</tr>
</tbody>
</table>

### Table 22: How confident are you about selecting filters inside spray-booths? (A)

<table>
<thead>
<tr>
<th></th>
<th>Much less confident 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Much more confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bristol</td>
<td>-</td>
<td>3% (2)</td>
<td>23% (16)</td>
<td>38% (26)</td>
<td>35% (24)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>2% (1)</td>
<td>-</td>
<td>19% (8)</td>
<td>23% (10)</td>
<td>56% (24)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>3% (2)</td>
<td>3% (2)</td>
<td>11% (8)</td>
<td>31% (23)</td>
<td>53% (40)</td>
</tr>
<tr>
<td>All events</td>
<td>2% (3)</td>
<td>2% (4)</td>
<td>17% (32)</td>
<td>32% (59)</td>
<td>47% (88)</td>
</tr>
</tbody>
</table>
7.6 INTENTION TO ACT ON INFORMATION RECEIVED

Table 23: This event has encouraged me to take further action to control exposure to isocyanate-based paints in my workplace: (A)

<table>
<thead>
<tr>
<th></th>
<th>Disagree strongly 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Agree strongly 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheshire</td>
<td>-</td>
<td>-</td>
<td>10% (3)</td>
<td>31% (9)</td>
<td>59% (17)</td>
</tr>
<tr>
<td>Bristol</td>
<td>-</td>
<td>-</td>
<td>10% (7)</td>
<td>28% (19)</td>
<td>62% (42)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>2% (1)</td>
<td>-</td>
<td>2% (1)</td>
<td>30% (13)</td>
<td>63% (27)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>-</td>
<td>-</td>
<td>3% (2)</td>
<td>23% (17)</td>
<td>75% (56)</td>
</tr>
<tr>
<td>All events</td>
<td>.5% (1)</td>
<td>-</td>
<td>6% (13)</td>
<td>27% (58)</td>
<td>66% (142)</td>
</tr>
</tbody>
</table>

Table 24: Will you take action within your business on anything you have seen or heard about today? (A)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheshire</td>
<td>100% (29)</td>
<td>-</td>
</tr>
<tr>
<td>Bristol</td>
<td>94% (64)</td>
<td>3% (2)</td>
</tr>
<tr>
<td>Kilmarnock</td>
<td>91% (39)</td>
<td>9% (4)</td>
</tr>
<tr>
<td>Hitchin</td>
<td>93% (70)</td>
<td>4% (3)</td>
</tr>
<tr>
<td>All events</td>
<td>94% (202)</td>
<td>4% (9)</td>
</tr>
</tbody>
</table>

Details of intended action: (A)

Cheshire event
- Air quality checks; smoke test in spray booth to check clearance time
- Air quality controls
- Better booth monitoring; better mask monitoring
- Better spray booth
- Booth (2)
- Check air fed masks
- Check clearance time in spray booths; move connection point for sprayer to outside booth; check visors are not removed whilst in booths
- Good housekeeping
- Health screening for new starters; introduce 6 & 12 week questionnaires
- In relation to preparation and functions carried out within spray booths
- Initial health surveillance checks when starting work
- Make sure air fed masks are worn
- Medicals; compressed air tests; air fed mask pipes
- Safety checks
- Smoke test (2)
- Spray booth
- Spray booth inspection & smoke test; extraction
- Spray gun; air fed masks; extraction fans
- Testing young employees (2)

