A practical approach to COSHH Assessment

Presentation to

AOSH
AVON OCCUPATIONAL SAFETY AND HEALTH GROUP

by

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Chartered Occupational Safety and Health Practitioner

PROGRAMME

General Risk Assessment – A Common Approach

Difficulties applying General RA Method to COSHH

Developing a COSHH Assessment Programme

“COSHH Essentials” – How can it help us?

COSHH Assessment – A Quantitative Methodology

Pro’s and Con’s of the Quantitative Approach.

General Risk Assessment

- Task often assigned to first line managers
- Need a simple risk assessment methodology
- Need a consistent approach across the organisation
- A Scoring / Quantitative Methodology often used.
Individuals’ “scoring” will vary one to another

“Consequence / Severity” often the most varied

Training / Guidance / Examples help consistency.

First Line Managers often:
- Have little knowledge of chemistry, medical or health matters
- Have difficulty relating to seemingly complicated terms e.g. Systemic, Chronic, Synergistic, Mutagenic etc
- Cannot judge the relative severity of complicated-sounding medical conditions e.g. Pneumoconiosis, cirrhosis, sensitisation etc.

Against this backdrop we have the law (Reg 6 COSHH) telling us:

"No Employer shall carry out work liable to expose employees to substances hazardous to their health unless a suitable and sufficient assessment of the risks has been carried out, and all precautions needed to comply with COSHH have been taken

The assessment must be undertaken by a Competent Person.

All 11 are the same chemical.....!
Depending on our Organisation, our starting point for COSHH Assessment may be:

- Nothing at all!
- A file labelled “COSHH Assessments” that is just stuffed full of safety data sheets!
- No resources available within our H&S Dep’t to take on COSHH for the entire Organisation
- Scientists / Laboratory staff unwilling to take on COSHH for the entire Organisation.

**Developing a COSHH Assessment Programme**

**Draw up a COSHH Management Plan e.g.**

1) Develop a simple-to-use “5x5” COSHH methodology
2) Initial Admin work:
   a) Draw up list of chemicals on site
   b) Dispose of unwanted chemicals (hazardous waste)
   c) Obtain up-to-date Material Safety Data Sheets
   d) “Pre-assessment”
3) Management:
   a) Estimate resources needed for COSHH Ass’t work
   b) Justify to senior management – get “buy in”
   c) Identify and train COSHH assessors from line mgt
4) Carry out the assessments.

**COSHH Essentials**

- Practical - plain English - no technical terms
- Step-by-step risk assessment
- Provides solutions - identifies adequate control
- Tells you when expert help is needed
- Is referenced by COSHH ACoP (“Adequate Control”)
- May be used by HSE Inspectors themselves to assess your Organisation’s level of compliance.

**COSHH Essentials - Principles**

The Generic Risk Assessment

<table>
<thead>
<tr>
<th>Health</th>
<th>Hazard</th>
<th>Potential</th>
<th>Risk</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>risk assessment approach</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Programme**

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**COSHH Assessment – A Quantitative Methodology**

**Pro’s and Con’s of the Quantitative Approach.**

<table>
<thead>
<tr>
<th>Hazard Group</th>
<th>Target exposure range</th>
<th>Risk phrase examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&gt;50 – 500 ppm</td>
<td>R36 (Irritating to eyes)</td>
</tr>
<tr>
<td>B</td>
<td>&gt;5 – 50 ppm</td>
<td>R20 (Harmful by inhalation)</td>
</tr>
<tr>
<td>C</td>
<td>&gt;0.5 – 5 ppm</td>
<td>R23 (Toxic by inhalation)</td>
</tr>
<tr>
<td>D</td>
<td>&lt;0.5 ppm</td>
<td>R40 (Risk of irreversible effects)</td>
</tr>
<tr>
<td>E</td>
<td>Seek specialist advice</td>
<td>R45 (May cause cancer)</td>
</tr>
</tbody>
</table>
### PROCESS AND TASKS

**Home**

Please complete the following 5 sections, then click 'Save' at the bottom of this page.

1. **Health & Safety**
   - You may have to fill in the statement at the bottom of this page.
   - You may have to fill in the 'Home' section.
   - If you are using a computer, you may have to fill in the 'Home' section.

2. **Use a Computer**
   - You may have to fill in the 'Home' section.
   - You may have to fill in the 'Home' section.

3. **Use a Computer**
   - You may have to fill in the 'Home' section.
   - You may have to fill in the 'Home' section.

4. **Use a Computer**
   - You may have to fill in the 'Home' section.
   - You may have to fill in the 'Home' section.

5. **Use a Computer**
   - You may have to fill in the 'Home' section.
   - You may have to fill in the 'Home' section.

**Assessment**

- You may have to fill in the 'Home' section.
- You may have to fill in the 'Home' section.

**Home**

You may need to enter the 'Home' section. If you don't, click 'Save' at the bottom of this page. It is important that you enter the 'Home' section. If you don't, you may need to fill in the 'Home' section.

