



# ASET-NSW NEWSLETTER

August 2020

Volume 3, Number 2

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## Links for Articles

- <https://assist.asta.edu.au/>
- <https://asta.edu.au/conasta>
- <https://starweek.org.au>
- <https://scienceweek.com.au>
- #STARweek

## Contact Us

<http://www.asetnsw.org.au>

## Editor

Loretta Fincato

[fincatol@stmarks.nsw.edu.au](mailto:fincatol@stmarks.nsw.edu.au)

## Chairperson's Report

Hope you were appreciated during #STARWEEK (24-28 August). SETA has already asked us to take photos of the way we have done things differently during the COVID crisis. We can take photos of ourselves supporting science before and during #STARWEEK, and the pictures will be posted to the website.



*Margaret Croucher*

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## Secretary's Report

We have been busy at our school as our juniors are back to doing pracs for Term 3 – so it's a busy time in our prep room. I'm hoping we can get through most of this term without too many disruptions from the Covid situation – I would especially like to see the HSC students get to the end of term without any more disruptions.

We will be holding our ASET-NSW AGM on Saturday 12th September 2020. We usually run our AGM as part of our Annual Conference but as this was cancelled this year due to

## Current Elected Committee Members

Margaret Croucher

*Chairperson, Public Officer*

Loretta Fincato

*Vice-Chairperson, Newsletter Editor*

Julie Ryan

*Secretary*

Laurence Wooding

*Publicity Officer, IT Manager*

Annett Stanley

*Membership Secretary, Treasurer*

Jonathon Blair

Jonathon Gray

Linda Stanford

Covid, we will hold it on Zoom. We have emailed details to our members as our plans are in place.

Here's a picture of me In my very small, temporary, demountable prep room! It's a challenge but will all be worth it when our new building is finished. We will then have the 'Taj Mahal' of prep rooms - huge, functional, beautiful! Can't wait!

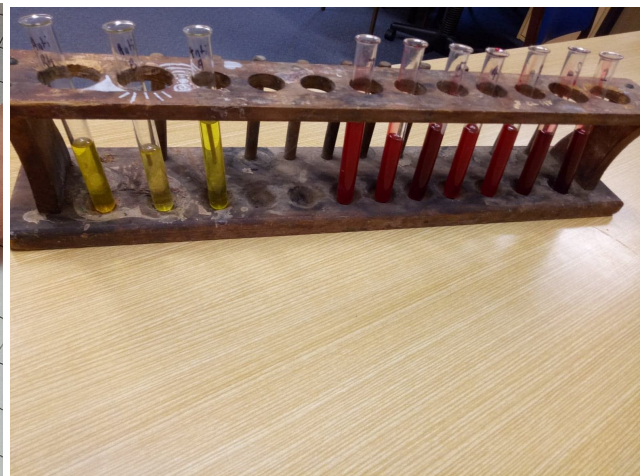
Regards

*Julie Ryan*

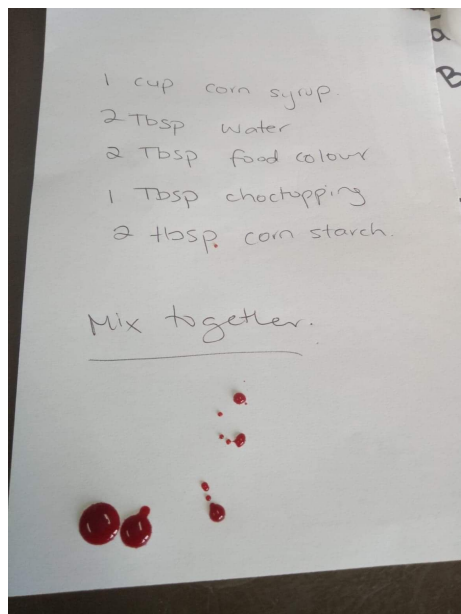


## Calendar of Events 2020

22 April	Earth Day
05-08 July	CONASTA69 – ANU, Canberra - CANCELLED DUE TO COVID-19
27 July	Australian National Chemistry Quiz
31 July	Schools Tree Day
15-23 August	National Science Week
24-28 August	#STARWEEK
14-15 September	ASET-NSW Conference – CANCELLED DUE TO COVID-19
12 September	Annual General Meeting - Zoom Meeting 10am.
September	National Biodiversity Month
15 October	HSC written exams commence
09-15 November	National Recycling Week
29 Jan - 2 Feb 2021	#COSPAR Space STEM Convention - ICC Sydney



