

**HS648**

## **Working out Concentration cut off points for Hazardous Substances**



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*Note: The HSIS database can still be used as an indicator of the reduction in hazard category. This system precedes the hazard classifications used in the new GHS. However once you have followed the steps below to identify the reduction in hazard category of your chemical you can use the converter website (provided in the reference section - last page) to obtain a GHS classification.*

*Reference: HS429 Labelling of hazardous chemicals guideline*

It is possible to dilute hazardous substances to the extent that their hazard category becomes reduced.

There is an excellent resource on the Safe Work Australia website called the [Hazardous Substances Information System](#) (HSIS). It is a database of hazardous substances which lists the substance's hazard category, its risk and safety phrases, concentration cut off points as well as occupational exposure limits. This information sheet attempts to explain how to use this database to assist with labelling.

In the NOHSC Approved Criteria for Classifying Hazardous Substances (NOHSC:1008); hazard categories include:

C	Corrosive
Xi	Irritant
F <sup>+</sup>	Extremely Flammable
F	Flammable
T <sup>+</sup>	Very Toxic
T	Toxic
Xn	Harmful

The Hazardous Substances Information System provides information on the Hazard Category, risk and safety phrases for labelling, concentration cut off points, exposure standards etc.

To find out if your hazardous substance has been diluted sufficiently to reduce its hazard category or to render it non hazardous, proceed as follows:

**Step 1:** Go to the [Hazardous Substances Information System](#). Choose 'Search Hazardous Substances' on the left hand menu and input either the CAS number (no hyphens) or the substance name.

Tick the fields that you are interesting in receiving information on, i.e.

'Show exposure standard details'  'Health , Physiochemical , Ecotoxicological ,

**Step 2:** Choose the Print / Save option to view the full screen information (in rtf format).

**Step 3:** Go to the Concentration Cut-Off Points column and find the hazard category for the various concentrations.

As an example, let's search for Formaldehyde [HSIS - Search Hazardous Substances](#) Type in Formaldehyde under Name or 50000 under CAS.

Go to the Cut-Offs column. As you can see if Formaldehyde is present at the following concentrations:

Concentration	Hazard Category	Risk and Safety Phrases
> than or = to 25%	T (= Toxic)	R40 R23/24/25 R34 R43
> or = 5% but <25%	Xn (= Harmful)	R40 R20/21/22 R36/37/38 R43
> or =1% but <5%	Xn (= Harmful)	R40
>or =0.2% but <1%	Xi (= Irritant)	R43

It would be considered non hazardous to health at concentrations below 0.2%. In this case the label would just require the substance name, the percent concentration and the words “Non Hazardous”.

The [Risk](#) (see information sheets) and [Safety Phrases](#) are linked to the hazard category. In the above example, when formaldehyde reduced from being in the “Toxic” hazard category to being “Harmful”, the risk phrases changed from being **Toxic** by inhalation, in contact with skin and if swallowed (R23/24/25) to **Harmful** by inhalation, in contact with skin and if swallowed (R20/21/22).

#### **References:**

1. [Safe Work Australia](#) Hazardous Substances Information System
2. GHS Converter website: <http://www.gischem.de/ghs/konverter/index.htm>  
A European resource which helps translate from existing hazard classifications into the GHS system.