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PROGRAME

COSHH Assessment – A Quantitative Methodology

Use the principles of “COSHH Essentials” hazard groups to determine the “consequence” (1 to 5)

Simple “look-up table” derived from HSE’s “the technical basis for COSHH Essentials”

www.coshh-essentials.org.uk/assets/live/CETB.pdf

COSHH Assessment – A Quantitative Methodology

HSE’s explanation of “hazard groups”:

A  the lowest degree of harm to health, for example, mild reversible irritation
B  low to moderate harm
C  medium harm
D  high harm
E  very nasty substances - special cases such as those that cause cancer or asthma, or are very poisonous

source: http://www.coshh-essentials.org.uk/help/HazardClassification.htm

COSHH Assessment – A Quantitative Methodology

HSE’s examples of “hazard groups”:

A - Skin and eye irritants
B - Harmful on single exposure
C - Severely irritating and corrosive. Skin sensitisers
D - Very toxic on single exposure. Harmful to reproduction
E - Cause cancer by genetic damage. Cause occupational asthma

source: http://www.coshh-essentials.org.uk/help/HazardClassification.htm

COSHH Assessment – A Quantitative Methodology

Use table derived from Appendix 3

source: http://www.coshh-essentials.org.uk/help/HazardClassification.htm
Check MSDS Section 15 for risk phrases e.g. R20, R36, R66

So overall Hazard Group = “B” (i.e. worst case)

So “Consequence/Severity” rating would be 2 (on 1 - 5 scale)

So determining hazard consequence/severity rating is less “opinion” and more “calculation” (with only one right answer)

“Pre-assessment” becomes a simple admin matter (requiring little training)

Easy to generate a list / register / inventory of chemicals with their hazard rating (1 to 5).

HSE stress that the amount of time spent on (and detail within) a COSHH assessment should be proportionate to the potential health risks

so whilst a “simple” risk assessment could be done using a 5 x 5 form

a “detailed” risk assessment would need to comply with the COSHH ACoP Paragraph 77...

COSHH ACoP Para 77
Assessment should include details of:

a) The process / activity
b) Substance(s) named / described & their form
c) Hazards / risks in normal use & in emergency
d) Has prevention / substitution considered
e) Who is exposed
f) Control measures already in place
g) Proving that the controls are effective
h) Need for atmospheric monitoring & frequency
i) Reasons for selecting PPE
j) Conclusions about risk for health
k) Whether Health surveillance is required or not
l) Period between reviews
This methodology is in use at some factories e.g.

One of the main reasons for doing a COSHH Assessment is to inform employees:

- About the hazards of chemicals they're using
- How to keep themselves safe whilst using them
- What to do in an emergency.
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Quantitative COSHH Assessment – Pro’s and Con’s

Benefits of a scoring COSHH methodology (Pro’s)

- A standardised approach across the Organisation
- “Lookup table” reduces “opinion” and variation
- Basis derived from HSE method gives credibility
- Line Managers can have “ownership”
- Good starting-point for Organisations where little or no COSHH Assessment has been undertaken
- Risk scores can inform senior management where priorities for action are needed.

Limitations of a scoring COSHH methodology (Con’s)

- It is simplistic – May not be seen to be “suitable and sufficient” on its own for higher hazard groups
- The concept of looking up hazard groups for individual chemicals on their own would not be valid where chemicals mix or react to form a higher level of hazard (e.g. a more toxic product or exothermic explosion)
- COSHH Essentials can underestimate toxic hazards via the ingestion route (e.g. BaCl = “3”) (Be prepared to up-rate scores if seems appropriate).
COSHH Essentials Hazard Groups

Hazard group

A  the lowest degree of harm to health, for example, mild reversible irritation
B  low to moderate harm
C  medium harm
D  high harm
E  very nasty substances - special cases such as those that cause cancer or asthma, or are very poisonous.

There is also a hazard group "S" which means that the chemical can also harm your skin and eyes. Many chemicals cause harm when they are breathed in and when they contact skin and eyes.

The screen tells you which hazard group the chemical you are assessing belongs in. COSHH Essentials decided this based on the R-phrases you entered.

Briefly the hazard groups are:

A - Skin and eye irritants
B - Harmful on single exposure
C - Severely irritating and corrosive. Skin sensitisers
D - Very toxic on single exposure. Harmful to reproduction
E - Cause cancer by genetic damage. Cause occupational asthma

S - Harm by skin or eye contact

Source : “HELP” screen on COSHH Essentials website : Accessed Feb 2010
http://www.coshh-essentials.org.uk/help/HazardClassification.htm
Appendix 3: CHIP Risk (R) phrases and CLP-GHS Hazard (H) statements

CHIP R-phrases

<table>
<thead>
<tr>
<th>R-no</th>
<th>Phrase</th>
<th>Group</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Harmful by inhalation</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Harmful in contact with skin</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Harmful if swallowed</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Toxic by inhalation</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Toxic in contact with skin</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Toxic if swallowed</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Very toxic by inhalation</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Very toxic in contact with skin</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Very toxic if swallowed</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Causes burns</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Causes severe burns</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>Irritating to eyes</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Irritating to respiratory system</td>
<td>C 1</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Irritating to skin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Danger of very serious irreversible effects</td>
<td>- 2</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Limited evidence of a carcinogenic effect</td>
<td>D 3</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Risk of serious damage to the eyes</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>May cause sensitisation by inhalation</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>May cause sensitisation by skin contact</td>
<td>C 4</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>May cause cancer</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>May cause heritable genetic damage</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Danger of serious damage to health by prolonged exposure</td>
<td>+1 5</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>May cause cancer by inhalation</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>May impair fertility</td>
<td>D 1</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>May cause harm to the unborn child</td>
<td>D 1</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Risk of impaired fertility</td>
<td>D 1</td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Possible risk of harm to the unborn child</td>
<td>D 1</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>May cause harm to breastfed babies</td>
<td>D 1</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Harmful: may cause lung damage if swallowed</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Repeated exposure may cause skin dryness or cracking</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Vapours may cause drowsiness and dizziness</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Possible risk of irreversible effects</td>
<td>E 6</td>
<td></td>
</tr>
</tbody>
</table>