## Murder at Murwillumbah



This term Year 7 STEM have completed a forensic science unit while developing the science skills in the lab. During Week 1, together with the help of a senior science class, we staged a forensic murder scene for the whole year group to discover. Year 7 came across our cordoned-off Police murder scene, a bloody murder victim and students posing as Forensic Detectives. Over the next few weeks classes undertook forensic investigation of evidence from the crime scene including blood samples, metal samples, hair samples and fingerprints.



Students enjoyed the chance to investigate the suspects and discover who committed the crime through using scientific investigation. I have included pictures of the blood work for the investigation as well as some pictures from our forensic crime scene. Students looked at suspect, victim and crime scene bloods, and tested with serums to determine which bloods were a match and narrow down the possibilities of finding the guilty suspect. Year 7 have enjoyed the forensics unit and they have enjoyed getting into the laboratory and using their skills to work through tasks.

**Charlotte Higgins** Murwillumbah High School



### **Substitute Science**

Wendy Purss from Gilroy Catholic College has a suggestion if you run out of paper tape used for recording on ticker timers.

If you run out of the paper rolls which are usually white and 16mm wide, you can substitute with plain newsprint sheets cut to width. Use a precision cutter on your poster size paper which can be purchased up to 760mm wide.

## CLEANING USING THE GLASSWASHER

The bench washer can be used for more than just rinsing test tubes. Any thing that will fit in the basket and won't melt at 50 degree temperatures is suitable. Wash a whole class set of safety glasses using lab decontamination detergent, or glass machine washing solution normally used in commercial premises. Once air dried there shouldn't be too much spotting, and if you handle the clean glasses with cotton gloves, then you won't get any fingerprints re-occurring on the lenses.



### Freebies

Free online activities, and competitions with Deep Blue themes at [www.scienceweek.net.au](http://www.scienceweek.net.au)

For example:

<https://inquirebox.com/science-scavenger-hunt/>

## **BOB'S INSTRUMENT SERVICE**

Bob's Instrument Service specialises in the service and repair of school science lab equipment including microscopes, balances, power supplies, panel meters and other equipment throughout NSW and ACT.

Please feel free to contact Bob Death on 0416 721 011 or [bobsinstruments@gmail.com](mailto:bobsinstruments@gmail.com) to discuss your school's needs.

If you have any interesting science stories, photos, hints, tips or freebie suggestions, and they haven't been published on other forums, please send me an email so I can publish in the next edition of the newsletter. Please put NEWSLETTER in the subject line.

[fincatol@stmarks.nsw.edu.au](mailto:fincatol@stmarks.nsw.edu.au)

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**You know you are a molecular biologist when:**

1. You call your children the F1.
2. Media is something that increases your culture.
3. You wash your hands both before and after using the bathroom.
4. You open the toothpaste with one hand.
5. You know how cold  $-80^{\circ}\text{C}$  is.
6. "In the hood" has a completely different meaning to you than it does to most people.
7. You know most of the Greek alphabet, but you can't speak Greek.
8. You use Parafilm instead of Saran wrap.
9. You wish you could use a graduated cylinder instead of measuring cups at home.
10. You put the cake in the oven to incubate.

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### **Random Factoid**

In 2007, they calculated that it cost \$11,000 to ship a litre of water to the International Space Station. They designed a water recovery system that reuses 93% of all moisture collected in the station. Luckily, astronauts are very professional and don't have an issue with drinking recycled urine!



