STANZ

Tech Tonic

Issue 110
Term 1 2023

Contents

Thanks to Sheryl Fitzsimons for the original cover artwork,
and for kindly allowing the Editor to alter her work.

Distributed by

STANZ

Technicians on the Move

Arriving

Vicky Le	One Tree Hill College
Cedric Pillay	Mission Heights Junior College
Kim Seaward	Bethlehem College
Hina Saleem	Wellington High School
Kathryn Corcoran	Burnside High School
Hailey Mareiku-ra-Edmonds	Bay of Islands College
Bridget Clare Harvey	Broadwood Area School
Donna Taaffe	Karamu High School
Kate Wilson	Rotorua Boys High School
Aleisha Moor	Ormiston Senior Collage
Anna Taylor	Tauranga Girls' College
Lisa Ducker	Mount Albert Grammar
Lisa Rutledge	Waimea College
Debbie Stone	Stratford High School
Kirsten Donald	Bayfield High School
Selena Dixon	Dannevirke High School
Jonathan Blows	Hillview Christian School
Joanna Holm	Hutt Valley High School
Natalie Pollard	Bream Bay College
Anita Sandip Kaur Jhim	Mc Auley High School
Jack Bosma	Hillview Christian School
karen asquith	Edgecumbe College
Ajani Peiris	Mt maunganui college
Lara Kumeroa	Ruapehu College
Anna Hall	Papanui High School
Ric Drake	Mangakahia Area School
Maria Shallard	Manukau Christian School
Saba Aijaz	Glendowie Collage
Kristiina Uusitalo	Mt Maunganui College
Peter Sutton	Kaikoura High School

Departing

Jane McCone	Burnside High School
SooJin Han	One Tree Hill College
Katie Batterton	Bay of Islands College
Elisa Weiss	Karamu High School
Ann Brimmer	Rotorua Boys' High School
Elizabeth Smith	Stratford High School
Janice Deverick	Alfriston College

Moving Schools

	Departing	Arriving
Rasika Subasinghe	Tangaroa College	Westlake Girls' High School
Sophie Dixon	Waimea College	Hamilton Girls' High School

Editorial

It's an exciting and historic moment; our Pay Equity claim has been settled! A huge thank you to our negotiation team: Georgina Harrison, Sharon Edgecombe and Sheryl Fitzsimons.

I hope Term 1 has gone well for you all. These terms just seem to keep getting faster. Hopefully all of you that have had to deal with 'unusual weather events' have remained safe and had some sense of normalcy restored.

Remember this is an election year so do consider joining the STANZ Executive. Everyone is lovely and supportive. Feel free to email any of us with any questions/fears /concerns.
Nominations will be accepted until 5 pm Friday 14th April 2023.

Also, another plug for a cluster group to come forward to host the next ConSTANZ. As no one has come forward there is the option of having a conference organisation company take over - but this will likely increase registration ~25-30% plus conference dinner added on top (~$100). If we do go this path, we'll still need a venue.

Serving on the ConSTANZ22 conference committee was a great experience. With a few people the workload is spread out and you can play to each other's strengths. And it's a great way of making friends. Our committee now meets termly to catch up!

I hope you all have a restful break and stay warm and dry as we head into winter.

Jasmine Harrison
Tech Tonic Editor

Thank you to Sarah Simmerson for sending in the above comic. Source: c&en

Presidents Report

Science Technicians' Association of New Zealand Inc.

Te Rōpū Kaihangarau Pūtaiao o Aotearoa

TERM 1 MARCH 2023

Settling our Pay Equity claim was a wonderful start to this year, wasn't it? Our negotiating team of Sheryl Fitzsimons, Georgina Harrison and Sharon Edgecombe, did a wonderful job for us and we are all very grateful to them for all of their mahi. The links with all of the information that you need on the Pay Equity implementation process, has already been shared on SciTechTalk, but you can also find them below:

https://www.education.govt.nz/school/people-and-employment/pay-equity/actions-for-schools/#sh-Pay%20Equity%20Science%20Technicians

https://www.education.govt.nz/school/people-and-employment/pay-equity/science-technician/#guidance

https://www.education.govt.nz/school/people-and-employment/pay-equity/science-technician/#more

Our Constitution is currently with the lawyers undergoing a few minor adjustments. Once that has been done and approved by the Executive, we will be emailing out voting details, so please keep an eye out for that email.

Disappointingly, we are still looking for a region or cluster group to host the next conference. We understand that this is a big commitment, but there are ways to share the load and STANZ can help in a myriad of ways. We are investigating the possibility of hiring an event planning company that could take on some of the workload, but we would still need a cluster group involved in that process and a host school. We have four conference conveners on the Executive, so if you or your cluster group are interested in discussing this, please drop us a line. It would be a tragedy if we couldn't run our next conference as it is our only organized professional development specifically for Science Technicians in New Zealand.

As you all know, this year is election year for the STANZ Executive Committee. We do have at least three members of the committee who are not standing for re-election, so we are looking for some new members. Thank you to those of you who have already put yourself forward, we appreciate your commitment towards our community. Nominations will be accepted until **5 pm Friday 14th April 2023.**

This will be my last President's Report for Tech Tonic as I will not be standing for re-election this year. I have enjoyed my time on the Executive Committee immensely. It has been such a rewarding and educational experience and it has afforded me so many opportunities that I would not have had otherwise. I have loved getting to meet so many of you through various events and I will cherish this experience for many years to come. Looking back on my eight years on this committee, I feel so proud of what we have achieved in that time. Our Association has grown both in membership but also in reputation. We have developed strong relationships with NZASE, the Ministry of Education and WorkSafe and many other affiliated groups which will stand us in good stead in the coming years. And we have finally been recognized and remunerated for our historical undervaluation. I am looking forward to seeing where the next Executive Committee takes us!

Arwen Heyworth
President
STANZ

Pay Equity The Process

At times negotiations flowed well because of the work done by those that came before us in establishing the process. Having said that, at the end it was also frustrating because some things we wanted to achieve weren't possible because of decisions/agreements made by those support staff groups that had negotiated before us, and we were restricted to being included into those outcomes.

On the last day of negotiations, I walked away feeling pleased it was done, yet with a sense of incompleteness, knowing it still had to pass the vote, which hinged on how well we could explain the settlement offer.

After the signing on Monday 6th of March, I finally felt the sense of achievement I had been expecting earlier. School Science Technicians will feel valued in their work. There will be opportunity for a career pathway and PLD to upskill, which we hope, will attract others to see it as a more viable option for employment.

Thank you for all the messages of support the team received. It really bolstered us to know we had the support of both union members and all the STANZ membership.

Sharon Edgecombe

Sharon Edgecombe, Sheryl Fitzsimons, Minister of Education and Women Jan Tinetti, and Georgina Harrison at the historic Science Technicians Pay Equity Settlement signing, NZEI Te Riu Roa, Wellington, 6 March 2023.

Pay Equity Signing Speech

Below is the Pay Equity negotiation teams' speech at the signing ceremony that was delivered by Sheryl Fitzsimons.

Kia ora koutou
Science Technicians are a work group of mostly women, we were inured to not being paid particularly well or recognised for the important work that we do, and we were undervalued.

Attracting and retaining appropriately qualified people to our role had become exceptionally difficult with our current rates of pay.