Notes: All phrases now considered a risk on or via the skin.

1 Based on evidence, experts can reduce Group from D to C or from C to B.
2 Combination phrase. No impact of header number - use the Group for the other R-numbers.
3 Old data sheets have R40 as a combination phrase. If so, treat as (2).
4 As (1), but retain skin sensitisation in mixtures to a concentration of 0.1%.
5 Combination phrase. Group for R-numbers in combination rises from B to C or from C to D.
6 If a combination phrase, as (2); otherwise Group E.
### CLP-GHS Hazard (H) statements

<table>
<thead>
<tr>
<th>H-stmt</th>
<th>Phrase</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>300</td>
<td>Fatal if swallowed</td>
<td>D</td>
</tr>
<tr>
<td>301</td>
<td>Toxic if swallowed</td>
<td>C</td>
</tr>
<tr>
<td>302</td>
<td>Harmful if swallowed</td>
<td>B</td>
</tr>
<tr>
<td>304</td>
<td>May be fatal if swallowed and enters airways</td>
<td>A</td>
</tr>
<tr>
<td>310</td>
<td>Fatal in contact with skin</td>
<td>D</td>
</tr>
<tr>
<td>311</td>
<td>Toxic in contact with skin</td>
<td>C</td>
</tr>
<tr>
<td>312</td>
<td>Harmful in contact with skin</td>
<td>B</td>
</tr>
<tr>
<td>314</td>
<td>Causes severe burns and eye damage</td>
<td>C</td>
</tr>
<tr>
<td>315</td>
<td>Causes skin irritation</td>
<td>A</td>
</tr>
<tr>
<td>317</td>
<td>May cause an allergic skin reaction</td>
<td>C</td>
</tr>
<tr>
<td>318</td>
<td>Causes serious eye damage</td>
<td>C</td>
</tr>
<tr>
<td>319</td>
<td>Causes serious eye irritation</td>
<td>A</td>
</tr>
<tr>
<td>330</td>
<td>Fatal if inhaled</td>
<td>D</td>
</tr>
<tr>
<td>331</td>
<td>Toxic if inhaled</td>
<td>C</td>
</tr>
<tr>
<td>332</td>
<td>Harmful if inhaled</td>
<td>B</td>
</tr>
<tr>
<td>334</td>
<td>May cause allergy or asthma symptoms or breathing difficulties if inhaled</td>
<td>E</td>
</tr>
<tr>
<td>335</td>
<td>May cause respiratory irritation</td>
<td>C</td>
</tr>
<tr>
<td>336</td>
<td>May cause dizziness or drowsiness</td>
<td>A</td>
</tr>
<tr>
<td>340</td>
<td>May cause genetic defects (route if relevant)</td>
<td>E</td>
</tr>
<tr>
<td>341</td>
<td>Suspected of causing genetic defects (route if relevant)</td>
<td>E</td>
</tr>
<tr>
<td>350</td>
<td>May cause cancer (route if relevant)</td>
<td>E</td>
</tr>
<tr>
<td>351</td>
<td>Suspected of causing cancer (route if relevant)</td>
<td>D</td>
</tr>
<tr>
<td>360</td>
<td>May damage fertility or the unborn child (effect if known, route if relevant)</td>
<td>D</td>
</tr>
<tr>
<td>361</td>
<td>Suspected of damaging fertility or the unborn child (effect if known, route if relevant)</td>
<td>D</td>
</tr>
<tr>
<td>362</td>
<td>May cause harm to breast-fed children</td>
<td>D</td>
</tr>
<tr>
<td>370</td>
<td>Causes damage to organs (organ if known, route if relevant)</td>
<td>C</td>
</tr>
<tr>
<td>371</td>
<td>May cause damage to organs (organ if known, route if relevant)</td>
<td>B</td>
</tr>
<tr>
<td>372</td>
<td>Causes damage to organs through prolonged or repeated exposure (organ if known, route if relevant)</td>
<td>D</td>
</tr>
<tr>
<td>373</td>
<td>May cause damage to organs through prolonged or repeated exposure (organ if known, route if relevant)</td>
<td>C</td>
</tr>
<tr>
<td>EU66</td>
<td>Repeated exposure may cause skin dryness or cracking</td>
<td>A</td>
</tr>
<tr>
<td>EU70</td>
<td>Toxic by eye contact</td>
<td>E</td>
</tr>
<tr>
<td>EU71</td>
<td>Corrosive to the respiratory tract</td>
<td>C</td>
</tr>
</tbody>
</table>
### "Risk Phrase" to "Hazard Group" Look-up Table