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## Welcome to the Wonderful World of Waste and the School Laboratory Part II

By Michael Pola  
 Envirostore Chemical Consulting  
[mike@envirostore.com.au](mailto:mike@envirostore.com.au)

This second part will deal with some of the issues that waste disposers find most at fault when collecting chemicals from school laboratories, that is, labelling your wastes and the use of incorrect containers to store the wastes.

Labels are sources of information, not opportunities to be clever (by just using a chemical formula and nothing else), obfuscating (by using codes), unhelpful (by forgetting important descriptions) or minimalist (by putting very little information). A good label will without ambiguity, inform any reader what the container has contained therein. You can rarely put too much information on a label and the opposite is too commonly true. An incorrect label is also a big no-no and can cause chemical heartache and consternation when the waste is worked on while disposing.

The correct label will contain the chemical name, its concentration if applicable which it is in the case of mineral acids. Dilute sulphuric and nitric acids are vastly different from the concentrated versions. The presence of any dangerous goods such as a solvent (the best example of this is the ethanol solution of phenolphthalein which looks like a water solution). The date of preparation is useful as is the initial or name of the preparer in case there are any queries. As disposers the waste is to be transported so any dangerous goods requirements such as a diamond or UN number will be also useful. Labelling to GHS requirements is not so important and there are exemptions when dealing with waste. Remember that labelling to the GHS is a requirement of the hazardous substances regulations which deal with the hazards of exposure while using the material. Dangerous Goods rules are for transport and storage, not exposure. If you want to put GHS compliant labels on your waste, feel free but the overriding requirement will be DG because there is a transport aspect. The waste man is not looking for hazardous substances labelling. The name of the chemical is of prime importance because this will indicate if it is a dangerous good which in turn reveals the chemical and/or

physical properties. Mixtures of chemical wastes such as those you consolidate in a carboy should be labelled to show all the ingredients.

There is no requirement to provide a safety data sheet for wastes especially for consolidated mixtures, as it would need to be specially prepared by you. If the waste is a single chemical we will probably have a SDS for it. The exception to this is when you are disposing of commercial products which are chemical mixtures. The SDS will hopefully list the ingredients.

Some waste companies may require safety data sheets for your wastes before they can provide a quote, but consolidated mixtures will be difficult. You can always hand over data sheets for every ingredient and this is fairly common with industry.

A common form of waste is the unlabelled or unknown chemical. This is an excellent reason to get rid of a chemical because you don't know what it is, or its label has come off. We understand unknowns do occur so just label them as just that - "unknown chemical with lost label". If you want to have an educated guess go ahead, we must work out what it is before we can dispose of it, so any help is of use. Don't be surprised if a waste company won't take your unknowns though it won't happen with us.

The following is a list of unsuitable containers to hold your chemical wastes:-

- glass and plastic food containers such as milk and juice containers
- glass jars
- stoppered glass bottles are not always suitable if the stopper is not a good fit
- containers that can't be properly sealed, or which don't have proper closures such as plastic bags or tins

If you need containers, we can supply 10 litre dangerous goods approved carboys at no charge. You just pay for the contents when full. If 10 litres is too large a volume, then try to use proper laboratory jars such as Schott bottles or second-hand chemical containers such as Winchester bottles which are 2.5 litre volume. Don't forget to change the label and if required, rinse out the original contents. A dangerous goods compliant container will have a series of numbers embossed on the sides or top of the container preceded by the UN symbol. Consolidating your liquid wastes into a 10L carboy will be cheaper than disposing of a lot of smaller volume containers as the waste man won't have to get rid of the empties.

Not all wastes can be consolidated and there are a few rules to follow generally before more chemically specific advice is required. The easiest consolidation is the flammable liquids and includes many non-flammable organic liquids such as oils. You can add together alcohols, esters, ketones, thinners and kero, turps and other household solvents, even small volumes of chlorinated solvents such as dichloromethane and methylene chloride. Any indicator and stain solutions even if aqueous, and organic acids such as acetic, formic and oleic.

