**CoSHH Assessment Reference Guide (Chemical Hazards)**

The following tables are designed to assist you in determining the level of risk associated with a process based on the physical properties, the nature of the work being undertaken and the chemical properties of the substance(s) being used. They should be used for guidance only in support of a full CoSHH Assessment applying the eight principles of control:

1. **Design and operate processes to minimise chemical emissions**
2. **Take into account all relevant routes of exposure**
3. **Control possible exposure by measures proportionate to the health risk**
4. **Choose the most effective, reliable control measures to minimise escape of the substance**
5. **If adequate control cannot be achieved by other means PPE should be provided**
6. **Control measures should be checked and reviewed regularly**
7. **Introduction of control measures should not increase the overall level of risk**
8. **Inform and train employees and other users on the hazards, risks and control measures**

**Step 1: Estimation of Exposure Potential**

To determine the Exposure Potential (EP) associated with a process select the most relevant description from each row (A, B and C) and assign it a score from 0 -2 . Add together the scores for each to give a total score between 0 and 6 (EP = A + B + C). The exposure potential will be high, medium or low as shown:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Score** | **0** | **1** | **2** |
| **Factors in Exposure Potential\*** | **(A)**  **Quantity** | **Less than 1**  **(g or ml)** | **1 to 20**  **(g or ml)** | **More than 20**  **(g or ml)** |
| **(B)**  **Form** | **Dense Solids** | **Dusty Solids** | **Aerosol / Gas / Mist** |
| **Liquid (bp>180°C)** | **Liquid (bp 80 - 180°C)** | **Liquid (bp <80°C)** |
| **Dilute Solutions** | **Conc. Solutions** | **Conc. Solutions** |
| **No skin absorption** | **Low skin absorption** | **Skin absorption likely** |
| **(C)**  **Operation** | **Closed system** | **Partially open** | **Open vessel** |
| **Unpressurised** | **Unpressurised** | **Pressure vessel** |
| **Low mishap risk** | **Medium mishap risk** | **High mishap risk** |

* **EP ≤ 3 Low Exposure**
* **EP = 4 Medium Exposure**
* **EP ≥ 5 High Exposure**

**\*Note:** If an operation involves prolonged or repeated exposures to one or more substances then consideration should be given to assigning it a higher exposure potential score.

**Step 2: Estimation of Toxic Hazard**

To determine the toxic hazard associated with a substance examine the supplier’s information including safety data sheets (SDS). The following hazard statements (and risk phrases) give a good indication of the toxicity of the substance (toxicity should be based on the highest level of risk):

|  |  |
| --- | --- |
| **Toxic Hazard\*** | **Hazard Statements (H)** |
| **Low (L)** | **No associated hazard phrases, toxicity expected to be low** |
| **Medium (M)** | **H302, H305, H312, H313, H315, H316, H317, H319, H320, H332, H333, H335, H336, EUH066** |
| **High (H)** | **H301, H311, H314, H316, H317, H318, H331, H351, H362, EUH029, EUH031, EUH070** |
| **Very High (VH)** | **H300, H304, H310, H330, H334, H340, H341, H350(Any), H360(Any), H361(Any), H370, H371, H372, H373, EUH032, EUH071** |

|  |  |
| --- | --- |
| **Toxic Hazard\*** | **Risk Phrases (R)** |
| **Low (L)** | **No associated hazard phrases, toxicity expected to be low** |
| **Medium (M)** | **R20, R21, R22, R36, R37, R38, R43, R62, R63, R65, R66, R67** |
| **High (H)** | **R23, R24, R25, R29, R31, R34, R40, R41, R43, R46, R60, R61, R64, R68** |
| **Very High (VH)** | **R26, R27, R28, R32, R33 R35, R39, R42, R45, R48, R49** |

**\*Note:** This table should be used as a guide to determine the toxic hazard associated with the substance. For substances where the risk is not clear compare the expected properties of the substance with hazards listed in the table to make a determination.

**\*Note:** This assessment covers only the toxicity and health effects associated with a substance, flammable, explosive and pyrophoric properties are not included.

**Step 3: Risk Rating, Assessment and Control**

Use the matrix below to combine the exposure potential with the toxic hazard of each substance to obtain an overall risk rating. The highest risk rating obtained indicates the containment required.

|  |  |  |  |
| --- | --- | --- | --- |
| **Toxic Hazard** | **Exposure Potential (EP)** | | |
| **Low** | **Medium** | **High** |
| **Low** | **1** | **1** | **2** |
| **Medium** | **1** | **2** | **2** |
| **High** | **2** | **2** | **3** |
| **Very High** | **2** | **3** | **3** |

* **Risk Rating 1 Open bench working may be suitable for this procedure**
* **Risk Rating 2 Use of a fume extraction system is recommended**
* **Risk Rating 3 Special containment facilities likely to be required for this process**