

LABLINES



Newsletter of the Laboratory Technicians' Association of Victoria

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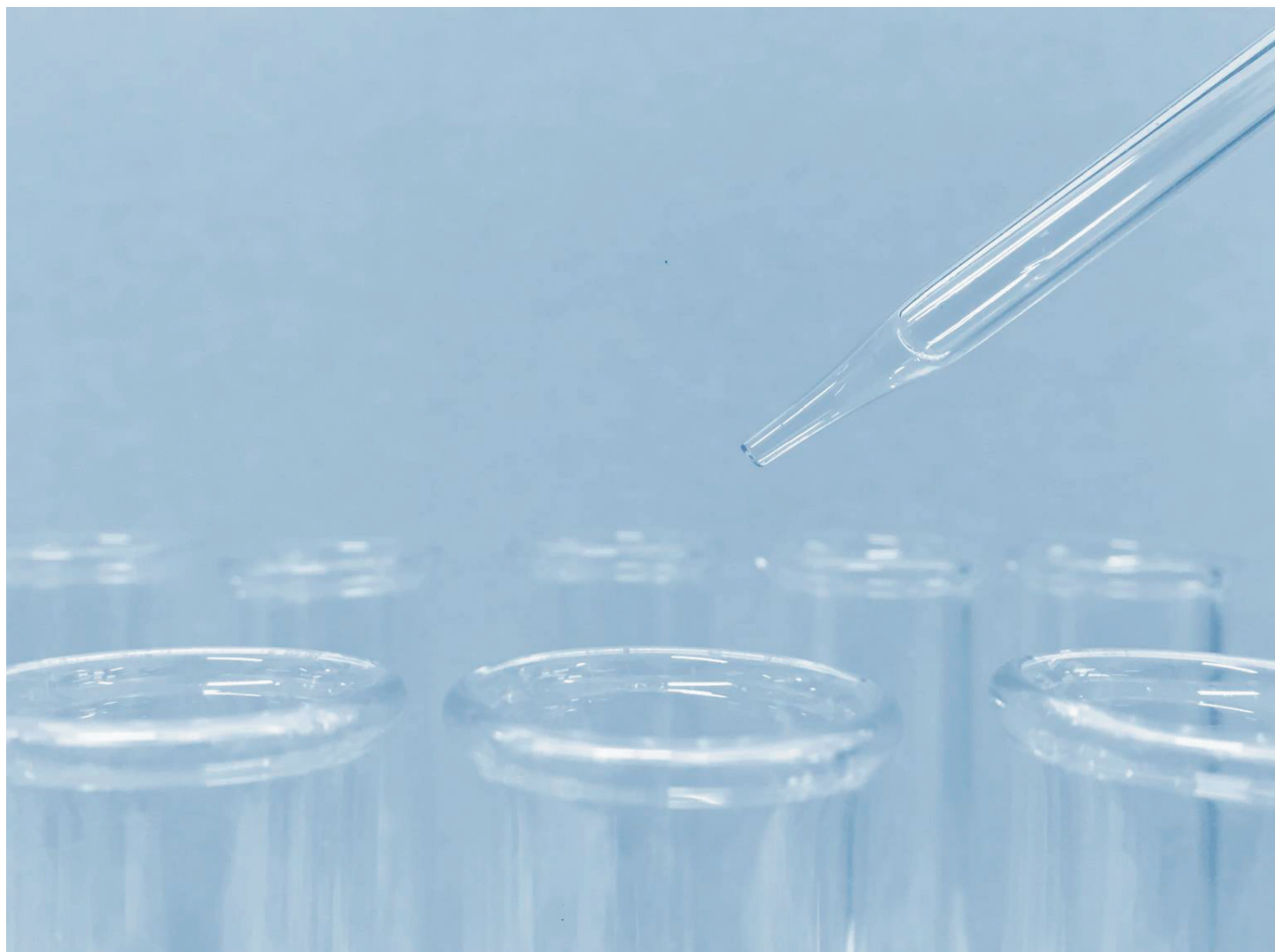
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Editor: Jessica Boys

LABORATORY TECHNICIANS' ASSOCIATION OF VICTORIA



LTAV Website
www.ltav.org.au

Science ASSIST re-opens!

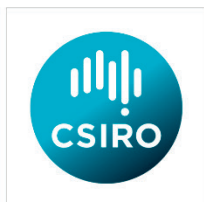
CSIRO Education has offered interim funding for Science ASSIST and will work in collaboration with ASTA to secure long term sustainable funding for the program.

The Science ASSIST team has reopened the Q&A section of the website to answer all of your questions regarding school laboratory and science room safety.

You have continued free access to all of the technical resources including SOPs, RAs, Information sheets and the Chemical Management Handbook.

To stay up-to-date on all the latest questions subscribe to the Science ASSIST eNews.

assist.asta.edu.au



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Deadline for next Lablines 2019

17th May 2019

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There is no responsibility taken for the results of any experiments published in "Lablines" and replicated elsewhere. Risk assessments should be carried out before attempting same.

President's Report

Geoff Gleadall

LTAV President



Welcome back to the lab. It is going to be an interesting year, after all, they all are.

Your LTAV committee is always looking for ways to improve the profession and I would ask you all to put some thought into how you would like to see that proceed.

If you have ideas of how LTAV can better help members, and the profession at large, please do not be shy to tell us.

I would like to flag a couple of things that I will be focusing on this year.

The two things that seem to cause most difficulty for our profession are bullying and excessive workloads. With regard to workloads, every time we survey this, we find that few, if any, schools meet the recommended minimum service factor. Our employers pretend that this is not a problem and will bring up apocryphal stories of some legendary technician in the past who did it all, and more, in half the number of hours. It is a problem in search of a solution, and the solution is likely to need the cooperation of this association and all of the unions that represent us.

The second thing, bullying, has been a problem in the profession since I started and has been getting worse rather than better. It is so common, that many of us do not even identify that what is happening to us is bullying. We are subject to bullying from teachers, heads of department and school leadership. Almost all of it stems from being unable to always deliver when they ask for the impossible. We even get bullied by students on occasion!

This is all made worse by the combined effects of vague job descriptions, lack of accountability in matters such as staffing and bullying, and conflicts of interests caused by inadequate school budgets.

As a profession we tend to be our own worst enemies. We put the interests of the students ahead of our own and simply tolerate it

If you have an issue with your workload or with bullying, please let us know. Contact me if there is nobody else that you can talk to.