<table>
<thead>
<tr>
<th>Risk Phrase</th>
<th>Hazard Group</th>
<th>Risk Phrase Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 B</td>
<td>B</td>
<td>Harmful by inhalation.</td>
</tr>
<tr>
<td>21 B</td>
<td>B</td>
<td>Harmful in contact with skin.</td>
</tr>
<tr>
<td>22 B</td>
<td>B</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>23 C</td>
<td>C</td>
<td>Toxic by inhalation.</td>
</tr>
<tr>
<td>24 C</td>
<td>C</td>
<td>Toxic in contact with skin.</td>
</tr>
<tr>
<td>25 C</td>
<td>C</td>
<td>Toxic if swallowed.</td>
</tr>
<tr>
<td>26 D</td>
<td>D</td>
<td>Very toxic by inhalation.</td>
</tr>
<tr>
<td>27 D</td>
<td>D</td>
<td>Very toxic in contact with skin.</td>
</tr>
<tr>
<td>28 D</td>
<td>D</td>
<td>Very toxic if swallowed.</td>
</tr>
<tr>
<td>29 C†</td>
<td>C</td>
<td>Contact with water liberates toxic gas.</td>
</tr>
<tr>
<td>31 C†</td>
<td>C</td>
<td>Contact with acids liberates toxic gas.</td>
</tr>
<tr>
<td>32 D†</td>
<td>D</td>
<td>Contact with acid liberates very toxic gas.</td>
</tr>
<tr>
<td>33 C†</td>
<td>C</td>
<td>Danger of cumulative effects.</td>
</tr>
<tr>
<td>34 C</td>
<td>C</td>
<td>Causes burns.</td>
</tr>
<tr>
<td>35 C</td>
<td>C</td>
<td>Causes severe burns.</td>
</tr>
<tr>
<td>36 A</td>
<td>A</td>
<td>Irritating to eyes.</td>
</tr>
<tr>
<td>37 C</td>
<td>C</td>
<td>Irritating to respiratory system.</td>
</tr>
<tr>
<td>38 A</td>
<td>A</td>
<td>Irritating to skin.</td>
</tr>
<tr>
<td>39 D‡</td>
<td>D</td>
<td>Danger of very serious irreversible effects.</td>
</tr>
<tr>
<td>40 D</td>
<td>D</td>
<td>Limited Evidence of a carcinogenic effect</td>
</tr>
<tr>
<td>41 C</td>
<td>C</td>
<td>Risk of serious damage to the eyes.</td>
</tr>
<tr>
<td>42 E</td>
<td>E</td>
<td>May cause sensitization by inhalation.</td>
</tr>
<tr>
<td>43 C</td>
<td>C</td>
<td>May cause sensitization by skin contact.</td>
</tr>
<tr>
<td>45 E</td>
<td>E</td>
<td>May cause cancer.</td>
</tr>
<tr>
<td>46 E</td>
<td>E</td>
<td>May cause heritable genetic damage.</td>
</tr>
<tr>
<td>48 D‡</td>
<td>D</td>
<td>Danger of serious damage to health by prolonged exposure</td>
</tr>
<tr>
<td>49 E</td>
<td>E</td>
<td>May cause cancer by inhalation.</td>
</tr>
<tr>
<td>60 D</td>
<td>D</td>
<td>May impair fertility.</td>
</tr>
<tr>
<td>61 D</td>
<td>D</td>
<td>May cause harm to the unborn child.</td>
</tr>
<tr>
<td>62 D</td>
<td>D</td>
<td>Risk of impaired fertility.</td>
</tr>
<tr>
<td>63 D</td>
<td>D</td>
<td>Possible risk of harm to the unborn child.</td>
</tr>
<tr>
<td>64 D</td>
<td>D</td>
<td>May cause harm to breastfed babies.</td>
</tr>
<tr>
<td>65 A</td>
<td>A</td>
<td>Harmful: may cause lung damage if swallowed</td>
</tr>
<tr>
<td>66 A</td>
<td>A</td>
<td>Repeated exposure may cause skin dryness or cracking</td>
</tr>
<tr>
<td>67 A</td>
<td>A</td>
<td>Vapours may cause drowsiness and dizziness</td>
</tr>
<tr>
<td>68 E</td>
<td>E</td>
<td>Possible risk of irreversible effects.</td>
</tr>
</tbody>
</table>

Adapted from “The technical basis for COSHH Essentials” (Appendix 3)  
(source: HSE 2009)

† Risk phrase not specified in COSHH Essentials - Assumptions have been made for these values

‡ If used in combination with R-phrases 20, 21 or 22, hazard group is reduced to “C”
This menu system allows employees to “drill down” to their area of work and easily find information about the chemicals they work with.

This is a simple menu system which is easy to create just using a WORD document with bookmarks and hyperlinks.

The I.T. Department provides a link to this document, which is saved as an HTML file.