Bristol event
- Air fed mask; Lung test; Skin test; Smoke test for booth
Air flow in spray shack; Warning facility on mask; Air condition from compressor
All are in place as I have just been inspected by HSE
All aspects covered will be reviewed
All topics need to be looked at closer
As an employee I will ensure I do more checks; Assess H&S needs
Awareness of paint in the booth and others around
Better control methods
Better selection of face masks; Gloves; Periods for changing filters
Booth repairs by someone competent; New respirators
Booth seals; Room clearance by a smoke test
Change time in spray space
Check booth efficiently
Check clearance time in booth; Pressure; Filters; Seals
Check filtration
Check respirators; Check filters; Check health
Check spray booth functions
Checking air pressure with the spray gun
Contact with more consultants
Continue to use products with little or no Isocyanates
COSHH Regulations; Health surveillance
Design and performance of vent for ‘spray spaces’
Frequent checks and awareness to staff
Get smoke machine; Test air flow in booth
Glove usage; Smoke test; Air test
Health surveillance
Health surveillance for those working alongside spraying
Introduce new working practices; Monitor ongoing testing
Investigate LEV/Extraction; RPE currently used
Isocyanate testing; Skin tests
Look at booth clearance
Medical checks; Respirator; Air fed checks; Spray booth checks; Keep documents
More checks; More self checks
More training to staff
New air fed mask; Smoke test on spray booth
Organise health surveillance; Arrange a booth clearance test
Personal exposure
Raise issues with bosses
Regular inspections of spray booths & respirators; Skin checks
Replace painting area with booth
Skin
Smoke test (2)
Smoke test booths; Check RPE
Smoke test in booth; Possible change respirator; Air quality check
Smoke test; Breathing air test; Booth test
Smoke test; Health checks
Smoke test; Spray booths
Storage of respirators; Protective gloves
Testing intervals; Smoke test
Testing items
– To check on different types of gloves available
– Total re-evaluation of everything I use and do
– Urine tests (2)
– Will obtain smoke for booth test
– Work Routines; Testing of equipment and air flows

**Kilmarnock event**
– Air quality check
– Air quality check; Booth clearance time
– Air quality check; Health and safety records kept; Health checks
– Booth clear smoke test
– Check air quality
– Check air supply
– Check booth for leaks
– Check clearing time of oven
– Check examination scheme
– Check smoke clearance; Negative pressures
– Check that everything is in place; Pass information onto others
– Correct full face mask
– Determine clearance time for booths; Record RPE maintenance
– Do not remove air feed mask in booth
– Ensure tighter controls amongst painters
– Exposure time after painting
– I will try and make everything safer
– Improve filtration system; More aware of health risks
– Inform sprayers not to lift visors until clear of spray boot
– Look at other equipment in general
– Maintenance and care of RPE
– Make sure our lines are checked regularly; Advise on mask visor removal
– Make sure visor is not lifted too early
– More frequent filter changes; Purchase a smoke detector; No open shop painting
– More training for staff; New masks
– New mask
– Oven maintenance
– Recording of health and safety data
– Safe clearance times for entering booth; Tighter control of PPE; Check procedures
– Smoke test; Manometer
– Smoke testing equipment; negative pressure gauge

**Hitchin event**
– A lot of stuff needs updating
– About the safety aspect
– Affects on non-painting staff; Working places
– Air quality
– Air quality checks; More awareness for employees
– Air valve test
– All aspects of today’s information
– Booth flow; Air quality
– Booths
– Booths; Gloves
– Check all products
– Check masks
- Clearance test (2)
- COSHH; Non Isocyanate products
- Design of new booth with full floor extraction
- Details to company visited of appropriate contact
- Ensure constant monitoring of all PPE
- Ensure that no spraying takes place outside booth
- Extraction
- General overall measures
- Give my respirator a service; Not to enter oven immediately after painting; Do a smoke clearance test
- Health checks
- Improve equipment eg RPE, booth/spray area
- Just about everything
- Lifting paint visors
- Lung function tests; Respirators
- Lung test each year
- Make some changes especially to staff behaviour
- More awareness of masks; Filters
- More booth checks; More health checks; More use of water borne products
- Oven flash of times over spray; Correct gloves; Keeping records
- Oven pressures
- RPE
- Safety checks on RPE
- Skin care
- Smoke test (3)
- Smoke test; Glove check
- Spray booth purge after bake
- Staff training
- Step up monitoring procedures
- Take more care with air fed mask
- Talk to partner & staff about info received & act on it
- Time taken to lift of mask when painting
- Urine sampling
- Urine test; Mask testing; Smoke test booth
- Workshop practice