As the last school support staff group to reach a pay equity settlement in over 5 years
of investigations, reports and negotiations, with the successful settlements first for our Teacher Aides, and then last year Kaiārahi i te reo and Administrators,
to now,
alongside our Librarian & Library Assistant colleagues.
We have this Science Technicians Pay Equity Settlement.
It's a beautiful piece of work, it's certainly something huge for us, and we are very happy with the outcome.

We now have recognition for the contribution school science technicians make to the education sector.
With validation of the skills, responsibilities, and qualifications our role does require,
and acknowledgement of the differences between our work, and that of the other support staff groups.

Science Technicians and Lab Managers have a passion and drive for science education, we assist education practitioners to enhance student learning in a largely practical way.

And the future looks good, with reviews of the schools funding model for support staff, a working group to consider professional learning and development provisions with view towards our career pathways, to establish what we do need, and progress those opportunities, I'd like to remind you that the Teacher Aides Professional Learning & Development fund was rapidly consumed and our need for this is no different, with the Health & Safety requirements of Worksafe having huge impact on our roles, our need for targeted Science Technician and Lab Manager Professional Learning & Development is very urgent.

This continuing support & recognition of Science Technicians
will further enhance the value of our work and upskilling of our profession.

Thank you to all who participated in and supported this process,

Mana Taurite!
Fairs fair!
Kia kaha!

Pay Equity Words of Kindness

All the kind words sent to the Pay Equity negotiation team in the lead up to negotiations that Sheryl Fitzsimons has created.

Pay Equity Implementation

The Ministry of Education has the roll out documents for implementation of Pay Equity for us (and librarians) on their website.

Hopefully those that need to know about this in your schools (Principals, HR, Payroll) will have received the information directly. There were information webinars in late March.

Ministry of Education Documents:
[Science Technicians' Pay Equity Claim – Education in New Zealand]

NZEI website includes an A3 version of the work matrix:
https://www.nzeiteriuroa.org.nz/campaigns/pay-equity-for-science-techs-mana-taurite

A Farewell from Janice

This term I'll be leaving work after nearly 20 years as a School Science Technician. What to say? It's hard to sum up in a few words. As well as the satisfaction of contributing to School Science, I've appreciated many mental challenges of learning new skills, as well as interpreting some curious requests.

I've learnt IT skills whilst on STANZ Executive managing the website, Scitechtalk, plus Tech Tonic: my kids thought it was a huge joke that I was for a time (prior to Jasmine joining the Exec) seen as the Exec IT expert.

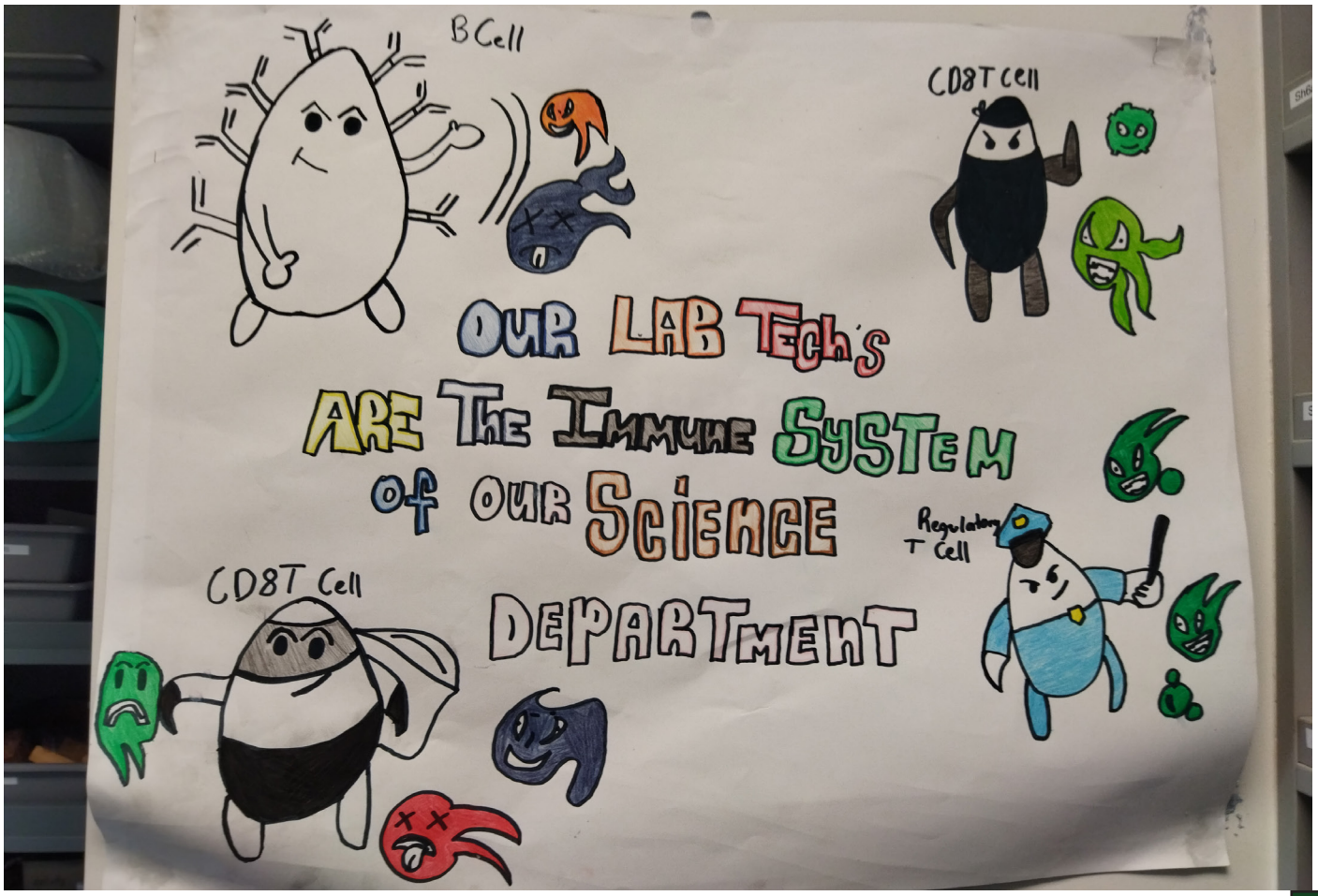
I've had the privilege of learning te reo Māori, a lifelong journey which started as an after-school class, that has opened up a whole new world to me that had previously been hidden in plain sight.

Learning about chemical safety through HAZX401 (now HAZA401) via) via Otago University was satisfying.

I've enjoyed the lateral thinking of interpreting some at times strange requests:
-"Christmas tree lights" (Biologist) = homemade conductivity testers made using Xmas tree lights;
-"Conflagration spoons" (Physicist) = deflagrating spoons;
- "Lollipops" (Learner) = iceblock sticks (he may have been disappointed in what he received);

I've been seen as the go to person for dealing with:
-stray dogs,
-a wounded bird,
-disposing of a live rat caught in a drain,
-removing chewing gum from skirts
- mending shoes.

As well as fixing faulty equipment by:
-taking the cover off the electronic balance;
-explaining that the teacher will need to first wet the sponge for the mop to work.