For more information contact Trident HS&E Ltd (www.trident.uk.com)

XYZ Co.: Health and Safety

COSHH Assessments (by department)

- **Department A**
- **Department B**
- **Department C**
- **Department D**
- **Department E**
- **Site Wide / External**

Including Coolants / Cutting Oils / grounds maintenance / drains
DEPARTMENT “A” : COSHH Assessments

Select Process :

- Pre-inspection Coating
- Turbex Ultrasonic Cleaning
- Salt Bath Heat Treatment
Click on the information you require:

- **COSHH Assessment**: A detailed report evaluating health and safety risks of the process and risk control measures.
- **Key Safety Information**: A 1-page summary of the above: The key "Do's and Don'ts" you need to know to work safely.
- **Emergency Information**: Emergency Information such as first aid, spillage, fire, plus information for the Emergency Services. This information should be prominently displayed in the area where the process takes place.
- **MSDS - Berkatekt 12**: The Manufacturer's Material Safety Data Sheet (more information about the chemical you are working with).
  - **Air Sampling Report (08/06)**: Sample Date: 8th October 2008: Personal Sample
  - **Air Sampling Report (08/07)**: Sample Date: 8th October 2008: Static Sample
XYZ Co.: Health and Safety

Pre-Inspection Coating : COSHH Assessment

In reality this will be a detailed report, proportionate in depth and detail to the hazards of the chemicals involved in the process. It will need to satisfy the requirements of the COSHH ACoP Para 77, containing the relevant headings as appropriate:-

a) The process / activity
b) Substance(s) named / described & their form
c) Hazards / risks in normal use & in emergency
d) Has prevention / substitution considered
e) Who is exposed
f) Control measures already in place
g) Proving that the controls are effective
h) Need for atmospheric monitoring & frequency
i) Reasons for selecting PPE
j) Conclusions about risk for health
k) Whether Health surveillance is required or not
l) Period between reviews
**Berkatekt Spraying Process**

**COSHH Information for Employees**

The chemical you are working with (Berkatekt 12) is designated as being “hazardous to health”. Breathing, swallowing, or getting the liquid on your skin can cause drowsiness and dizziness in the short term, and longer term may damage the lungs and liver.

Despite these hazards, Berkatekt spraying can be done quite safely, with minimal risks to your health and safety - provided you comply with the few simple rules set out below.

However, under no circumstances may female employees who are (or could become) pregnant to work with, or be exposed to the chemical since it can cause serious harm to the unborn child.

The key points to protect your health and safety when carrying out the Berkatekt spraying activity are:

1. **Room preparation**
   - Ensure the ventilation fans are switched on, and are switched to the correct position (extract not intake);
   - Check the fans to make sure that they are all working as expected;

This is aimed at the people who stand to benefit most from a good COSHH assessment (though who are often overlooked when it comes to provision of information)

**THE EMPLOYEES ACTUALLY WORKING WITH THE CHEMICALS!**

This section should explain in simple, easy to understand (but not patronising) terms what the employees should (and shouldn't) do to protect themselves against injury or adverse health effects from the chemicals they're working with.

These “information cards” are usually encapsulated and displayed in the workplace in a prominent place – in this factory they are displayed at the point of use of the chemicals, and also in the staff’s tea-room.
These cards provide information (a) for employees and Company first-aiders and (b) emergency services (fire and ambulance) on action to be taken in emergency.

These “emergency information cards” are usually encapsulated and displayed in the workplace at the point of use of the chemicals, and also in the chemical store.

In the event of an incident involving a person being taken to hospital, this card would go with them.

Copies of the information are also kept at the gatehouse/reception so that they can be handed to fire-crews as they arrive at site, together with a site plan showing the location of storage and use of chemicals on site (COSHH Regulation 13(2) : Arrangements to deal with emergencies)
## EXAMPLE: COSHH Menu System

**XYZ Co. Ltd**

**CoSHH Inventory**

Control of Substances Hazardous to Health Regulations 2002  
(as amended)