OK, enough problems, I and the rest of the committee really do wish you all a good year ahead.



ATTENTION NEW LAB TECHS

It has long been recognised that a new technician's first year in education can be very difficult. LTAV has decided to support beginning technicians by offering

FREE first year LTAV membership

deemed to be paid by the LTAV Committee.

The following conditions apply:

- a. The payment is at the discretion of the committee and will apply for the course of each membership year.
- b. The payment is to be made only on behalf of technicians in their first year working in education.
- c. Members who are given this benefit are expected to continue their membership in subsequent years.
- d. Such members will have all the rights and obligations of ordinary members, but in accepting the payment also agree not to run for office during that same first year

Please refer all interest and enquiries to:

admin@ltav.org.au

In the News

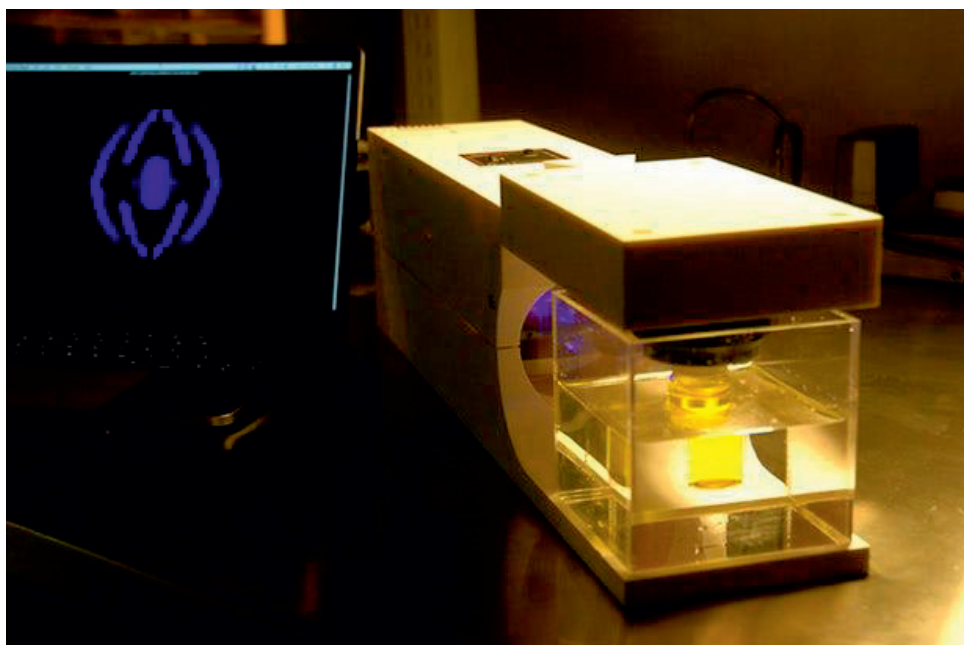
STEM education seems to be here to stay as the current buzz word in education, and continues to receive large amounts of funding. Many Laboratory Technicians are finding themselves thrust into STEM assistant or coordinating roles. All of a sudden we are learning to code robots, program Arduinos and 3D print!

This one goes out to the now STEM technicians and any Star Trek fans out there.

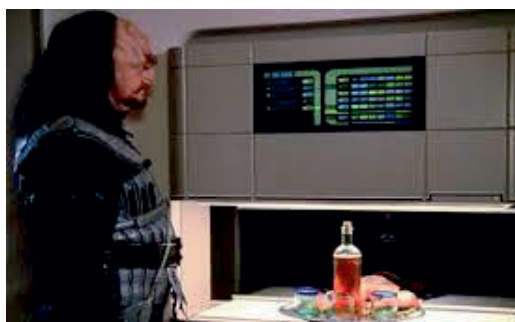
Scientists from the University of California, Berkeley, have created the closest thing to a 'replicator' that we have seen yet. Conventional 3D printers create objects layer by layer resulting in ridges on the surface known as the 'stair-step' effect, a common issue in manufacturing objects that require planar edges.

This new printer, dubbed 'The Replicator', in reference to the Star Trek machine capable of materialising almost any object, bears more resemblance to a CT scanner than a 3D printer, using light to mould a 3D shape. 'The Replicator' projects very specific patterns of light onto a rotating cylinder of 'resin' made up of liquid polymers mixed with photosensitive molecules and dissolved oxygen. The light reacts with the resin, depleting the oxygen, and transforming it into a solid.

There are many exciting outcomes for 3D printer users with this method of production. The process is much faster than conventional 3D printing, with a small figurine of the famous 'The Thinker' statue created in only 2 minutes! It also removes the requirement



'The Replicator 3D Printer'. Image taken from newatlas.com.



'Star Trek Replicator'. Image taken from mythcreants.com

for bridges and supports –the bane of 3D printer users' existence. The objects produced are not only smooth, but more flexible than conventional 3D printing. It also makes it possible to attach 3D printed parts to existing objects by placing them in the resin and solidifying the resin around them.

We will contain our excitement for a little longer though. 'The Replicator' is still quite small scale, with 10cm models the maximum size that can be produced.



'The Thinker figurine'. Image taken from sciencedaily.com

The resin is also quite unique (read 'expensive'). So unfortunately, we can't expect futuristic, Star Trek-style replicators to be rolling out into schools any time soon. Maybe that isn't such a bad thing... better get back on YouTube to figure out what on earth Raspberry Pi is.

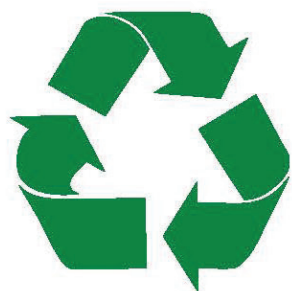
Jessica Boys

THANK YOU! YOU ARE AWESOME!

Ever had a Lab Tech do something super nice for you?
Ever seen a Lab Tech do something awesome, far beyond their call of duty?

**This is your chance to say
THANK YOU!
and to recognise those Lab Techs who you think are
AWESOME!**

Please send a sentence or short paragraph to
boys.jessica.j@edumail.vic.gov.au
to be included in the next edition of Lablines.



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The System Garden: University of Melbourne

Ros Clark

Laboratory Technician, Melbourne High School

As part of LABCON 2018, we were able to take a guided tour of the System Garden at the University of Melbourne with Virginia McNally, the University's Arborist/Horticultural Technician.