A Farewell from Janice

I'm relieved I've got through my time without a single call to the fire brigade or school evacuation on my account, although there has been:

-a trip to hospital (Learner drinking copper sulfate),
-a call to the Poisons Centre (Learner eating acorns "A human?" queried the mystified Poisons Centre staff) and
- a, thankfully after-hours, Bomb Squad call out (Teacher's paperweight with radioactive tape stolen and found in rubbish bin by cleaners).
- the time I had to clean sodium off the ceiling - it was also stuck in a Learner's hair.
- a severely charred Safety Manual after Mr Conflagration managed to set fire to the plastic u-bend of the sink above (after failing to extinguish a demo as well as he thought he had).

On reflection, it's probably just as well I'm quitting while I'm still ahead.

At one time a rumour took hold amongst Learners that my name was Mrs Gren, which was fine with me. I wish now I'd made a new nameplate for my door.

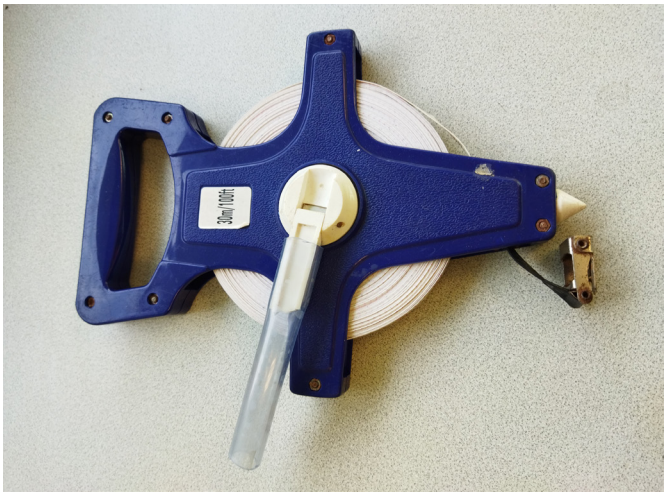
Of course, what I will miss most of all is the people, especially my fellow techs, and most especially the friends I've made on STANZ Executive. I will not name anyone as there are too many.
It was during the Dunedin conference that I had a lightbulb moment that I had really found my tribe. We were embarking for a cruise of Otago harbour, the other passengers settling into the comfy seats with their complimentary hot drink, whilst my fellow techs were engrossed being waylaid peering down a hatch to the engine room "Ooh look!" "I wonder what's down there?" before crowding up front with the skipper to quiz him about the instrument panels.

Finally, I'll leave you with some of my small but satisfying upcycling/repurposing successes:
-mallowpuff inserts in a takeaway container for storing stopwatches

-a peg basket rescued from a skip for rinsing test-tube (I haven't really used this yet, but I believe it has potential)
-a fridge egg container for holding 50ml bottles upright - rescued from my daughter's rubbish bin

A Farewell from Janice

-a measuring tape handle made from polyethylene tubing



-a conductivity tester

-a nail to keep DG cabinets shut

(My husband will be relieved he no longer feels he has to walk on the other side of the road whilst I bin-check.)

To all of you, my tribe, who have always accepted me and for whom curiosity comes naturally, thank you!

Aroha nui
Janice Deverick

Balance Calibration Mini Workshop

East Auckland Technicians' cluster had an electronic balance calibration mini workshop on the 23rd November 2022.

With blustery winds and showers happening outside, it was lovely to be inside a warm and dry classroom and catch up with each other after extended Covid lockdowns.

There were 12 of us, plus our presenter David, and a few brought stacks of electronic balances to work on. We definitely needed more than a morning to work on all of the balances.

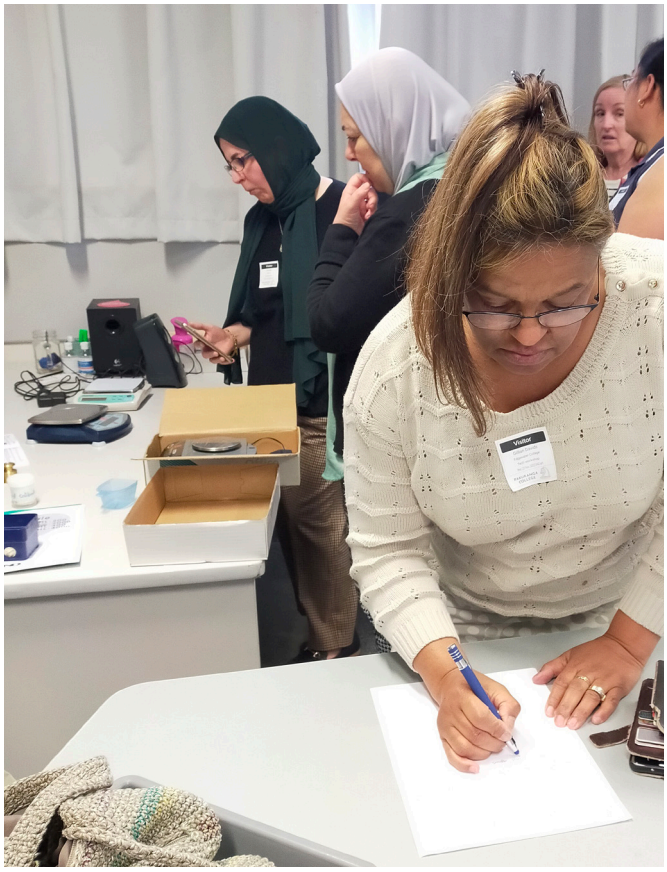
We certainly learned a thing or two about calibrating, one of which is to make sure the balance calibrating mechanism is unlocked! Also, I'm now looking around for something to cannibalise for known and trusted weights. Stan's cannibalised stash are so bright and shiny.

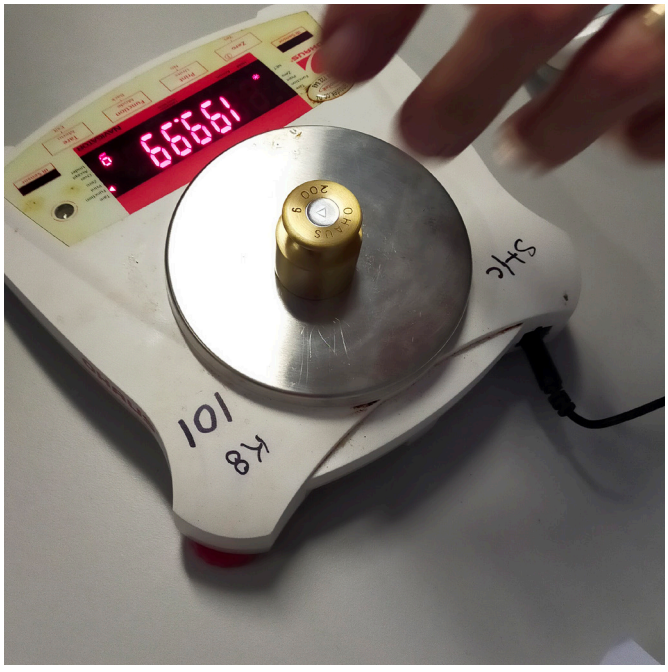
Lots of hands-on activities and writing of notes. And to top it off, a scrumptious morning tea provided by Pakuranga College, thank you so much.

Thank you to Maysoon and Robyn for hosting, and thank you to Stan for presenting the mini workshop.