Hyperlinks to supplier's information  

<table>
<thead>
<tr>
<th>MSDS</th>
<th>PDS</th>
<th>Description</th>
<th>Manufacturer</th>
<th>Hazard Rating</th>
<th>Ass’t</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI 022</td>
<td>PD 407</td>
<td>Abralap 2B Lapping Oil</td>
<td>Peter Wolters</td>
<td>-</td>
<td>Y</td>
</tr>
<tr>
<td>CI 244</td>
<td>PD 427</td>
<td>Nitric Acid 69%</td>
<td>Waterfall &amp; O’Brien</td>
<td>3</td>
<td>Y</td>
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<tr>
<td>CI 246</td>
<td>PD 428</td>
<td>Hydrochloric Acid 48, UN 1790, 1.8vn 1789</td>
<td>Waterfall &amp; O’Brien</td>
<td>3</td>
<td>Y</td>
</tr>
<tr>
<td>CI 401</td>
<td></td>
<td>Acheson Berkatekt 12</td>
<td>Acheson Colloids</td>
<td>4♀ 3♂</td>
<td>Y</td>
</tr>
<tr>
<td>CI 402</td>
<td></td>
<td>ANTICORIT 220</td>
<td>Fuchs</td>
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<td>Y</td>
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<tr>
<td>CI 403</td>
<td></td>
<td>ANTICORIT 988</td>
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<td>Y</td>
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<tr>
<td>CI 405</td>
<td></td>
<td>Britemor 555 Fluorescent Dye Penetrant</td>
<td>Chemetall</td>
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<tr>
<td>CI 406</td>
<td></td>
<td>Castrol PX1 - Rust Preventative</td>
<td>Castrol</td>
<td>1</td>
<td>Y</td>
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<tr>
<td>CI 407</td>
<td>PD 407</td>
<td>Castrol Rustilo DWX 21 Water Displacer</td>
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<td>LTD Crowndip DMQ</td>
<td>DA Stuart</td>
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<tr>
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<td></td>
<td>Glacial Acetic Acid</td>
<td>BDH</td>
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<td>Y</td>
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<tr>
<td>CI 415</td>
<td></td>
<td>Houghto-Grind 590</td>
<td>Houghton</td>
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<tr>
<td>CI 416</td>
<td></td>
<td>Hysol G Metal Working Fluid</td>
<td>Castrol</td>
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<tr>
<td>CI 417</td>
<td></td>
<td>Industrial Methylated Spirit</td>
<td>Charles Tennant</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CI 418</td>
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<td>A SCGN-09-LC abrasive</td>
<td>Lapmaster</td>
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<tr>
<td>CI 419</td>
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<td>MacDermid Liquid Compound OC854</td>
<td>MacDermid</td>
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<tr>
<td>CI 420</td>
<td></td>
<td>Neu Tri E (Trichloroethylene)</td>
<td>Caldic UK</td>
<td>5</td>
<td>Y</td>
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<tr>
<td>CI 422</td>
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<td>Prephos 111 Rust Inhibitor</td>
<td>MacDermid</td>
<td>-</td>
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<tr>
<td>CI 427</td>
<td>PD 427</td>
<td>Tonna S32</td>
<td>Shell</td>
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<td>Y</td>
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<td>CI 428</td>
<td>PD 428</td>
<td>Techniclean MTC 43</td>
<td>Castrol</td>
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<td>PD 429</td>
<td>Techniclean XHD</td>
<td>Castrol</td>
<td>3</td>
<td>Y</td>
</tr>
</tbody>
</table>

Further details of this menu system for displaying COSHH information via Intranet can be obtained from:  
Trident HS&E Ltd
XYZ Manufacturing Company Ltd: Health and Safety

USE OF COOLANTS / CUTTING FLUIDS / METALWORKING FLUIDS

COSHH† Information for Employees
†The Control of Substances Hazardous to Health Regulations 2002

Coolants are in widespread use in the Company and are essential for many of the machines that we operate. The purpose of this information card is to make you aware of how their use can affect your health and safety – and to help you minimise these risks to yourself and your colleagues.

Coolants contain a complex mixture of chemicals, bacteria, additives like rust inhibitors, biocides and sharp metal fines. All of these, individually or together, can cause problems in one way or another.

For any chemical to harm you it must, in some way, come in contact with the body. Two of the most common ways for this to happen when working with coolants are inhalation and skin contact:

- **Inhalation:**
  Use of coolants generates aerosols, mists and vapours.
  Depending on the type of machine, these may be totally contained and taken away by the extraction/filtration system. Or they may be minimised by some of the local machine guarding (for prevention of contact with moving parts), or in some cases staff have fabricated their own shields to minimise spray.
  Always use the precautions that are provided properly. If you have concerns about excessive spray/mist etc talk with your foreman.
  If you develop symptoms of any breathing / lung problems, again talk with your foreman and an appointment with our occupational health advisor can be arranged for you.

- **Skin contact:**
  The chemicals, together with microscopic sharp particles of metals that are formed as metal grinds or cuts metal (known as “fines”) can cause a number of unpleasant skin problems such as dermatitis.
  This photograph (magnified many thousands of times) shows a metal “fine”. Although too small to be seen with the naked eye, and certainly too small to be detectable by touch, these are suspended in the coolant. It is easy to see how they can abrade the skin and cause problems without you realising it. <- 50 microns ->
  Dermatitis causes cracking of the skin which is very painful and makes you vulnerable to infection.
  As can be seen in this photograph the hands become scaly and unsightly which can be distressing for sufferers.
  And yet it can easily be prevented by good hand hygiene, use of barrier creams before you start work, use of gloves to prevent contact with the fluids, washing hands at break-times and after work. Use of restorative cream after work can help rehydrate skin and prevent dryness and cracking of skin.
  If you develop symptoms of any dermatitis or other skin problems, talk with your foreman and an appointment with our occupational health advisor can be arranged for you.

Please turn this card over to see the general advice that is given by HSE to employees who work with metal working fluids such as coolants and cutting oils.
What precautions should you take?

**General**

- Follow the instructions and training given by your employer on safe systems of work when working with metalworking fluids.
- Use splash guards, where provided, to control splashing and misting.
- Minimise the production of mist and vapour by controlling the volume and rate of delivery of the fluid to the cutting edge of the tool.
- Use any enclosures or ventilation provided to remove or control any mist or vapour produced.
- Allow a time delay before opening the doors on machine enclosures to ensure that all mist and vapour have been removed by the ventilation.
- Report any damaged or defective splash guards, ventilation hoods or other control equipment.
- Open workroom doors and windows to improve natural ventilation.
- Don’t use compressed air to remove excess metalworking fluids from machined parts or plant or equipment.