The garden serves as a social space for students, and I remember enjoying lunch here with my friends as a first year Science student. It is the second largest open space on the Parkville campus. A small oasis amongst all the buildings and activity of the University, it contains little spaces with special features as well as open grassed areas.

The System Garden was originally established in 1856 by Professor Frederick McCoy for use by botany students, created as a circular design contained within hedges in the north-west corner of the Melbourne University Campus. Plants are grouped together in families/subclasses giving an opportunity to see the similarities



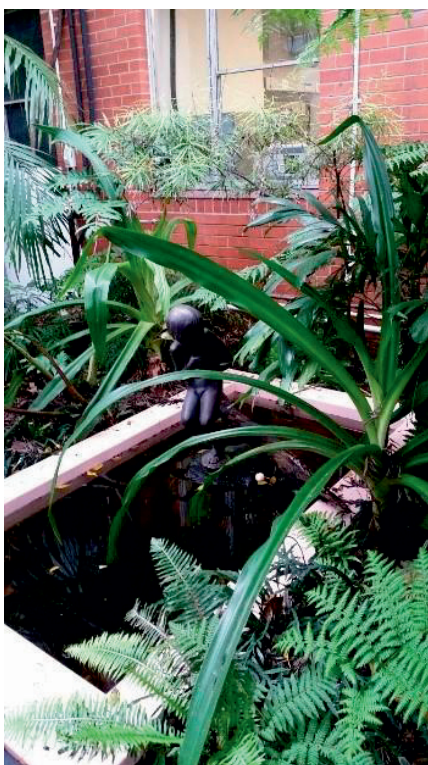
glasshouse, closely reflecting the circular form of the garden.

Unfortunately, today all that remains is the tower of the old conservatory, retained when the glasshouse was dismantled in 1916.



and differences in form and flower structure between members of the same family.

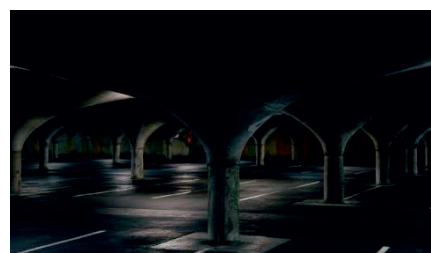
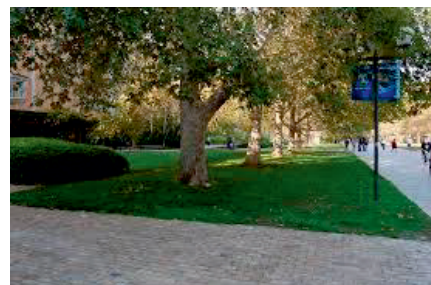
The garden is now only a quarter of its original size due to building encroachment over the years. It originally contained a polygonal



The garden is now reflective of the diversity of the current student populations with plants from every continent, except Antarctica. It is designed so that all visitors can come to relax and find plants from their home region.



We were able to enjoy the new rainforest section of the garden which was to be officially opened the following week. Of course, as it was November in Melbourne, it was raining in the rainforest.



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Virginia also took us to look at the University's South Lawn garden and explained to us how in the 1970s they built a voluminous car park underneath (you may remember it from Mad Max). The large plain trees' roots systems are cleverly incorporated into the structure of the car park pillars to ensure they get enough space and water and the structure can hold all the weight.

The car park has been decommissioned, as the University is now a "Car Free Zone" and they are taking suggestions on how to redevelop the area to include eating zones and usable space.

Overall it was a unique tour of the Melbourne University Gardens from a woman who was obviously very passionate about botany and horticulture. Thanks to LTAV for organising this.



2019 LTAV Conference Scholarships CONASTA 68

This year the Laboratory Technician's Association of Victoria will again support two members in furthering their knowledge and expertise in science education by offering scholarships to attend CONASTA 68, the science teachers' conference hosted by ASTA. CONASTA always has a number of workshops and forums relevant to lab technicians and is a valuable way to learn more of what is happening in today's science world.

CONASTA 68 will be held in Darwin between 7th – 10th July 2019. For an overview of the conference, go to <http://asta.edu.au/conasta>

All school-based Victorian science laboratory staff who are LTAV members are invited to apply for the scholarship, which will cover travel, registration and accommodation costs.

Any other costs and charges associated with acceptance of this scholarship must be met by the winner(s). Two scholarships only will be offered. Awards are not transferable.

Applicants should provide a brief CV and details of the anticipated benefits for both the applicant and the Association. The successful applicants will be expected to write a small article for Lablines outlining their experiences at the conference.

Written applications addressed to the LTAV Secretary can be posted to:

Laboratory Technicians' Association of Victoria
S3/159 Burwood Road,
Suite 150
Hawthorn, Victoria 3122

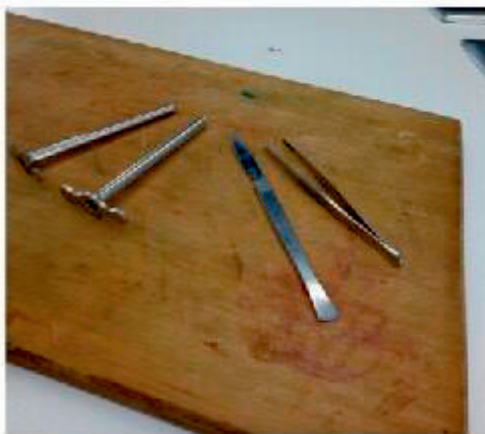
or emailed to: admin@ltav.org.au

and must be received no later than Friday 26th April 2019



Bursting Beetroot Membranes

Unit 1 Biology - SAC 1 Cellular Membrane Investigation



Sheree Baker

Laboratory Technician, William Ruthven Secondary College

After reviewing the dizzying array of procedures offered on the LTAV List last year, we eventually opted for the Pearson/Heinemann Experiment 2.3.1, 2016 (ISBN 978 1 4886 11230) with one modification - varying the water bath temperatures to more evenly spaced intervals: 5°C, 20°C, 40°C, 60°C and 80°C. We had two thermostatically controlled water baths (these were at

60°C and 80°C) and the others were 'lab tech controlled' (5°C ice bath, 20°C tap water, 40°C regulated by adding more hot water). The test tubes, each filled with 5ml of water, were incubated with three per water bath.