Florinda Petterson

Balance Calibration Mini Workshop

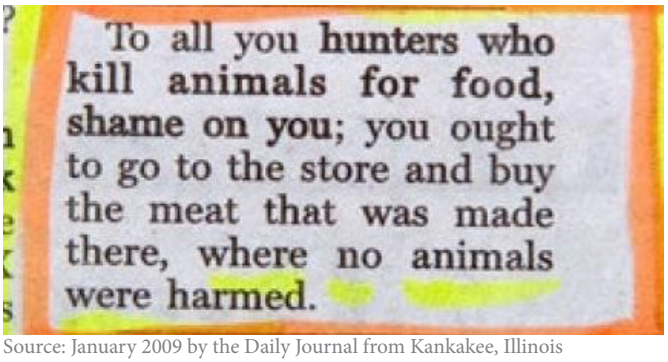




Agriculture Workshop Part 1: Soils Introduction

For ConSTANZ 2022 I presented a workshop entitled "What Your Agriculture Tracher Wished You Knew". Here I've covered the first part on an introduction to soils, the rest of the workshop will be continued in future editions. The slideshow from the workshop can be accessed here.

Sharing knowledge of agriculture is growing in importance as once common knowledge of our environment and food supply becomes rarer. Many are disconnected from their food sources leading to misinformation. While likely a joke, this can be exemplified by the 'letter to the editor' below that was published in the Daily Journal from Illinois in America.


To all you hunters who kill animals for food, shame on you; you ought to go to the store and buy the meat that was made there, where no animals were harmed.

Source: January 2009 by the Daily Journal from Kankakee, Illinois

Soils

"Despite all our accomplishments we owe our existence to a six-inch layer of topsoil and the fact that it rains"
- Paul Harvey

When I posed the titular question to my agriculture department, the number one answer was simple: potting mix is not soil. Potting mix fulfils many of the requirements we need of soil, most importantly as a plant growing medium, but lacks many of the characteristics that makes soil, soil.

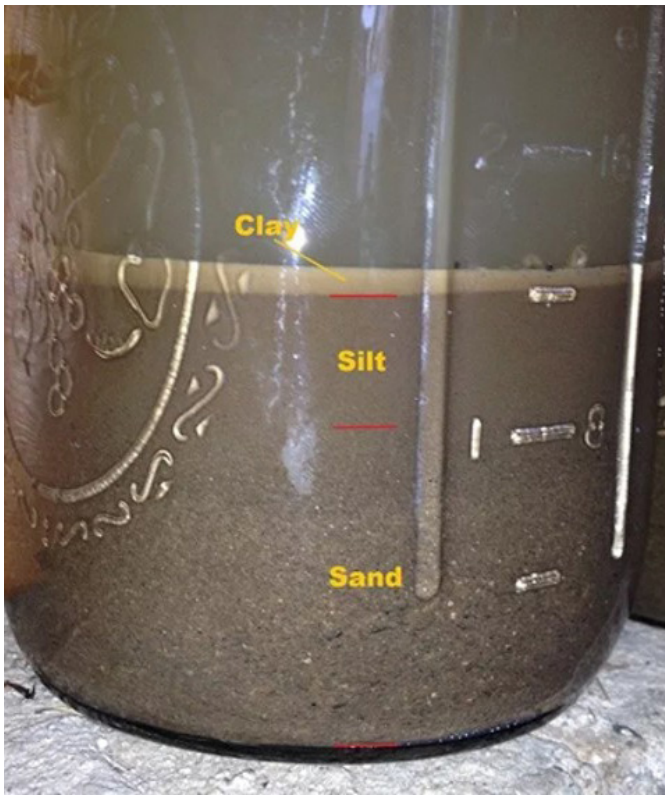
Thankfully, potting mix is most often all that's needed by the agriculture department as when you need soil you've generally got to head to a paddock with a spade.

Soils are made up of four parts. Approximately 50% of soil is the spaces between the particles called pore spaces. When the soil is not experiencing extremes of flood or drought the pore spaces are filled will relatively equal measures of air and water. Minerals (often from weathered rock) make up the bulk of the soil at 45%. The final 5% is organic matter.

Soil Texture

Soil texture describes the size of the mineral particles. The smallest are clay at less than 0.002mm, then silt which is in between 0.002 and 0.05mm. The largest particles are sand which range from 0.05 to 2.00mm in size.

It can be roughly determined by the feel of the soil when wet but not soaked. There is a flow chart in the slideshow linked earlier.



Agriculture Workshop Part 1: Soils Introduction

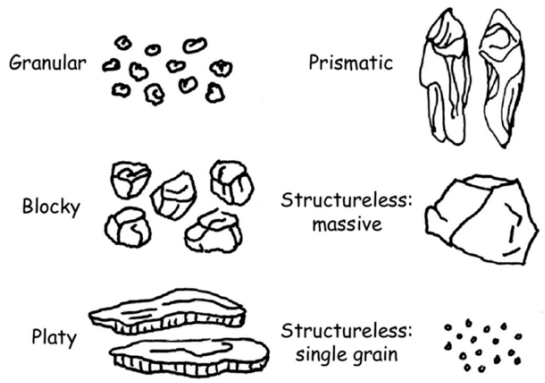
Soil texture has a huge effect on the soil. One effect is on nutrient retention and availability. Most soils are negatively charged, while most nutrients are positively charged. Soils with greater surface area have a higher area of negative charge for nutrients. The surface area of clay soils is greater than the surface area of sandy soils.

Another effect is on soil structure, with examples such as clay pans: dense, compact, slowly permeable layers that can form in high clay soils.

Soil Structure

Soil structure refers to the size and shape of the particles of the soil.

	Description	Root penetration	Plant stability	Access to air water and nutrients
Granular	<0.5 cm diameter found in the surface horizons	good	good	good
Blocky	Irregular shapes 1.5-5cm diameter found in the b horizon	good	good	good
Prismatic	Vertical columns found in b horizon and subsoils	Good	good	good
Platy	Thin flat horizontal plates found in ce and b horizons	poor	poor	poor
Massive	No structure hard to break clods	poor	poor	poor
Structureless	Single grained particles that dont stick together	poor	Poor	poor