**Skin protection**

- Reduce your contact with wet workpieces and surfaces.
- Don’t put your bare hands into fluid sumps or use oily rags to wipe them clean.
- Wear suitable gloves, overalls, aprons, goggles or face shields if needed (NB: Gloves can be hazardous if worn near rotating machinery or parts).
- Take care not to contaminate the inside of your gloves with metalworking fluids when putting them on or taking them off.
- Use a suitable pre-work barrier cream designed to provide a protective layer between the skin and the fluid being used, and use after-work creams to replace the natural skin oils removed by washing and the corrosive action of metalworking fluids.
- Cover any cuts and abrasions with a waterproof dressing.
- Wash regularly with soap and water to remove metalworking fluids from your skin. Avoid using abrasive or powerful solvent cleaners.
- Wash your hands thoroughly before eating, drinking or smoking. Pay particular attention to washing skin under rings and watch straps.

**Sump fluid control**

- Do not discard unwanted food, drink, cigarette stubs or any other debris into the sump.
- Tell your supervisor if you see any layers of scum or large amounts of tramp oil on top of the sump fluid, or if the sump fluid is dirty or smelly.
- Follow good working practices when mixing fluids, cleaning and topping up sumps etc.

**Other precautions**

- Store personal protective equipment in the changing facilities provided or another clean storage area.
- Change dirty overalls regularly and keep oily rags out of your pockets.
- Avoid taking dirty overalls home, eg for washing.
- Avoid eating, drinking or smoking in areas where metalworking fluids are used.

If you have any queries or concerns regarding health and safety issues arising from this, or any other aspect of your work, please speak with your Foreman or Manager.

Acknowledgement: Source of photographs and above text: HSE Documents INDG 365 and HSG 231

If you require further information, you can download the free leaflet from [http://www.hse.gov.uk/pubns/indg365.pdf](http://www.hse.gov.uk/pubns/indg365.pdf)
Britemor 555 is not a particularly hazardous substance, although it does contain some component chemicals which do have hazardous properties.

When used properly in accordance with these instructions you can minimise any health and safety risks:

- Ensure the ventilation fans are switched on in the NDT lab
- Try and minimise the amount of spray/mist produced when washing components – avoid leaning into the tank during spraying.
- Wear PPE:
  - Neoprene Gauntlets
  - Safety glasses suitable for use with mists (EN 166 1F 34)
- Regularly check the gauntlets for signs of chemical permeation or breakthrough (e.g. turn inside out and check under u.v. light)
- Keep away from sources of ignition

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**INFORMATION FOR EMERGENCY SERVICES**

**CHEMICAL COMPOSITION** (Taken from Manufacturer’s Material Safety Data Sheet)

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Content</th>
<th>CAS No.</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Distillates</td>
<td>25-50%</td>
<td>64742-46-7</td>
<td>265-148-2</td>
</tr>
<tr>
<td>Solvent Naphtha</td>
<td>10-20%</td>
<td>64742-94-5</td>
<td>265-198-5</td>
</tr>
<tr>
<td>Naphthalene (carc cat 3)</td>
<td>1 - 2.5%</td>
<td>91-20-3</td>
<td>202-049-5</td>
</tr>
<tr>
<td>Di-isononyl phthalate</td>
<td>10-25%</td>
<td>28553-12-0</td>
<td>249-079-5</td>
</tr>
<tr>
<td>Propylene carbonate</td>
<td>2.5-5%</td>
<td>108-32-7</td>
<td>203-572-1</td>
</tr>
<tr>
<td>N2hydroxypropyloleamide</td>
<td>2.5-5%</td>
<td>111-05-7</td>
<td>203-828-2</td>
</tr>
</tbody>
</table>

UN No: 3082
1) Introduction and Background

The COSHH Regulations require employers to carry out risk assessments on chemicals that are used in the workplace and which may cause injury or damage to a person's health.

At XYZ Manufacturing we classify the chemicals using a scheme which relates to the risks that are detailed in the manufacturer’s material safety data sheet (or from other official information provided by the Health and Safety Executive (HSE) and the European Chemicals Agency.

Our scheme rates the chemicals on a scale of 1 (lowest hazard) to 5 (highest hazard).

The chemical to which this assessment relates either:
- Scores “1” on this scale, or
- Is not sufficiently hazardous to be covered by the COSHH regulations at all (one could consider it to score “zero” on our scale).

We therefore believe that the chemical only represents a relatively low hazard to staff.

That’s not to say that it cannot cause a person harm. Any substance, even water or day to day products such as coffee, soft drinks and butter can, in one way or another, cause a person harm if used in the wrong way or in excess.

Health and Safety Regulations require employers to carry out a “suitable and sufficient” risk assessment. The HSE explain that this means that the level of detail in an assessment, and the amount of time, trouble and effort put into doing the assessment should be proportionate to the hazards involved.

So whereas XYZ Manufacturing has, during the past year, put a lot of time, trouble and effort into assessing (and controlling) the risks associated with the more hazardous chemicals that it uses, we consider that for these “low hazard” chemicals it is sufficient to just give general guidance about the use and precautions which should be taken when using them.

