# Chemicals in schools (formaldehyde, melamine and cyanuric acid)

Posted by Anonymous on Mon, 2016-02-15 09:21

Chemicals in schools (formaldehyde, melamine and cyanuric acid): Can someone please tell me if we can use formaldehyde (37%), melamine or cyanuric acid for IB individual design experiments in schools in Victoria? Thanks.

**Voting:**
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**Year Level:**
7
8
9
10
Senior Secondary
**Laboratory Technicians:**
Laboratory Technicians

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## Chemicals in schools

Submitted by sat on 19 February 2016

Answer reviewed 16 February 2023

**Assessing chemicals for use in schools**

It is important to consult the relevant Safety Data Sheet and conduct a risk assessment prior to purchasing any new chemical. In particular, the ‘handling and storage’ and the ‘stability and reactivity’ sections of the SDS should be consulted to help guide storage and handling, as well as to identify any incompatible materials and storage conditions to avoid.

You should consider the intrinsic hazards of the chemicals as well how they will be used and the products of any chemical reactions. A risk management strategy is to choose the least hazardous chemical, process and products.

In assessing chemicals for use in schools, it is important to follow the directions of your jurisdiction regarding the processes for purchasing new chemicals and the use of existing chemicals.

The Science ASSIST List of recommended chemicals for science in Australian schools[1] was developed in 2016 and updated in 2021 to address the significant variations existing between the practices and local policies of the states and territories and educational jurisdictions.

All three of your chemicals do not appear on this list, and will be discussed in order:

### Formaldehyde (methanal, $CH_2O$) 37%

Science ASSIST strongly advises against the use of formaldehyde in a school science setting. It is a Category 1 (known) human carcinogen, has acute toxicity, and is a Category 2 drug precursor.

Formaldehyde was considered in the development of the Science ASSIST List of recommended chemicals and was not included because of its acute health hazards and because it is not regarded as essential to the science curriculum. For further information regarding its classification as a carcinogen to humans, see references below. [2,3]

### Melamine (1,3,5-triazine-2,4,6-triamine, $C_3H_6N_6$)

This is currently not listed in the Science ASSIST list of recommended chemicals because we are unaware of an identified science curriculum use for it.

Melamine carries the signal word “Warning”, and GHS hazard statement H361 ‘Suspected of damaging fertility or the unborn child.’ [4] Melamine is a crystalline solid, when combined with formaldehyde, produces a commonly used thermosetting plastic.[5,6]

### Cyanuric acid (iso-cyanuric acid, 1,3,5-triazine-2,4,6-triol, $C_3H_3N_3O_3$)

This is currently not listed in the Science ASSIST list of recommended chemicals because we are unaware of an identified science curriculum use for it.

Cyanuric acid is not classified as hazardous under the GHS criteria.[7] Cyanuric acid is a crystalline solid, commonly sold as a swimming pool chemical, to stabilise the loss of chlorine through the effects of ultraviolet radiation.[8] It is also used in the commercial formation of melamine as a step towards forming melamine-formaldehyde resins.[5,6]

### Alternatives

If the intention of using these chemicals is to investigate the production of thermosetting polymers, then we recommend finding safer alternatives that are suitable for the school setting, such as:

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STEM Learning. (nd). *Plastics and Polymers *suitable for home teaching**, Retrieved (16 February 2023) from the STEM Learning website: https://www.stem.org.uk/resources/community/collection/449973/polymers

- STEM Learning. (nd). *Polymers*, Retrieved (16 February 2023) from the STEM Learning website: https://www.stem.org.uk/resources/elibrary/resource/35141/plastics-and-polymers-suitable-home-teaching
- Rowland, T., and S. Slutz. (nd). *Turn Milk into Plastic*, Retrieved (16 February 2023) from Science buddies website: https://www.sciencebuddies.org/stem-activities/milk-into-plastic

## References


1 Science ASSIST. (2021, March). *'List of recommended chemicals for science in Australian schools'* Retrieved from the Science ASSSIT website: https://assist.asta.edu.au/resource/4669/list-recommended-chemicals-science-australian-schools-2021

2 IARC Monographs, (2018, July) *'Formaldehyde'*. Retrieved from the World Health Organization website: https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono100F-29.pdf

3 Chem Supply, (2019) *'Formaldehyde solution' Safety Data Sheet.,* Please search https://shop.chemsupply.com.au/ via the product information on the website for the latest version of the Safety Data Sheet

4 Sigma-Aldrich, (2021) *'Melamine'*, Please search https://www.sigmaaldrich.com/AU/en via the product information on the website for the latest version of the Safety Data Sheet

5 Britannica. (2023, February 12). *Melamine*, Retrieved from the Encyclopaedia Britannica website: https://www.britannica.com/science/melamine

6 Vedantu. (2023, February 13). *Melamine*, Retrieved from the Vedantu website: https://www.vedantu.com/chemistry/melamine

7 Sigma-Aldrich, (2022) *'Cyanuric acid'*, Please search https://www.sigmaaldrich.com/AU/en via the product information on the website for the latest version of the Safety Data Sheet

8 NSW Health, (2017, April), '*Stabiliser (Cyanurate) Use in Outdoor Swimming Pools' Fact sheet,* Retrieved from the NSW Health website: https://www.health.nsw.gov.au:443/environment/factsheets/Pages/stabiliser-cyanurate.aspx


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