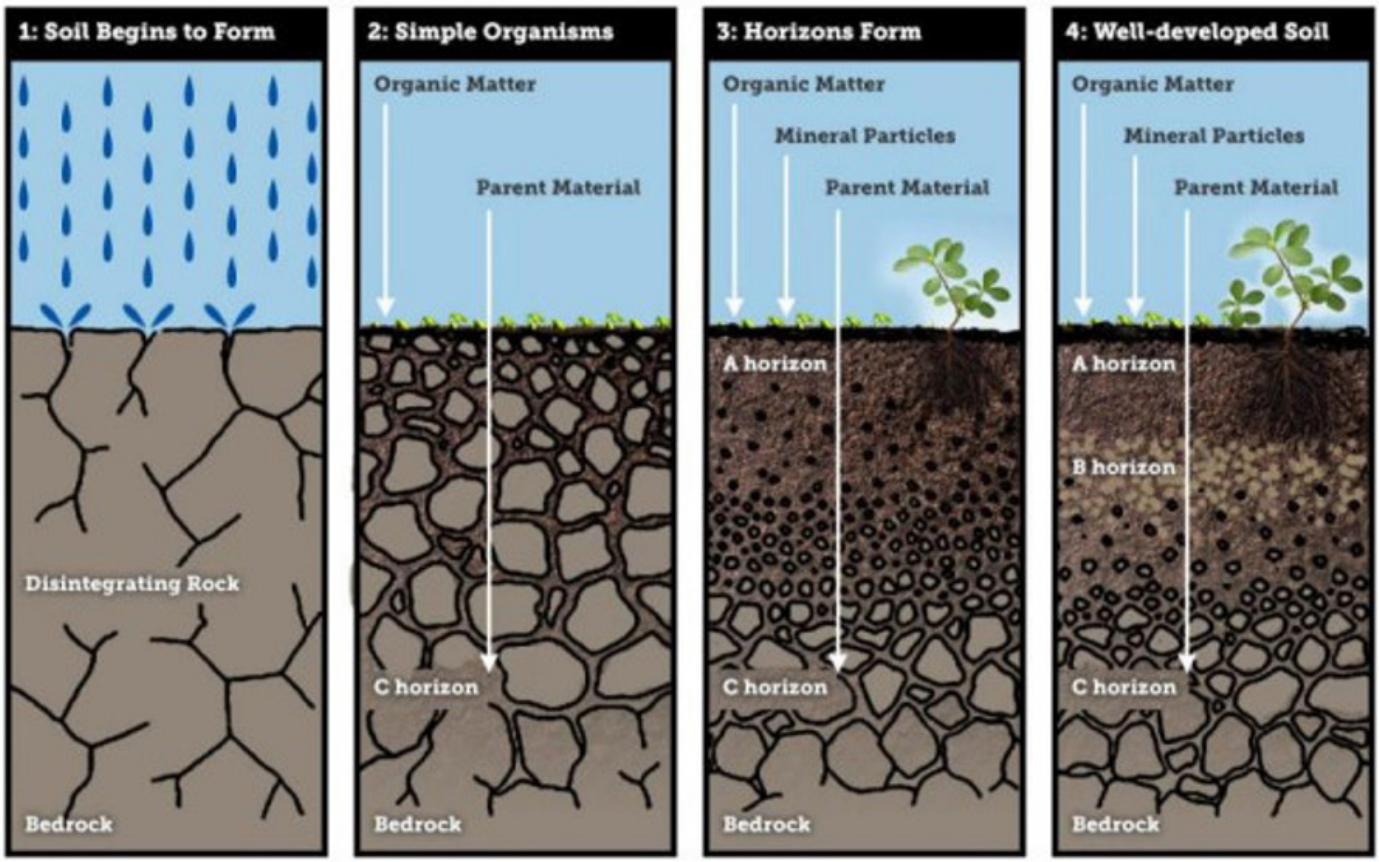


Source: https://www.gardenwild.net/garden-soil

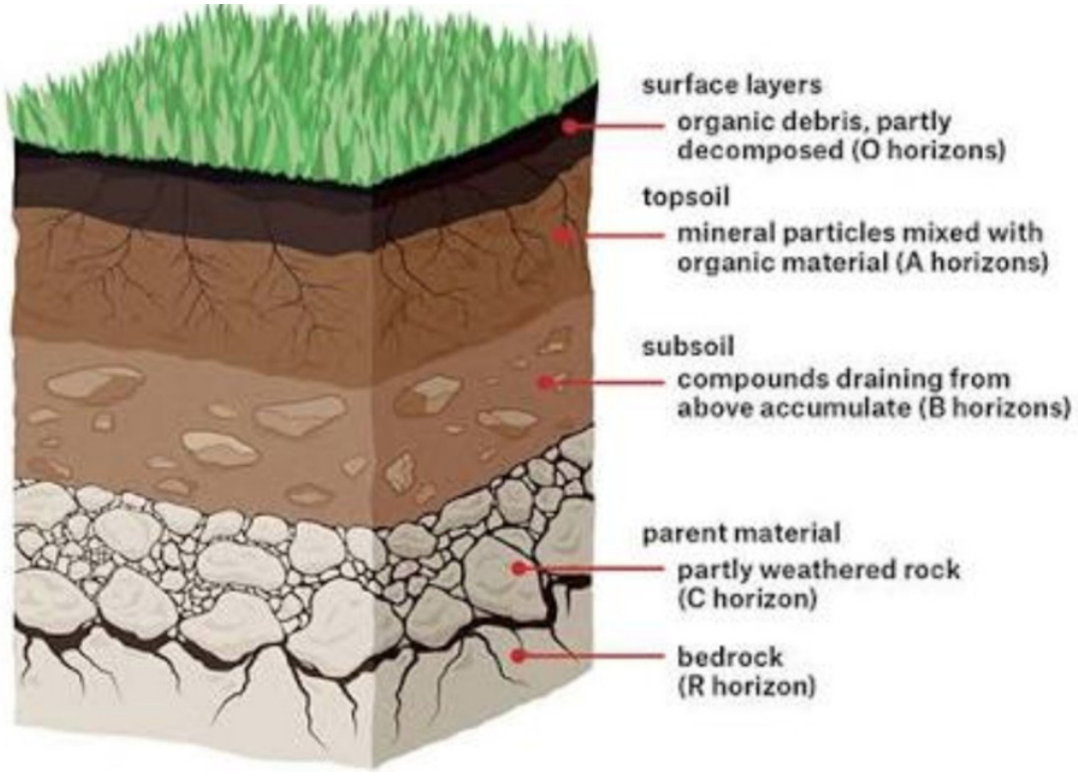
Source: MWLR https://soils.landcareresearch.co.nz/topics/understanding-soils/get-dirty/

Agriculture Workshop
Part 1: Soils Introduction

Soil Formation



Source: Landcare Research



More ConSTANZ Photos

Photos credit to Andrea Paynter of Hastings Christian School

Tech Tips and Fun Practicals

Science Good Enough to Eat

The number of edible food practical's we do seems to be ever increasing. We're lucky enough to have classrooms we can use when we don't want to send our classes outside, plus a kindly accommodating food technology department that will let us use their ovens.

I'm guilty of telling anyone that'll listen that all students should have to learn to cook or bake. It's the perfect way to learn to follow instructions and problem solve. Mixed up your white powders? Your puddings now salty. Your cake's a flat brick? You left out the baking soda!

Sherbet

A simple end of year treat, or folded into a topic like 'Fizzing and Foaming'. My recipe is a variant on the Chelsea recipe with the sour and fizz dialed up.

The recipe can be tweaked to suit taste buds. Or reduce the amount of citric acid and baking soda to a 1/4 teaspoon and leave out the jelly crystals for a budget friendly version.You can also get them to bring in their own lollypops as a dipping spoon.

I also made labels so there weren't little baggies of white powder roaming around the school. And after how many I found around the school, I'm so glad I did!

Bread Rolls

I came across this recipe when a teacher wanted to make bread with a class in a single 50 minute period!

They only require a short rise time after shaping, before putting in the oven so there's no stopping in the middle. The recipe says makes 12 but 3 larger rolls also cooked well with the center only slightly undercooked - aren't they fantastic at following instructions.

Reebops

Reebops are imaginary animals made from anything you can get multiplies of. Non food versions are easily made from egg cartons or foam. But delicious marshmallow versions are my favourite.

Each of a series of characteristics is decided by paper chromosomes. Each student in class tends to end up with slightly different baby Reebop thanks to the 'parents' both being heterozygous for all traits.

The Royal Society of Biology website has great resources for this (scroll to the bottom and look for the downloads section)

Alginate Balls

This one I haven't done for food, but it looks super cool! Spherification of food went through a popularity spike a few years back with people putting full meals(pureed), or cocktails (molecular gastronomy) into alginate balls.