The only organic liquid to avoid is any isocyanate which is the catalyst or activator for polyurethane two-part paints. Call to check if unsure of the inorganics and aqueous liquids. All we can really advise in a general sense is to pH match, i.e. low pH with low pH and the high pH with same. Adding acid to alkali can result in heating and vigorous reaction especially if one of the solutions is strong. Remember the pH scale is for dilute acids and alkalis and is not suitable for concentrated acids and alkalis. There are a few other safe consolidations (photographic wastes is one but now diminishing) but it is best to check with a chemist or the text books before trying, and you can always ask us.

*Editor: Very sure I wouldn't let my expensive Schott, Duran or Pyrex reagent bottles be used for waste disposal as I wasn't going to get them back. I like to save used bottles of alcohol and hydrogen peroxide for disposal of chemical waste. This article has been included with permission from Envirostore and has been published previously in Lablines.*



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## BIOLOGY PRACTICAL

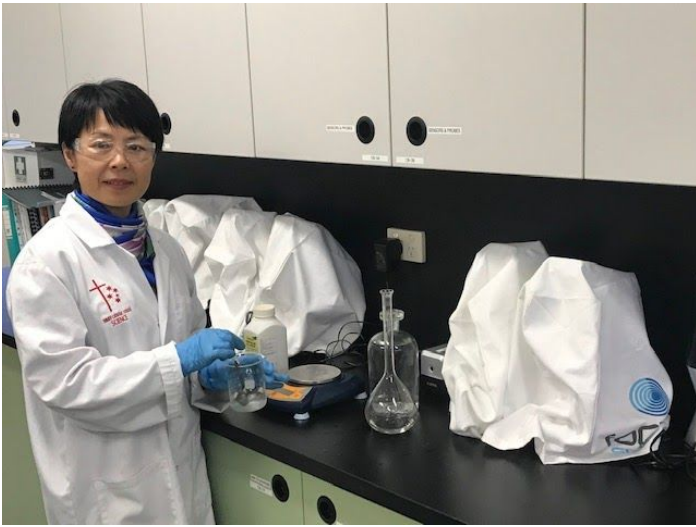
### Method for Creating an Epidermal Peel using Nail Polish

1. Set up two slides by writing 'upper epidermis' and 'lower epidermis' on the side using permanent marker
2. Paint a small area of the upper epidermis of a leaf with nail polish
3. Let it air dry completely. Blowing on it or waving it in the air will speed up this process
4. Carefully put tape over the nail polish, seal it down but make sure there's an edge to pull off
5. Rip the tape back off from the edge not stuck down
6. Place tape directly on the slide.
7. Repeat steps 3-6 on the lower epidermis side

### Visualising stomata

1. Mount 'upper epidermis' slide onto light microscope with 100x magnification (or 50x if too close)
2. Count the number of stoma in the field of view, note in the table
3. Move the slide across to another area & repeat counting of number stoma in field of view and note in table
4. Repeat step 3 one more time
5. Repeat steps 2-4 for the 'lower epidermis' slide
6. Calculate the average number of stoma per field of view





**LAB ENVY**

Meet Yanli Li from Trinity Park College. She has sent us photos of the new laboratories and prep room at the Regents Park campus. She says they are very modern, and provide her with plenty of space for storage, and many work areas.





## COVID FUN

What did I do during COVID? I isolated in my store rooms.