Reasons for not taking action
- Everything is ok

<table>
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<tr>
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<tr>
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What might prevent taking this action: (A)
- Cost (22)
- Funds/money (6)
- Time (10)
- Supervisory time
- Workload
- Work pressure
- Commercial pressures
- Owner/employer (4)
- Management
- Line management lack of awareness
- ALARP (2) - have to demonstrate it’s reasonable
- Only an accident
- Moving to another site
- Loss of equipment
- Business activities
- Closing down
- Lack of awareness from employees
- Consult with professions to improve our advice
- We must take action
- Good housekeeping
- Work processes

7.7 PARTICIPANTS’ APPRAISAL OF EVENT

Table 26: Appraisal of Content - Health session

<table>
<thead>
<tr>
<th></th>
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Table 27: Appraisal of Content - Booths session

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### Table 28: Appraisal of Content - Respiratory equipment session

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### Table 29: Appraisal of Content - Working with paints session

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### Table 30: Appraisal of Content - Exposure testing; health checks & other risks session

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### Table 31: Appraisal of Presentation - Health session

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### Table 32: Appraisal of Presentation - Booths session

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### Table 33: Appraisal of Presentation - Respiratory equipment session

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### Table 34: Appraisal of Presentation - Working with paints session

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### Table 35: Appraisal of Presentation - Exposure testing; health checks & other risks session

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Table 36: Which part of this event did you find most useful and why? (A)

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**Most useful part of the event - comments**

**Cheshire event**
- All of it; kept interest and attention
- All useful particularly spray booths
- Booths - made aware of air flow & time to clear
- Health checks/risks - covered items not aware of
- Showing air flow in booths

**Bristol event**
- All - I am new to all this
- All presentations were well done and helpful
- Booth effectiveness and the need to check
- Booth extraction- buying booth & will check air flow changes
- Booths - did not know that the vapours remained
- Booths - I didn't realise how long fumes stayed in booths
- Booths - made me realise how it works properly
- Booths as you could see the results
- Booths because we are about to buy one
- Coatings and guns - gave detailed explanation
- Demo of booths and spray areas
- Exposure in booth after painting
- Health as it affects the whole workforce
- Health check requirements - the only thing we don't do
- Health surveillance - I find it confusing but attending today helped
- Information about the skin
- Isocyanate exposure, smoke test demonstration
- Learning about the booths
- Legislation because that is my responsibility
- Performance and efficiency of booth
- RPE - although not a paint sprayer I now know how to check
- RPE because it is a prime source of contamination
- Very good awareness seminar - well done HSE
- Worked well as a complete morning
Kilmarnock event
- Booths - Air flow of Isocyanates
- Health - good clear image of what can happen to you
- Health - to improve employee working conditions
- Isocyanate vapour in booth and clearing time
- RPE - use of correct equipment
- RPE maintenance
- Smoke test on the spray bake
- Spray booth air clearance
- Work on the booths was interesting

Hitchin event
- All of it, clarified procedures and information
- All useful information
- All very informative
- All, good information
- Booth demo, highlights risks & how long it takes to clear
- Booth extraction - it showed air flows
- Booth extraction; Air flow dead spots
- Booths - I'm just about to get one
- Booths-now I know how to check isocyanates
- Education on isocyanate exposure
- Exposure testing - made me more aware
- Face masks
- First part very interesting and medical advice
- General reminder of all things
- Good try all round
- Health as it is of paramount importance
- Health check i.e. skin
- Health opened my eyes
- It is interesting to know what the regulations are
- Oven test, all starts from here
- Spray booth operation, didn't know about areas that don't extract as quickly
- Test of booth
- Using the correct gloves
- Worthwhile day

Table 37: Which part was least useful and why? (A)

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Least useful part of the event - comments

Cheshire event
- Health checks - been doing this for year
- Health checks - too short

Bristol event
- Booths - economical solutions?
- Gun use - health risks not a concern
- Health surveillance - already have an adequate system in place
- I thought it was too rushed
- It all has a relevant use
- It was too hurried
- Last part - the sales pitch
- Long talks on paints do not tend to sink in
- Paint - prior knowledge
- Presentation could be longer
- RPE was common sense
- Skin care-- I have lots of questions and no clear answers
- Speaker could not be heard
- Spray gun too elementary for professional painters
- Spray guns - it is common knowledge amongst painters
- Spray guns not covered
- Spray guns, I am not a painter
- Types of gun - use only ones recommended
- Working with paint, it isn't as important as health issues
- Working with paints - I am not a painter
- Working with paints - I've been in the business for 32 years
- Working with paints - no changes can be made to materials used
- Working with paints - paint supplier gives excellent advice
- Working with paints as I don't do paint work
- Working with paints, most people already know about this topic