You'll need some food grade sodium alginate (or algin) and a calcium powder which is what causes the alginate to gel.

You'll recognise the technique from some common foods, such as boba tea and the pimento part of pimento olives.

Source: Practical Biology.org

New Zealand Science News

Dry Ice Shortage

New Zealand's last domestic carbon dioxide plant had to temporarily close in December of last year due to a safety issue. This has lead to shortages across many sectors.

Produced as a byproduct from fossil fuels, New Zealand used to have two food-grade carbon dioxide plants. The closure of the Marsden Point oil refinery in 2022 has left the county reliant on a single plant and imports. Marsden Point had been producing 70% of New Zealand's carbon dioxide needs.

Now, that last plant, Todd Energy in Kāpuni has had to temporarily shutdown in December due to a safety valve releasing ammonia. Along with many other industries including the heavily publicised effect on the beer industry this has led to shortages of dry ice leaving many suppliers unable to supply schools, with some even shutting down that part of their business (Air Liquide).

The plant has a staged-restart plan with the factory back at full capacity at the end of 2023. There are also plans for a new plant to reduce the dependance on imports and make the supply more robust.

Source: BANZ via Financial Times

New Zealand Science News

New Scott Base Research Station

The new Scott Base research station has it's tickets booked for it's trip to Antarctica in 2027. Construction of the new buildings will commence mid-way through this year at Timaru's PrimePort. The new base will be three interconnected buildings prefabricated before being separated into 8 modules for shipping.

Check out the Scott Base Redevelopment website for more information including a virtual tour of the new base.

School Students Rally for Climate

Our ākonga once again took to the streets to demand a better future for themselves and our planet. A joint protest between School Strike 4 Climate and Fridays for Future on March 3rd saw thousands take to the streets.

Among their demands were no new exploration or mining of new fossil fuel resources, increased marine protection in New Zealand's waters, e-bike rebates for lower-income families and, support for regenerative farming. Also, in an effort to gain a stronger voice, the lowering of the voting age to 16 .

Source: Antartica New Zealand

Science events in your Neighbourhood

Auckland

Double Trouble

- Now - Late 2023
- Peter the T.rex is joined by Barbara, one of only 3 female T.rex on record
- Auckland Museum
- Free
- https://www.aucklandmuseum.com/visit/exhibitions/t-rex

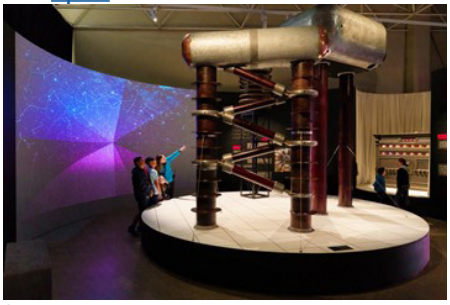
Source Auckland Muesum

STEM Fair 2023

- 2nd April
- MOTAT
- Adult $19 Child $10 Family $45
- https://www.motat.nz/events/stem-fair-2023

MOTAT Free Family Entry

- April
- Free entry for Teachers and Support Staff
- Details on website
- https://www.motat.nz/events/teachers-visit-for-free-this-april



Source Motat

Source: New Zealand Festival of Nature

Wellington

Emergency Services Expo

- 15th April
- Te Papa
- Free
- https://www.tepapa.govt.nz/visit/whats-on/events/emergency-services-expo-6th-edition

Source Te Papa

Te Taiao Whānau Day

- 19th April
- Te Papa
- Free
- https://www.tepapa.govt.nz/visit/whats-on/events/te-taiao-whanau-day-0

Christchurch

Astroblast! Canterbury Astronomical Society's Public Open Nights

- 14th April – 27th September
- RF Joyce Observatory, West Melton
- Adult $15, Child $10
- Tickets avaialbe on Eventbrite

Dunedin

New Zealand Festival of Nature

- 14th - 23rd April
- Various events around the city
- https://www.wilddunedin.nz/

Wild Inspirations Science Show

- 7th - 23rd April, 2pm Daily
- Koha
- Otago Museum
- https://otagomuseum.nz/whats-on/wild-inspirations

Tūhura Photography Competition

- Entries close 12pm 1st May
- Residents of Otago and amateurs only
- https://otagomuseum.nz/photo

Calendar: Days of Note

Month	Day	Event
April	7	World Health Day https://www.who.int/campaigns/world-health-day
	12	International Day of Human Space Flight https://www.un.org/en/observances/human-spaceflight-day
	14	**Nominations Close for STANZ Executive at 5pm**
	21	World Creativity and Innovation Day https://www.un.org/en/observances/creativity-and-innovation-day
	22	Earth Day https://www.earthday.org/
	23	World Book Day https://www.worldbookday.com/
May	All Month	NZ Music Month https://www.nzmusicmonth.co.nz/
	8	Mothers Day
	7-13	Rotuman Language Week https://www.mpp.govt.nz/programmes/pacific-language-weeks/
	8-14	NZ Sign Language Week https://nzslweek.org.nz/
	13-20	Tech Week https://techweek.co.nz/
	19	Pink Shirt Day https://www.pinkshirtday.org.nz/
	20	World Bee Day https://www.worldbeeday.org/en/
	26	**STANZ AGM in Auckland**
	28 May - 3 June	Samoa Language Week https://www.mpp.govt.nz/programmes/pacific-language-weeks/
June	5	Week World Environment Day https://www.worldenvironmentday.global/
	8	Week World Ocean Day https://unworldoceansday.org/
	15	Week Global Wind Day https://globalwindday.org/
	29	Week International Day of the Tropics https://www.un.org/en/observances/tropics-day
	30	Week Asteroid Day https://www.un.org/en/observances/asteroid-day
July	All Month	Week Plastic Free July Plasticfreejuly.org