The students cut their beetroots in half and proceeded to drill out uniform beetroot cores using a number four cork borer. These were cut

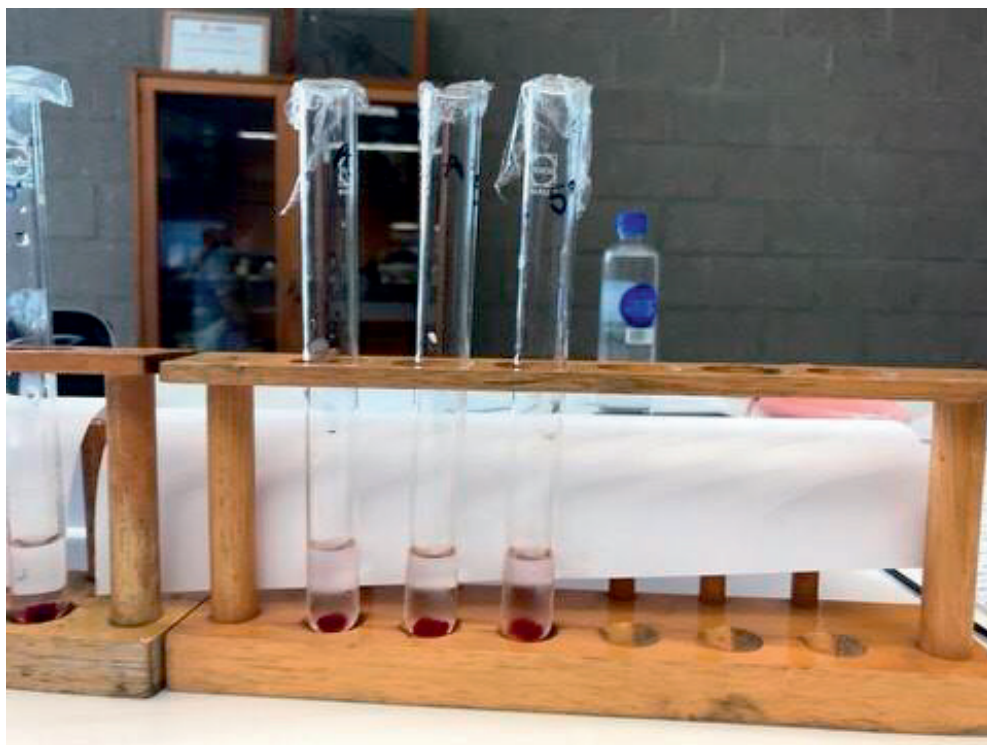
into 15 identical 5mm discs. They were washed using distilled water until the water ran clear. Although the collective wisdom of the LTAV List suggested that overnight rinsing was the best option, we had a Monday morning class and didn't want to leave them in water all weekend.

A single beetroot disc was placed in each tube, covered with plastic wrap and incubated for 30min. When arranged in



ascending order, a trend is immediately apparent, with increasing release of the betalain pigment from cells as the temperature increases. The students later measured the absorbance of each solution using our Vernier colorimeter, set at a wavelength of 530nm.

This is a simple, straight forward practical, made easier with thermostatically controlled water baths, however I am sure that good results could still be achieved without them. I know many of us don't have every mod con at our disposal!



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Welcome to the Wonderful World of Waste

and the School Laboratory

Part IV

Michael Pola

Envirostore Chemical Consulting

mike@envirostore.com.au

This quarter's article will look at radioactive items, explosives and a few of those exciting chemicals that don't store well.

Radioactive items in the school lab seem to be either the three small, radioactive sources in disc form, stored in a nice wooden box, or radioactive rocks or minerals, usually uranium or yellow cake and very rarely actual radioactive salts like uranium or thorium. The latter scenario is thankfully very rare unless some kind parent has donated such items to the school laboratory along with other filthy chemicals – there is rarely anything good that comes from these “donations”.

There are three golden rules when dealing with radioactive materials and these are applicable to virtually all scenarios, ie storing, handling and using as well as disposal when required.

The three rules of radioactives are:

1. Time
2. Distance
3. Shielding

Time refers to reducing your exposure.

Distance means observing the correct distance while keeping in mind the inverse square law that applies. For example, the radiation taken at a one meter distance from the source is a quarter that at two meters and one sixteenth that at three meters.

Shielding means the use of correct shielding material. This is dependent on what type of particle the source is emitting - alpha, beta or gamma. The three sources in the wooden box, as mentioned above, usually consist of an alpha emitter such as Am210, (commonly in household smoke detectors) a beta emitter such as Sr90 and a gamma emitter such as Co60. Alpha particles are a helium nucleus and therefore fairly large and easily shielded by physical barriers, so lead sheet will certainly work. Beta emitters need shielding with aluminium, not lead.

Gamma emitters are effectively shielded by lead. So using only

lead sheets to wrap around your sources will only work if the sources are gamma or alpha. Remember that the radiation from gamma emitters closely resembles x-rays. You need to know what isotope you have to effectively shield.

It is also a good idea to have on hand a detector with a Geiger Muller tube to check for radiation. Many Physics radiation practicals are designed to demonstrate how effective shielding is, as well as to prove the inverse square law. For the conscientious laboratory technician, the GM detector will prove how effective your choice of shielding actually is. There should be very little detectable radiation at the outside of your stored sources, let alone any within the room where they are stored. You will need to establish what the background radiation is first before any measurements are meaningful. If all else fails with shielding, move the sources further away until there is no measurable radiation (or dispose).

Any radioactive mineral or rock also needs shielding and it is a good idea to try the various shielding choices for effectiveness using your meter. Some minerals have multiple particles and you may need to consult a chart of radioactive nuclides. These charts can be a little confusing if you haven't used one before.



A common radioactive source kit found in schools. Image taken from SciChem website.

You can always call us at Envirostore if you are confused. Radioactive materials are dangerous goods class 7.1 (low level). The 7.2 and 7.3 radioactives are beyond the scope of this article and are the serious radioactive items like plutonium and radium.

