

## Application of the criteria in paragraph 3.1.3.2

(This example was requested subsequent to the submission of document INF.27 (15th session) to the Sub-Committee. It is related to INF.27 (15<sup>th</sup> session), addendum 1, item 7)

### Ingredient information:

| Ingredient   | Wt% | Acute toxicity test data         |  |                            |
|--------------|-----|----------------------------------|--|----------------------------|
|              |     | Oral                             | Dermal   | Inhalation Vapours         |
| Ingredient 1 | 26  | LD <sub>50</sub> : 2,737 mg/kg   | LD <sub>50</sub> : 6,480 mg/kg                         | LC <sub>50</sub> : 11 mg/l |
| Ingredient 2 | 23  | LD <sub>50</sub> : 4,500 mg/kg   | LD <sub>50</sub> : > 6,000 mg/kg                       | LC <sub>50</sub> : 19 mg/l |
| Ingredient 3 | 11  | LD <sub>50</sub> : > 5,000 mg/kg | No data available                                      | No data available          |
| Ingredient 4 | 40  | LD <sub>50</sub> : 400 mg/kg     | Dermal limit dose > 2,000 mg/kg (No signs of toxicity) | LC <sub>50</sub> : 4 mg/l  |

### Answer:

- (a) Oral route - Apply the equation in paragraph 3.1.3.6.1:

$$\frac{100}{ATE_{\text{mixture}}} = \sum_n \frac{C_i}{ATE_i}$$

$$\frac{100}{ATE_{\text{mixture}}} = \frac{26}{2,737} + \frac{23}{4,500} + \frac{40}{400}$$

ATE<sub>mixture</sub> = 873 mg/kg, Acute Oral Toxicity; Category 4

- (b) Inhalation route - Apply the equation in paragraph 3.1.3.6.2.3:

$$\frac{100 - \left( \sum C_{\text{unknown}} \text{ if } > 10\% \right)}{ATE_{\text{mixture}}} = \sum_n \frac{C_i}{ATE_i}$$

$$\frac{100 - (11)}{ATE_{\text{mixture}}} = \frac{26}{11} + \frac{23}{19} + \frac{40}{4}$$

ATE<sub>mixture</sub> = 6.6 mg/l, Acute inhalation toxicity; Category 3 and “11% of the mixture consists of an ingredient of unknown inhalation toxicity”

|                    |   |
|--------------------|---|
| Pictogram:         |  |
| Signal word:       | Danger  |
| Hazard statements: | Toxic if inhaled. Harmful if swallowed.   |

### Rationale:

- Classification via application of substance criteria is not possible since acute toxicity test data was not provided for the mixture (paragraph 3.1.3.4);
- Classification via the application of bridging principles is not possible since data on a similar mixture was not provided (paragraph 3.1.3.5.1);
- Classification based on ingredient data for the mixture can be considered (paragraph 3.1.3.6);
- Applying the “relevant ingredients” concept from paragraph 3.1.3.3 (a) means that all ingredients will be considered when applying criteria in paragraphs 3.1.3.6.1 and 3.1.3.6.2.3;

- (e) Review of the ingredient test data show there is relevant evidence to suggest acute toxicity via the oral and inhalation routes so the  $ATE_{mixture}$  calculation was applied to the oral and inhalation routes (paragraph 3.1.3.2). Review of the ingredient test data via the dermal route show that the data are not applicable to the dermal  $ATE_{mixture}$  calculation (paragraph 3.1.3.6.1(c));

#### **Oral route**

- (f) Data is available for all ingredients via the oral route so criteria in paragraph 3.1.3.6.1 apply;
- (g) Ingredients 1, 2 and 4 are included in the  $ATE_{mixture}$  calculation because they have data that fall within a GHS acute toxicity category [Paragraph 3.1.3.6.1 (a)].
- (h) Applying the guidance in Note (a) to Table 3.1.1 results in using the  $LD_{50}$  data for ingredients 1, 2 and 4 in the  $ATE_{mixture}$  calculation since data is available.

#### **Inhalation route**

- (i) The total concentration of ingredients with unknown inhalation acute toxicity (i.e., ingredient 3) is 11%, therefore, the  $ATE_{mixture}$  equation in paragraph 3.1.3.6.2.3 must be used for the inhalation route. This calculation corrects for ingredients with unknown acute toxicity above 10% of the mixture.
- (j) Ingredients 1, 2 and 4 are included in the  $ATE_{mixture}$  calculation because they have data that fall within a GHS acute toxicity category [Paragraph 3.1.3.6.1 (a)];
- (k) Applying the guidance in Note (a) to Table 3.1.1 results in using the  $LD_{50}$  data for ingredients 1, 2 and 4 in the  $ATE_{mixture}$  calculation since data is available;
- (l) Ingredient 3 does not have any useable information for the inhalation route  $ATE_{mixture}$  calculation and is in the mixture at a concentration  $\geq 1\%$  so an additional statement is included (paragraph 3.1.3.6.2.2).

*(Reference document: ST/SG/AC.10/C.4/2008/23, Annex 2, Example 4)*

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