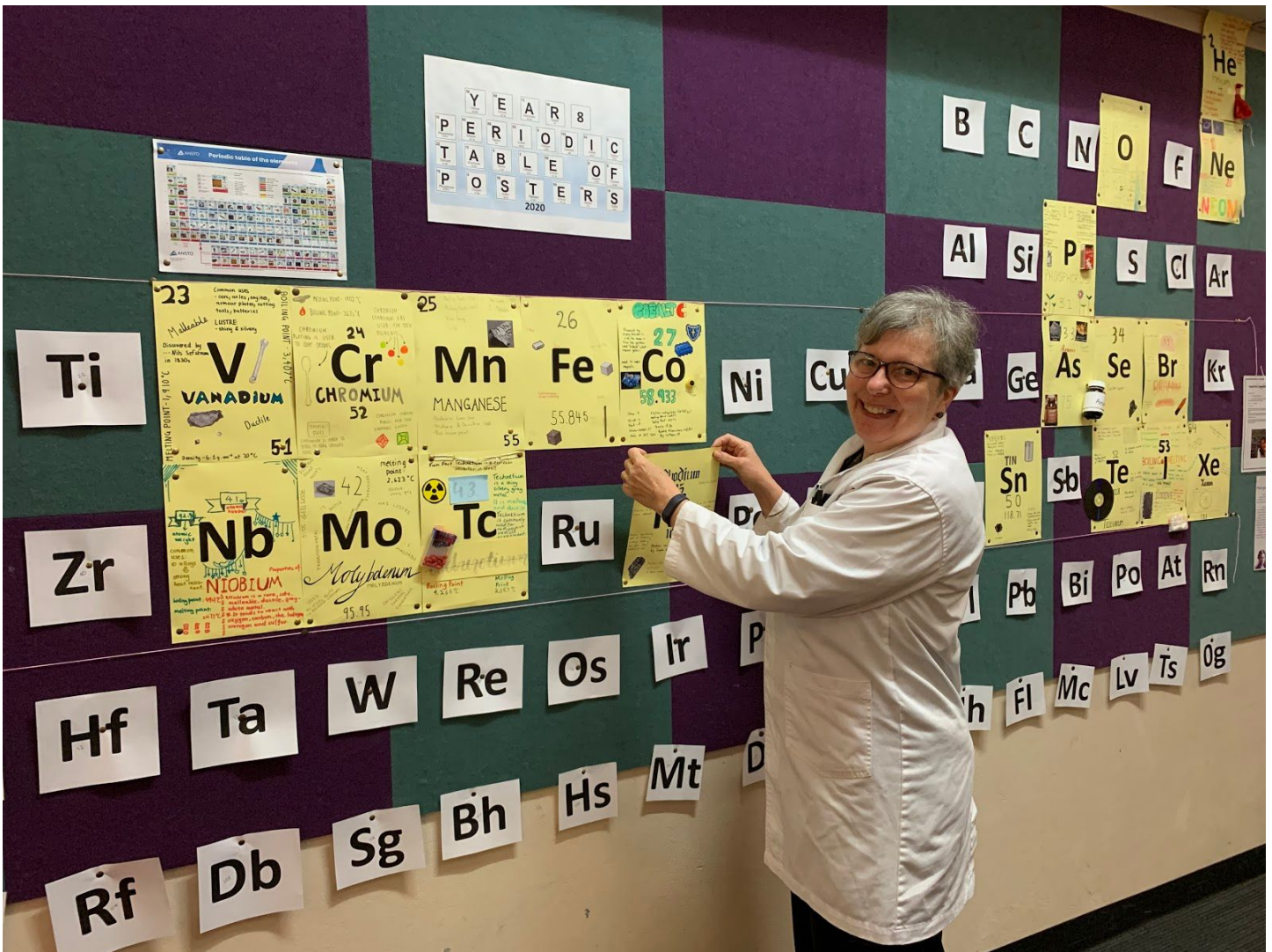
We already had the storage system but I never had the time to actually sort it all out. Now I can tell anyone exactly what shelf what chemical is on and how many jars/containers of the chemical we have.

I even managed to sort through 100s and 100s of dropper bottles and culled many.

I use to hate going into my chemical room now I don't mind the visit at all. Even my prep room got sorted.

Just need to now sort out the general store room but that may for another isolation time.

Kim Lawlor  
Quirindi High School



Helen Atkins from Tara Anglican School for Girls is setting up the 2020 Year 8 Periodic Table of Posters.