Science News

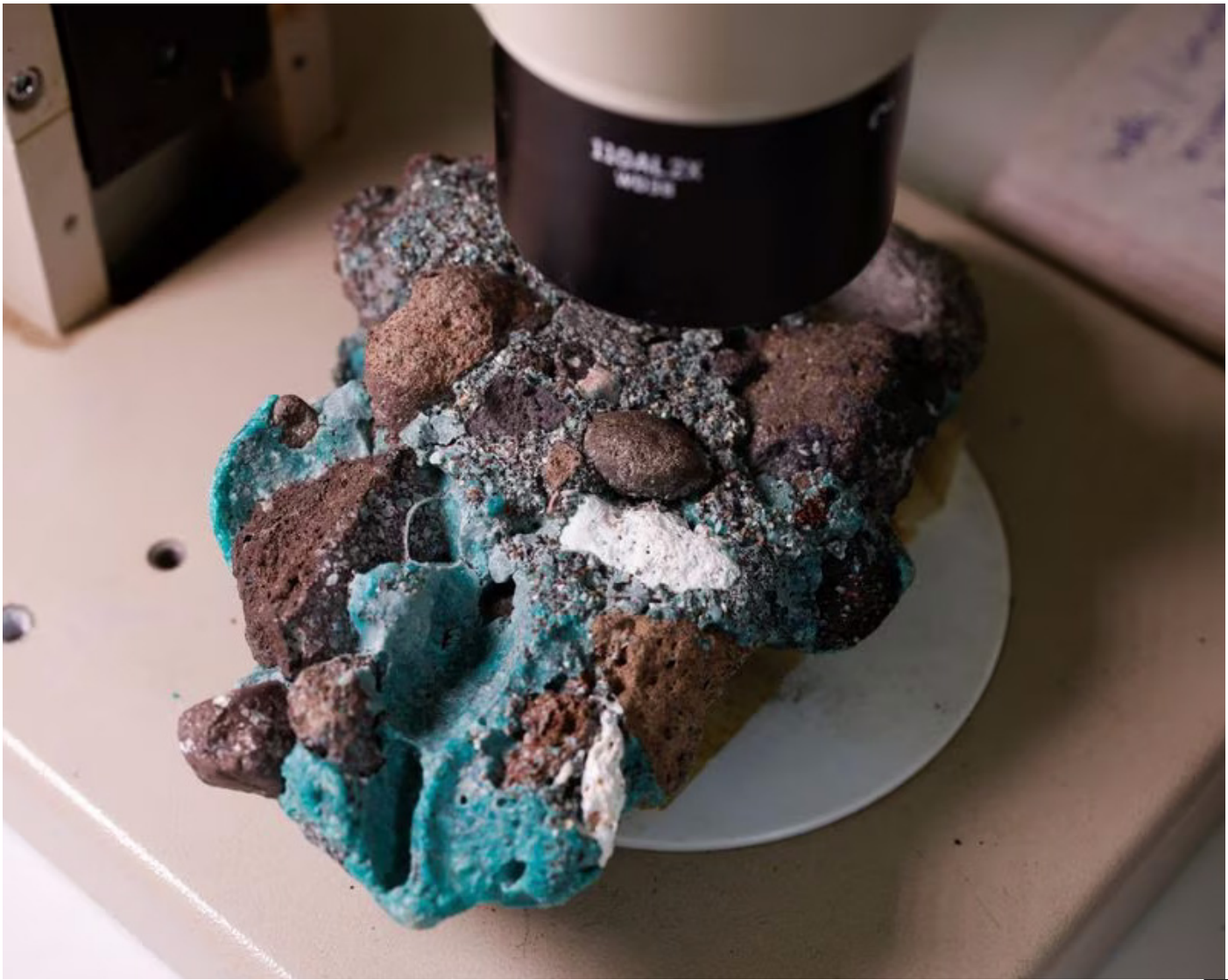
Pollution Has Reached Geology

Strange bluish-green rocks were found on Trindade Island, a remote volcanic island off the coast of Brazil. Geologists from the Federal University of Parana were unable to identify the rocks until they ran tests to determine chemical composition.

In yet another sign of how human activity is changing the world around us the strange substance was found to be plastic. The rocks are a conglomerate of sedimentary granules and other debris that's been fused together by plastic melted from volcanic activity and have been Dubbed "plastiglomerates". If you were paying attention earlier in this edition, I'm sure they'll make excellent soil one day.

Trindade Island is a green turtle refuge with no permanent human settlement 1,140km from Brazil's mainland. The plastic is thought to be from fishing nets that accumulate on the island and melt into the beach's natural material.

Sadly, this is not the first time plastiglomerates have been discovered. While the material had been discovered earlier the journal of the Geological Society of America was first to publish in 2014 after a study on plastiglomerates that had washed up on Hawaii's Kamilo Beach.



Source: Reuters

Science News

New Method for 'Forever Chemicals" Breakdown

At the end of 2022 researches at University of California (UC) Riverside in the United States described a new method to breakdown forever chemicals without producing any harmful byproducts.

The new method bubbles hydrogen gas through contaminated water to ionise the water molecules. This generates reactive species (including hydrated electrons) that have the ability to break apart the strong bonds that hold the chemicals together. To speed up the reaction a high-energy, short wavelength UV light is used. The method has only been tested on small volumes (500mL) but has achieved degradation of 95% of PFAS after 45minutes.

"Forever chemical" is a term used to describe PFAS, per- and polyflurorinated alkyl substances that comprise a chemical family of over 4700 chemicals. These chemicals are all highly persistent and don't breakdown in our bodies or in the environment. Very small doses have been linked to cancer, reproductive and immune system harm , and act as endocrine disruptors (interfere with hormonal systems).

PFAS are used in many consumer products due to their ability to repel both grease and water. Common examples include non-stick cookware, waterproof textiles, and cosmetics. They've been seen in New Zealand's news around discussions of contamination by fire fighting foams with PFAS that are now banned. Many countries are beginning to ban PFAS on mass. New Zealand's Environmental Protection Authority is seeking feedback on a proposal to follow Europe in banning PFAS in cosmetics. Public consultation is open until May 31st 2023. The proposal and submission form can be found online on the EPA website.

Longest Neck

New analysis of fossils found in 1987 puts the Jurassic-era sauropod in the running as the animal with the longest neck ever known.

The dinosaur, Mamenchisaurus sinocanadorum, has been estimated to have had a neck 15meters long. From snout to tail they were 50m long and weighed over 70tonnes.

While only a small number of bones were found researches estimated the length of the neck by comparing the remains with fossils from other closely related dinosaurs.

The long neck allowed sauropods (the clade of dinosaurs that include the more wel-known Brachiosaurus) to graze large areas of vegetation while standing in one spot, thus conserving energy.

X-ray scans of the Mamenchisaurus fossils showed the vertebrae to be light and hollow with between two-thirds and three-quarters of their volume being airspace. Similar skeletal features are seen in birds that minimise weight to fly.
Read more online in The Guardian

Science News

Cloned Artic Wolves

Chinese biotechnology company Sinogene announced to the world on September 19th 2022 the existence of the first cloned artic wolf Maya. News of her birth was held until she was 100 days old to ensure she was fit and healthy.

A skin sample was taken from the 16 year old donor wolf, also named Maya, who lives at Harbin Polarland in Northeast China's Heilongjiang Province. The sample was used to create 137 embryos. 85 of the embryos were inserted into seven different beagle surrogate mothers. Of these only Maya was born successfully on June 10th.

After her worldwide reveal Maya has been moved to Harbin Polarland where she now lives with her beagle surrogate mother who doesn't seem to mind her pups' enormous size.

Although arctic wolves are not under threat, the researchers hope that the technology used can potentially help other species under threat.

It was later revealed that 3 days after Maya celebrated her 100th day, a second cloned wolf cub was born called Ha'er. A clone of a male artic wolf, also named Ha'er from Harbin Polarland. With the success of both cubs, breeding of cloned artic wolves is now on the plans for Sinogene.

This is far from Sinogenes first foray into cloning. The company produced the first cloned police dog from an award-winning sniffer dog. They also operate a successful pet cloning service for peoples beloved cats (~$56000 NZD), dogs(~$80000 NZD), and horses(~$129000 NZD).

Trending on SciTechTalk

Tea Bag Rockets

Dilmah has changes their tea bags and they no long work for tea bag rockets.

Known brands that work are listed in accumulated wisdom, but Pams Classic Tea Bags are the cheapest ($3-$4 for 100 Tea bags)

As a side note, our classes very rarely use the actual tea so it just gets binned. I keep a small container full at work. Then I empty the rest out at home into a container and have a constant supply of tea! All I need is a fine mesh tea strainer.

sciPAD Technician Notes

A reminder that sciPAD produces Technician notes for some of there books. They can be accessed here.

Thanks to Sheryl Fitzsimons for reminding us and to Steph Grey for sending them out originally.

Safety Standards

Particularly useful for schools undergoing a rebuild/refurbishment NZASE has paid for 12 safety standards for their member schools. STANZ has negotiated access to these for our members.