Explosive items we have encountered from schools include smoke machine generators, small rockets, touch powder, fireworks and the like. Explosives are dangerous goods class 1, with class 1.1 being the classic gelignite, TNT, nitro-glycerine and detonators etc. Fireworks are class 1.4, as are distress flares. We really can't condone these materials in schools, apart from perhaps sparklers, which are not explosives but flammable solids (class 4.1). Generating bangs and smoke in the class is a poor demonstration of chemistry in action; we subscribe to the old Maxwell Smart aphorism: chemical knowledge for goodness not evil. If you do have any of these items in your lab, they are effectively subdued, by dunking in water in a bucket for instance, prior to calling in the disposals man

Of course, there are some chemicals that may form explosive compounds over time. The best example is the formation of solid organic peroxides in certain solvents such as ethers or furans. Luckily, this is rare in schools because such solvents are no longer used. If you do have diethyl ether in your lab, you really should consider disposal as it is a troublesome solvent for any laboratory, let alone a school laboratory. If you are concerned or you would like to know more, please contact me. Ammonium

dichromate is said to become explosive when aged. Chlorates and perchlorates cannot be trusted to behave themselves, so we strongly suggest disposal. Formic acid (90%) over time breaks down and forms carbon monoxide, which has been said to break the bottle from pressure build up. It is only the 90% concentration that causes problems, so if you have some, you should routinely, gently vent the cap. If there is a noticeable 'psst' sound then maybe the formic has aged enough and you can either use it or lose it or dilute it (with water).

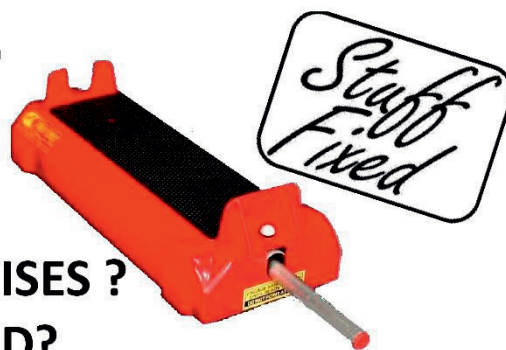
That's probably enough for now. Next article we will have a look at some of our favourite and least favourite chemicals. Future topics will include gas cylinders, best and worst habits and practices and whatever else we can think of between now and then. If anyone would like a particular topic mentioned or if there are any comments, even brutal and abusive, contact myself or Lablines Editor, Jessica Boys.

PRINCIPLES and PRACTICE

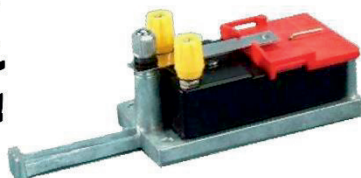
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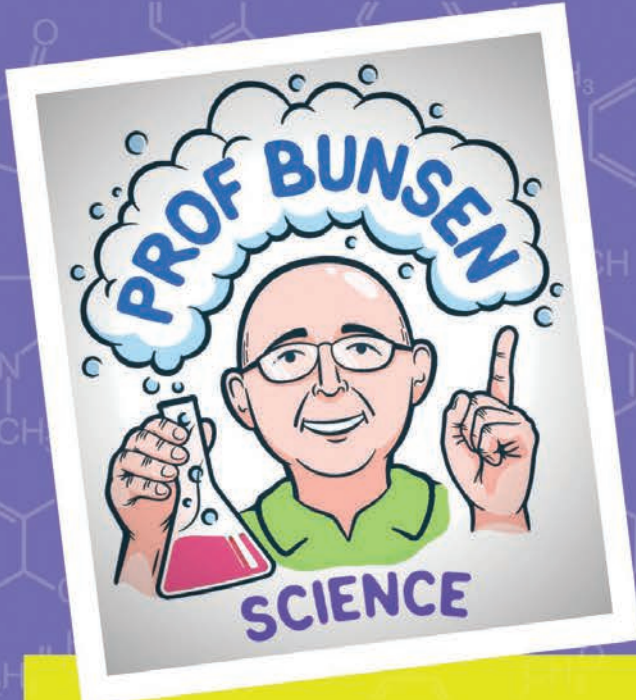
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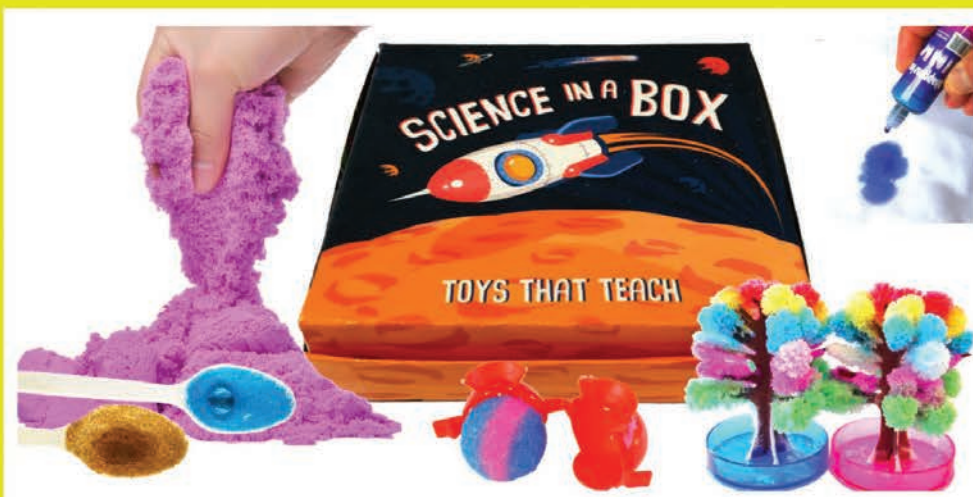


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A Week in the Life of a Lab Tech

Sarah Emms

Laboratory Manager
Mount Scopus Memorial College,
Gandel Campus

What a week it has been here at Mount Scopus Memorial College! Our first busy week since Term 1 began was, fortunately, filled with some of my favourite pracs, in addition to the usual elephant toothpastes and Bunsen burner licenses.

The start of the week saw our 3 eager classes of Year 8 Applied Science (Forensics) students investigating a “crime scene” littered with many kinds of forensic evidence including hair, fingerprints, soil, computer evidence, handwriting, splatter patterns, and footprints. These are all topics they will eventually cover throughout the rest of the semester.



Some of our students in Years 7 and 8 undertake a Hebrew Language Immersion program, and Science is one of the subjects taught entirely in Hebrew. The Year 7s are learning about all the different scientific disciplines, while also improving their Hebrew vocabulary with exploratory stations representing astronomy, psychology, geology, botany and more.