Kilmarnock event
- Booths - not many companies can afford them
- Health as I knew most of it
- Paint, was not explained enough
- Paints - we know how to paint!
- Paints as already have good knowledge
- Paints, as a H&S officer didn't understand technology

Hitchin event
- 3M presentation - minimal information
- Booth due to different type used
- Booths - I don't use them
- Could have been done via bodyshop book
- Health as most of it is common sense
- Health checks were too brief
- Health too short
- More regarding smart repairs
- Moving from room to room
- Paint demo - why Isocyanate? there are very few options available
- Paints - it was a bit heavy
- Presentations were rushed; Event should be longer for this very important information
- RPE - had most knowledge in this area
- RPE and Working with paints - not enough information
- RPE as it is personal choice
- RPE because it was represented by 3m
- Skin care - not enough info
- Spray masks - it was common sense
- Spray masks as it seemed very obvious
- Working with paint - no new information

**Additional comments (A)**

**Cheshire event**
- Content and time taken made this a quality half day; small non-registered shops should be made aware of event

**Bristol event**
- A guide that contains all the info and contacts you need
- Alternative paints to isocyanate – HSE stance
- Cost effective ways of dealing with requirements for small operators
- Handouts would have been an excellent investment
- Information on new legislation regarding booths
- List of different reference companies
- List of things containing isocyanate
- Maybe you should include other businesses in sessions that spray isocyanates, e.g. aircraft repairers, boat builders, etc
- More info on effect of isocyanate absorbed through eyes and skin
- More information on future legislation
- More on damage of isocyanate to eyes and skin
- More people should be made aware of the dangers involved
- Opens up thoughts for me
- Presentations to be longer
- Presenters should be careful to project their voices adequately
- Sessions started late; Sessions too rushed; Could not hear everything
- The spray guns bit was useful
- Would like meetings like this on a regular basis

**Kilmarnock event**
- Air respirators and how often filter should be changed
- Bodies to contact with regard to subjects
- Costs involved and who to talk to in order to initiate change
- Everything was pretty well covered
- Future technology
- If there is any financial help available to meet requirements
- More on paint technology
- More spray booth technology; for other ovens; makes best for water borne or solvent baking
- Skin; Health
- The course was useful
- The overall presentation was excellent
- Very worthwhile
- Why don’t they have monitoring warning devices like they have for GPS Fires, for isocyanates, to fit in bodyshops? If isocyanates are so harmful why can’t they produce paints without them

**Hitchin event**
- A very good and informative seminar
- Carry on with the good work
- Hands
- How to get clean air to RPE
- I feel that presentations rushed – event should be longer for this very important issue
- Idea of costs from Sound Advice and Enviroderm, etc; What is HSE doing to pressurise [?]
  providers to minimise rates to allow sufficient investment in health and safety procedures
- Keep up good work
- Longer time on health would have been helpful
- Mixing paint; Making it law to wear equipment
- More information on skin care
- More time
- Not enough time spent on each subject
- Not enough time, a bit rushed
- Should also mention all types of solvent problems
- Skin exposure
- Working in the real world
- Would like to invited to similar events
8 REFERENCES


HSE (2003b) Motor vehicle repair guidance control sheets MR01 Isocyanate from mixing two-pack paint, etc.

HSE (2003c) Motor vehicle repair guidance control sheets MR02 Isocyanate from spraying two-pack products in a spray/bake booth.

HSE (2003d) Motor vehicle repair guidance control sheets MR03 Isocyanate from cleaning two-pack spray guns.

HSE (2003e) Motor vehicle repair guidance control sheets MR04 Isocyanate from brush or roller application of two-pack products.

HSE (2003f) Motor vehicle repair guidance control sheets MR05 Isocyanate from small tasks - flatting, SMART repair, welding, etc.