See Arwen Heyworth's email to SciTechTalk on th 21/02/23 for a list of all 12 standards. To access these, you need to send an email to NZASE to request access. Instructions in aforementioned email.

Posters

Large periodic wall posters from sciPAD $30 each

- Chiara Magagna
- Erica Abelen-Freeman

Good body system ones here:-
https://www.carolina.com/teacher-resources/Interactive/infographic-human-body-systems/tr40003.tr

Science issues NZ based
https://www.sciencemediacentre.co.nz/infographics/

Chemistry ones - I especially love the mole one!
https://edu.rsc.org/eic/section/infographics

- Jane Lieshout

Te reo periodic table from Science Hub for free (p[lus other posters)
https://www.sciencelearn.org.nz/search?term=periodic%20table

- Megan Hay

https://www.thechair.co.nz/login/moe-thechair for Te Reo Science posters

https://www.teaching.com.au/page/mta-au-science-rockstars

- Beth Trotter

Bunsen Collars Stuck

Tech department and CRC, then a very little Vaseline when putting them back on.

- Wendy Hilliar

WD40 and CRC will do the trick with a pair of vice grips. Make sure to wipe dry afterwards

- Aaron Jacobson

I use a slim screw driver!
Thread it right through the funnel using either the round holes or the 'slits' and it makes a good levering arm

- Emma Heath

Put the barrels and collars in some weak acid - probably a build up of chemical waste in the collar - and leave overnight.

- Harry Nichol

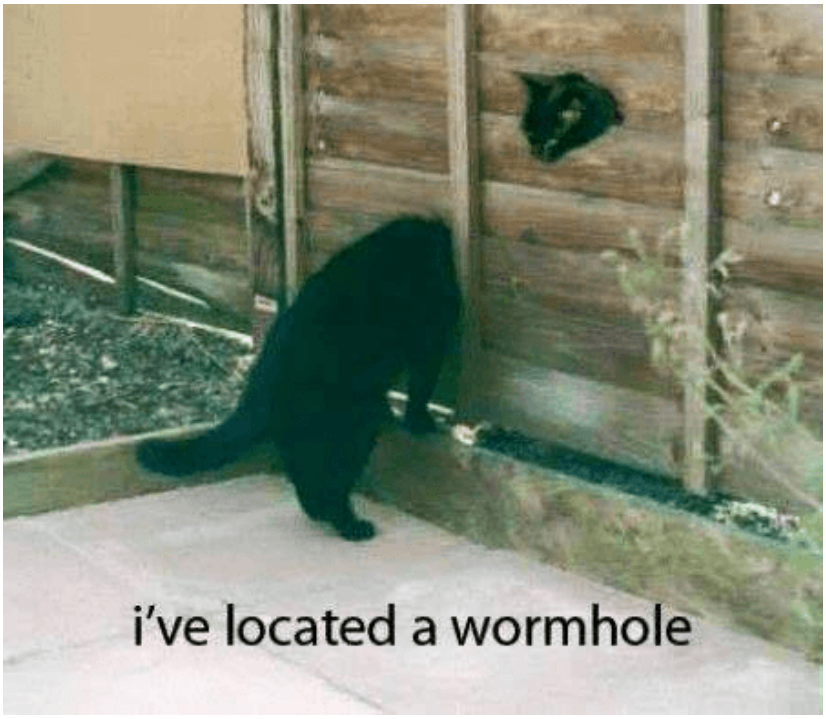
Trending on SciTechTalk

Kmart Anatomy Models

We have just brought these anatomy parts at Kmart $17.00 each.

They seem to be pretty good and each comes with a wee book and an app that is pretty cool which explains each part and also features a quiz on the different parts. The bio teacher likes that each part is a different colour making it easier to show the kids the different parts.

- Marie Steele



Notices

New Cluster Coordinator

Anna Taylor has taken on the role of Cluster Coordinator for the Eastern Bay of Plenty Cluster. Thank you Anna.

New Cluster Coordinator Required

The Counties Cluster needs a new Coordinator!

Network with local technicians and meet for coffee ...err, I mean attend free local PD or, well, do whatever the local group wants to do really.

If there is no cluster in your area, why not start one?

Cluster Coordinator Email Updated

Dunedin Cluster Coordinator Anne-Marie Pulham has a new email address; ampulham@trinity.school.nz

Pay Equity Information

Ministry of Education roll out documents:
Science Technicians' Pay Equity Claim – Education in New Zealand

NZEI website includes an A3 version of the work matrix:
https://www.nzeiteriuroa.org.nz/campaigns/pay-equity-for-science-techs-mana-taurite

PD Funding

Take advantage of funds available to individuals and Cluster Groups for professional development:
https://stanz.nzase.org.nz/professional-development-funding-applications/

Individual scholarships up to $600 each.
Apply: you may get one!

Your Article Here!

Contribute to the next Edition of Tech Tonic

Last day for contributions Monday 26th June

STANZ Election

Nominations are open for the STANZ Executive. They will be accepted until **5 pm Friday 14th April 2023.**

The nominee must be a school Science Technician with a minimum of one year's experience and be seconded by another practicing school Science Technician.

AGM

STANZs Annual General Meeting (AGM) will be held on **Friday the 26th of May in Auckland**.

Changing your Details

If you are needing to change any of your details, be they change of Technician, change of address, change of school, change to subscription to Scitechtalk or Tech Tonic, change of name or maybe you are resigning please use the membership form on the website to do this.

And remember, if you know of someone new; point them in our direction!

Safety and Science Edits

Thank you to all who have taken the time to contribute to the page that was created to record any mistakes, omissions and questions regarding the new Safety And Science Document.

The Safety and Science edits document is still collecting errors and omissions. Click here to go straight to the document or you can fill it out in the password protected section of the website.

Cluster Groups

Cluster	Coordinator	Email
Northland	Sarah Garner	Sarah.Garner@kamohigh.school.nz
East Auckland	Florinda Petterson	fpetterson@sacredheart.school.nz
Central Auckland	Arwen Heyworth	aheyworth@ohs.school.nz
South Auckland	Heather Hart	HeHart@papatoetoehigh.school.nz
North-West Auckland	Debbie Williams	debbie.williams@hobsonvillepoint.school.nz
Counties	**Opportunity!!!**	
Waikato	Lisa Clay	lisaclay@rhs.school.nz
Eastern Bay of Plenty	Anna Taylor	ataylor@tgc.school.nz
Rotorua	Monique Arts	Monique.Arts@jpc.school.nz
Gisborne	Lisa Jones	lisa.jones@gghs.school.nz
Hawkes Bay	Netta Brown	NettaB@ths.school.nz
Wellington	Craig Johnstone	cjohnstone@chilton.school.nz
Tasman/West Coast/ Marlborough	Sue Standish	science.tech@waimea.school.nz
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Central Otago	Georgie Roberts	robertsg@mtaspiring.school.nz
Dunedin	Anne-Marie Pulham	ampulham@trinity.school.nz
Cambridge Syllabus	Michelle Pattison	Michelle.Pattison@pinehurst.school.nz
Tertiary Sector	Daniel Roecken	droecken@northtec.ac.nz

Cluster Professional Development Funding Available

Funding from STANZ Inc. is available to Regional Groups to enable the creation of Professional Development opportunities to support School Science Technicians. Applicant Information: Professional Development Application Form – Regional Group

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