Year 11 Chemistry students started off the year with “Flame Testing 2.0”. It was the grand debut of Dale Carroll’s most excellent invention, the soft drink bottle flame test apparatus, which I have been itching to implement since I first saw it at



LABCON in 2017. What a brilliant and long-lasting colour these produce - not to mention the easy clean-up! It was a real team effort to drink 8 litres of soft drink at short notice to get the empty bottles, but fortunately we were able to secure the services of the IT department who were instrumental in getting the job done.

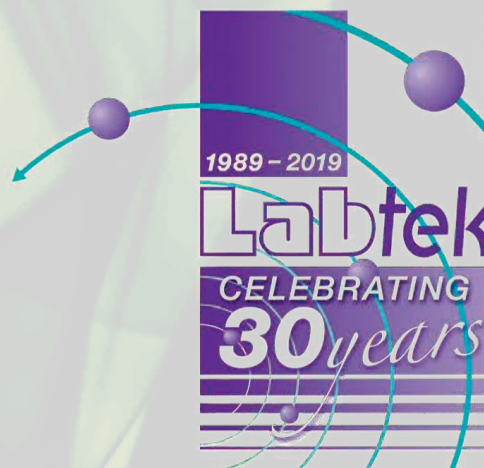




The last great prac was another one for Applied Science. Students are given an impression of a shoe print in a box of sand, and they mix and pour plaster into this mould to make a plaster cast of the sole pattern. After pulling the prints, they compare their plaster casts to suspects' shoes to determine "shoe-dunnit"!



Though it was a busy week, it was a fun one. New ideas and improvements to existing activities have been appreciated by staff and students alike, and it seems we have got the year off to a great start. Time to take a breath over the weekend, then back on Monday to do it all again!



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List Laughs and Life Hacks

The LTAV list-serv is provided to all LTAV members and is an amazing resource for laboratory technicians working in educational institutions. Whether you have a question that needs to be answered, or just need a laugh every now and then, sign up to the list-serv forum and meet a bunch of fun, friendly and helpful lab techs, just like yourself! Go to www.ltav.org.au and click 'Join the LTAV List'.

Sender: Mark Thompson, Catherine McAuley College

Date: 20 February 2019

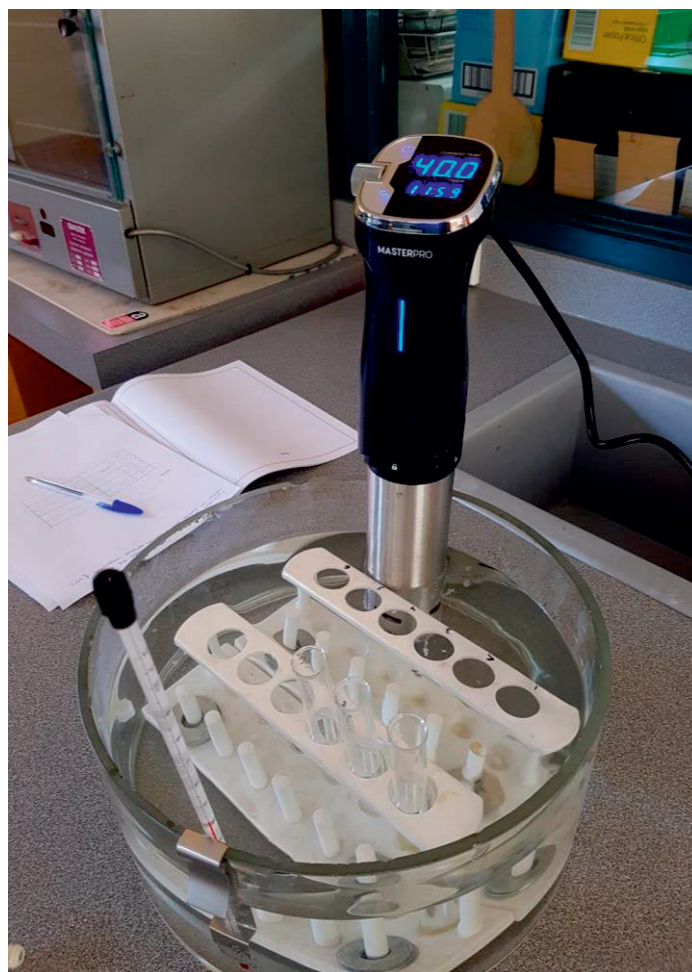
Subject: [LTAVlist] Water Baths

Just had an exciting success story I'd like to share. The topic of affordable water baths comes up a lot and for many schools they aren't affordable but I've managed to create some very effective circulating water baths for \$200. Still not cheap but much better than \$500/600+.

I asked last year if anyone had used Sous Vide kitchen equipment as a water bath and today I got my hands on one. Clipped it onto a trough and was set. Total game changer for me and I've just ordered a bunch more. My Biology teacher almost cried. Not as pretty as an actual water bath but I'm very impressed. Just need to find some test tube racks that don't float.

If any supplier reps on this email list, whack your science company logo on it and sell it as a water bath.

Regards,
Mark



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Your name will be added to the Laboratory Technician Relief list for the Melbourne Region. Laboratory Technicians that are available to work in Regional Victoria are also encouraged to make contact!



Conditionaire is now offering more than just Fume Cupboard/Fume Hood/Ductless Fume Cupboard solutions for your School/Company/Research Facility/University etc. We are now in association with two other companies: Validair Sciences and Biosafety. For peace of mind, we are a Nata Accredited Company, so we get all our staff and equipment audited annually. Because of this, our reporting/results, as per the standards, must reference the correct AS/NZS 2014.8-2014 and include a photo/sketch, which is required on the reports as well. Science ASSIST reiterates/recommends using a Nata Accredited Company for testing/servicing.

Website Address <https://assist.asta.edu.au/>

Why are we associating with two other companies you may ask? Very simple; to help our existing and new clients have one Contractor who can provide expertise in three main fields:

Fume Cupboards/Fume Hoods/Biosafety Cabinets/Laminar Flow Units/HEPA Filters

Testing/Hygiene

Odour Testing (testing and supplying reports for Chem Storage Rooms/Cabinets etc. as evidence of unusually high odours in these areas so they can be rectified for proper ventilation)

We have experience in dealing with all models of Fume Cupboards that are on the current market today and most past makes/models. We can offer you original parts on your current makes/models or retro fit ours onto whatever make/model you have if those parts are not available or don't exist anymore, or you simply don't like the existing control/operating system that is already in place. This is a huge advantage over all our competitors, as most cannot do this. All associated companies have full accreditation in their respective fields. I have also presented a list of other services that are available to all our clients and new clients....**and we now have access through an online portal for all our clients to see or gather their test reports and have a full asset history on their fume cupboards etc including comments/repairs...but...there will be even more capabilities coming in the future!**

Repairs/Upgrades/Trouble Shooting of All Fume Cupboards/Fume Hoods/ETC.