2) General Health and Safety Precautions when using the chemical

You should read (and follow) the manufacturer’s safety precautions when using the chemical. This information can be found in two places:
- On the label of the container in which the chemical is supplied; and
- On the “Material Safety Data Sheet” (MSDS).

The Material Safety Data Sheet can be accessed through the Company’s intranet system (Follow the links: General, Health and Safety, Hazardous Substances) Then select “View Chemicals in Use”, page down until you find the chemical and then click on the “CI” number to the left.

In addition, some manufacturers provide “Product Data Sheets”. These explain the correct method of use for the intended application. To view these, click the “PD” number.
In addition, the following general rules should be observed:

- **Protect your eyes!**
  Any chemical getting in the eyes can be painful, and even dangerous – to the point of threatening your eyesight. According to the MSDS, the chemical to which this assessment relates shouldn’t be able to cause permanent blindness – but it’s simple common sense to avoid getting chemicals of any sort in your eyes – they are valuable – look after them! i.e.
  - Avoid spilling or splashing of the chemical;
  - Some containers may be pressurised so beware of spurring of chemicals or release of gases, spray and vapours towards the face;
  - Do not rub your eyes if you have dirty hands or are wearing gloves
  - Do not wipe your face using the sleeve of a coat or overalls
  - Wear safety glasses if recommended by the manufacturer – even if not specifically mentioned, still consider it. Safety glasses are readily available on request – if not, ask your foreman, manager or the general manager.

- **Don’t breathe in any gases, vapours, mists, spray etc.**
  Remember – what goes into your lungs can:
  - Pass into the blood and may harm organs elsewhere in the body; and
  - Damage the lungs themselves

  Manufacturers may recommend that you use the chemical in a “well ventilated area” – do so!

  If you have concerns about inhalation of chemicals, dusts or mists, then it may be possible to provide you with a suitable mask. Ask your foreman or manager. However these need to be selected with care – there are several different types of mask available. No one type will protect against all chemicals.

  Some chemicals (particularly solvents) can cause narcotic effects. They do not smell unpleasant and it isn’t immediately obvious that they are harmful. It is well known that some people abuse these chemicals and deliberately inhale/sniff them. Do not do this!

  Solvents cause significant harm to the body, both in the short term and long term – e.g. causing cirrhosis of the liver.

And remember “**SOLVENT ABUSE CAN (and frequently does) KILL**”

- **Don’t ingest or swallow chemicals**

  Although it may seem daft to think that people may swallow chemicals that they use at work, it does happen and every year people die as a result. The main ways that this can happen is:
  - When they drink from a bottle (or other container) that appears to contain water, lemonade etc. However, unbeknown to them, someone has previously needed a temporary container to store some liquid chemical and used a drinks bottle. Someone then comes along and drinks from it.

  **NEVER POUR CHEMICALS FROM ONE CONTAINER TO ANOTHER** without first ensuring that the other container is properly labelled with the same label as the first. A person ignoring this simple rule risk with the result that someone gets poisoned, risks being imprisoned for manslaughter;

  - Chemicals are taken into kitchens/canteens etc and contaminate food;
o DON'T TAKE CHEMICALS INTO PLACES WHERE FOOD IS EATEN!
TAKE CARE WITH “DOMESTIC” KITCHEN CHEMICALS SUCH AS
BLEACH ETC – KEEP AWAY FROM FOOD AND DRINK.

o Accidental “Hand to mouth” transfer of the chemical – e.g. eating, drinking
or smoking when hands are contaminated

OBSERVE GOOD HYGIENE PRACTICES
- Wash hands after finishing work – use skin restorers if provided
- Wash hands before eating / drinking / smoking
- Don’t eat or drink in factory areas – use the canteen / rest areas

• Don’t mix chemicals
Chemicals can react together unexpectedly and very violently. This can result
in explosions which cause permanent, irreversible blindness. This happens
to people every year in the UK, who have to spend the rest of their lives in
darkness – DON’T LET IT BE YOU.
A common cause of this is when people use one chemical to clear a blocked
drain. It doesn’t work, so they try another – and the chemicals react violently
(e.g. acids and caustic/alkali solutions).
Another problem is the mixing of acids and bleach which not only causes a
violent reaction but releases toxic chlorine gas into the air.

• Protect your skin
Take care not to spill the chemical or get it on your skin. Wear gloves if
recommended by the manufacturer in section 8 of the MSDS. If you don’t
have gloves available of the type that they recommend then ask your foreman
or manager.

• Protect the Environment
Do not pour waste chemical down the drain (e.g. sink, toilet, yard drainage
gully etc) since these chemicals may kill fish and other forms of life in the
river, damage sewage treatment processes – and in any event it is illegal!

• Prevent Fire or Explosion
Where chemicals are flammable or explosible this should be marked on the
label. Take care not to use near any naked flame, source of ignition or allow
to become heated. Don’t store in a hot place or in direct sunlight.

3) Introduction of new chemicals
Remember that by law anyone who wishes to introduce any new chemical for
use at work must not do so until a COSHH assessment has been done. Talk
to your foreman or manager first who will make the necessary arrangements.

David Osborn BSc, CMIOSH, AIEMA, SpDipEM
Chartered Safety and Health Practitioner

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Longwell Green, Bristol BS30 9AG     November 2010