Fume Cupboard Testing/Servicing/Cleaning and Fume Cupboard Sales

Fume Hood/Exhaust Arm Testing and Fume Hood/Exhaust Arm Sales

Ductless/Recirculating Fume Hood Testing and Ductless/Recirculating Fume Cupboard Sales

Air Curtain Sales

Contact me now if you are unhappy with the current rates you are paying for fume cupboard/fume hood testing, contact me now for a competitive price and if you do become a client of ours, you will have access to our new online portal. How many other companies in today's market offer all this?



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Brain Break – Bumper Edition!

A Sudoku Puzzle with a twist!

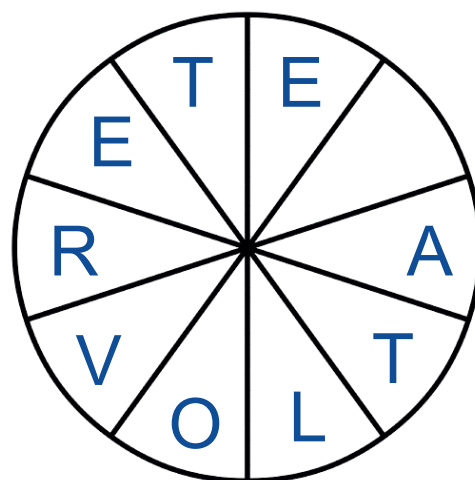
Instead of numbers, each row, column and 3x3 square must contain one of each of the 9 letters in the word **BINOCULAR**.

Rating: HARD

		A			O	R	C	
							B	
			I	R		L		
			O		I		L	
	C	I				B	U	
	A		N		B			
		O		A	U			
	R							
	L	C	B			I		

Turn the Wheel

Find the letter that will 'turn the wheel' into a science-related 10-letter word. The word can be clockwise or anti-clockwise.



10 of the Best

1. Which animal produces the loudest sound?
2. How many time zones are there in the world?
3. What is the medical term for low blood sugar?
4. Which planet in our solar system has the longest day?
5. What is the rarest blood type in humans?
6. True or False? A jellyfish is made up of 95% water.
7. What is the chemical symbol for molybdenum?
8. What is the product of a body's mass and its linear velocity?
9. True or False? Lightning never strikes in the same place twice.
10. What is the word 'laser' short for?

(Answers page 22)

Who dunnit?

Five students at your school have stolen items from your science department. You are particularly concerned about two students who have taken a 2L bottle of methylated spirits and a box of matches. There are five suspects being interrogated by your Head of Science, each only telling parts of the story. Can you figure out, from the clues below, which two students you need to worry about? Answer on page 22.

		Item					Location				
		Pen	Box of Matches	Magnet	Beaker	Methylated Spirits	Science Prep Room	Science Classroom	Lab Tech's Desk	Chemical Cupboard	Equipment Cupboard
Student	Tommy			X							
	Michael			X							
	Isabelle	X	X	✓	X	X					
	Nigel			X							
	Leticia			X							
Location	Science Prep Room										
	Science Classroom										
	Lab Tech's Desk										
	Chemical Cupboard										
	Equipment Cupboard										

How to solve

Read through the list of clues and use the larger grid to record information. The grid has been started for you with some logical ticks and crosses based on clue number 1. Using this method will help you to fill out the smaller table and determine the culprits.

- Isabelle was seen by a staff member taking a magnet from the Science Prep Room.
- Michael cannot stand the smell of methylated spirits and has not had a class in the science classroom today.
- The male student who stole the box of matches did have classes in the science classroom today.
- Leticia divulged that the student who had stolen from the equipment cupboard took either the beaker or the methylated spirits.
- Nigel saw Tommy sneak into the Chemical Cupboard, but doesn't know what Tommy took.

Student	Item	Location
Tommy		
Leticia		
Isabelle		
Nigel		
Michael		

Word Search

There are 30 Physics-related words in the Word Search below, running horizontally, diagonally and backwards. See if you can find them all!

T	V	M	Y	X	B	R	O	W	N	I	A	N	T	G	X	L
H	S	H	F	N	O	I	T	C	E	V	N	O	C	A	M	A
E	P	O	T	O	S	I	V	G	W	V	X	V	C	M	Q	S
R	A	F	T	R	E	S	I	S	T	O	R	A	T	P	O	E
M	Q	S	S	A	M	V	M	J	O	L	I	C	F	E	D	R
O	Z	B	C	D	A	F	Y	G	N	T	I	U	C	R	I	C
D	E	N	S	I	T	Y	C	X	E	X	L	U	K	E	O	O
Y	T	I	V	A	R	G	F	O	R	C	E	M	Z	N	D	U
N	M	A	T	T	E	R	G	N	R	A	S	B	D	Q	E	L
A	N	C	M	I	T	S	I	U	E	B	Y	U	C	K	M	O
M	E	L	U	O	J	V	M	T	D	E	C	I	B	E	L	M
I	D	Z	X	N	L	K	C	A	R	T	R	I	A	M	Z	B
C	U	R	R	E	N	T	E	N	O	I	S	S	I	F	I	G
S	R	C	K	D	E	F	G	R	S	H	I	V	G	M	V	P
H	T	N	O	I	T	A	R	E	L	E	C	C	A	D	P	K

Riddle Me This

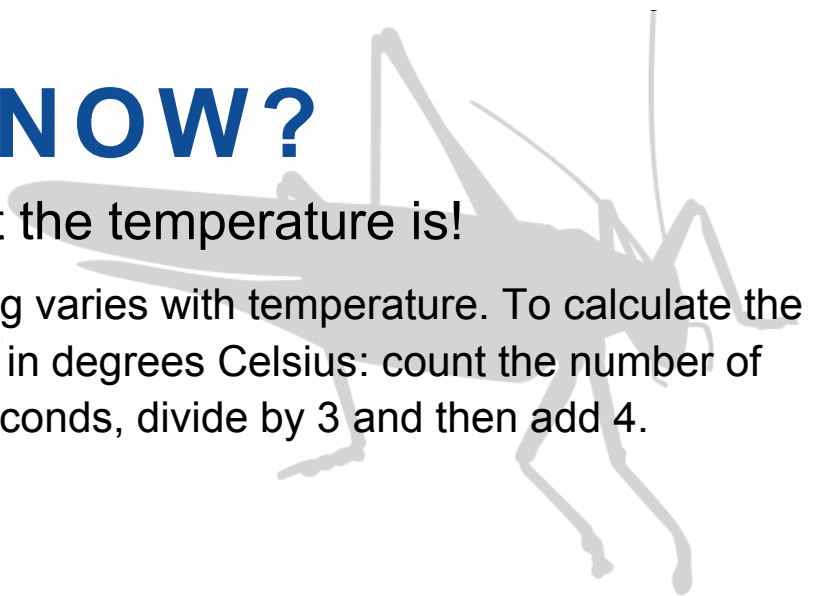
What is black when you buy it,
red when you use it and grey
when you throw it away?

(Answer page 22)

DID YOU KNOW?

Crickets can tell you what the temperature is!

The frequency of cricket chirping varies with temperature. To calculate the temperature from cricket chirps in degrees Celsius: count the number of chirps from a cricket over 25 seconds, divide by 3 and then add 4.



LABCON 2019

*Bringing Excellence to Science Education
The Conference specifically for Laboratory Technicians*

Keep an eye out for dates and further information in the June edition of Lablines and on the LTAV List.

ALL ENQUIRIES

Marg Scarlett
LABCON CONFERENCE MANAGER
pcs@cogroup.com.au

Riddle Me This Answer

Charcoal.

Who Dunnit Answer

We should worry about Tommy and Nigel!

10 of the Best Answers

- 1 Blue Whale
- 2 24
- 3 Hypoglycemia
- 4 Venus
- 5 AB negative
- 6 True
- 7 Mo
- 8 Momentum
- 9 False
- 10 Light Amplification by Stimulated Emission of Radiation



LTAV

Laboratory Technicians' Association of Victoria

By Lab Technicians for Lab Technicians
S3/159 Burwood Road
Suite 150
Hawthorn VIC 3122
www.ltav.org.au

LTAV PUBLICATIONS 2019

The following laboratory reference manuals and/or CD are available from LTAV:

- **BIOLOGY REFERENCE MANUAL**, 2013: \$25.00 for CD and black and white hard copy combination.
This REVISED handbook contains information on biological techniques, reagents, stains and culture media commonly used in secondary schools. Dale Carroll, Ritva Fazio, Sarah Daniele and Wendy Hurle have updated the earlier version by Dale Carroll, Ritva Fazio, Jeannene Bradbury and Marg Rubans of the original authors of: Jenny Kopsidas, Rita Poole, Jean Stokes and Maya Wagner.
- **PHYSICS REFERENCE MANUAL**, 2013: \$25 for CD and black and white hard copy combination.
Svetlana Machouba has made many updates to the earlier version by Sabino Del Balso and Valerie Clements.
- **CHEMISTRY: A REFERENCE MANUAL FOR LABORATORY TECHNICIANS**, 2008: \$27.50 by Geoff Gleadall, Dip.App.Sci. A comprehensive guide for the beginning and experienced Laboratory Technician in all aspects of the chemistry laboratory.
- **LABORATORY MANAGEMENT DATABASES CD**, Version 2, 2009 \$33 by Geoff Gleadall, Dip.App.Sci.

LTAV PUBLICATIONS TAX INVOICE & ORDER FORM

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Physics Ref Manual 2013 CD + Hard copy	\$25		
Laboratory Management Databases 2009 CD v2	\$33		
Chemistry a Ref Manual for Lab Technicians 2008	\$27.50		
Postage (\$4 per for each copy)	Number of units	x\$4	
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2019 LTAV MEMBERSHIP TAX INVOICE

ABN: 96 439 156 002

REGISTRATION (first time members) / **DETAILS** (continuing members)
(please circle one)

New members to LTAV must complete an APPLICATION FORM as well (refer to website above)

Technicians employed or formerly employed in educational institutions are eligible for membership of LTAV. Financial members receive Lablines, LABCON 2019 Registration Booklet plus discount and voting rights at the Annual General Meeting at LABCON.

Member name:

Name of School / Institution:

Postal address of School / Institution:

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State:

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Email address:

Phone number:

Position in organisation:

Temporary or permanent? (circle one)

If temporary please give details of term of employment:

Have you registered at more than one school / Organisation? Yes / No

If yes, please indicate where you would like your Lablines sent:

Region:

Signed:

Date:

PLEASE TICK THIS BOX if you are a new Laboratory Technician or Assistant in your 1st year of employment in education and LTAV will cover the cost of your Membership for this 1st year. ☐

INDIVIDUAL MEMBERSHIP FEE – FULL YEAR (1st Jan 2019 to 31st Dec 2019) \$44.00 (includes GST).

Payment due by 30th April 2019

Send payment to: Laboratory Technicians' Association of Victoria Inc
S3/159 Burwood Road, Suite 150, Hawthorn, Victoria 3122

Please make Cheque or Money Order payable to: Laboratory Technicians Association of Victoria.

This Membership Tax Invoice must be sent with payment.

Direct Banking details: Commonwealth Bank of Australia

BSB: 063 532 Account Number: 1040 1068

Reference payment with SURNAME AND SCHOOL NAME

OFFICE USE ONLY

Tax Receipt No:

Payment date:

Method:

If paying by Direct Credit the Remittance Advice must be posted or can be emailed to: membership@ltav.org.au Please ensure this Membership Form is posted or emailed at the same time. Please note that Memberships cannot be processed if paperwork is incomplete. Tax Receipts will be issued to confirm LTAV Membership.

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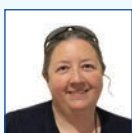
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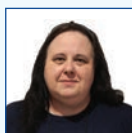
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Please feel free to contact any member of your committee with any queries or concerns.
Members are always welcome at committee meetings. Contact any committee member for more information.

LTAV Committee Meeting Dates 2019.

The Committee meets at CBC St Kilda, 11 Westbury Street, St Kilda East and
St Michael's Grammar School, 25 Chapel Street, St Kilda.

The meetings usually go from 6:30– 9:30 p.m.

All members of LTAV are most welcome to attend. Please be in touch with the LTAV Secretary to confirm the location.

19 February, 7 May, 23 July, 10 September, 22 October, 26 November