

School Science Technicians as Laboratory Managers

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Summary

Survey data show that increasing numbers of Science Technicians have taken on a Laboratory Manager role. This is likely to continue, especially if the value of that role is better defined, and the funding found, to enable this to be an opportunity for advancement. However, there has been a lack of resourcing and support from the Ministry of Education for hazardous substance management in State and Integrated schools under the 2007 Code of Practice. Moreover, this situation has not improved since the 2015 Safety at Work Act and its 2017 Hazardous Substances Regulations have been promulgated.

The 2021 publication Safety & Science was intended to provide a guide to hazardous substance management in schools, but in itself does nothing to address the resourcing issues evident during the era of the 2007 Code of Practice. Neither have other commitments been made along with its introduction that will enable schools to take the financial responsibility and accountability for hazardous substance management intended in the Act and Regulations.

Introduction

Following on from their work to achieve pay equity for Teacher Aides, NZEI Te Riu Roa looked at the basis for making a pay equity claim for school Science Technicians - along with claims they lodged for other school support staff groups. Like Teacher Aides, Science Technicians have a strong basis of data (de Stigter, 2020) for a Pay Equity claim. This information was used in establishing claim arguability, then the Science Technician claim was lodged on 6 November 2020.

Some Science Technicians also take on the role of Laboratory Manager (LM) for their school, though schools have found that difficult to resource. The current study was begun in 2019 to provide data for assessing the LM role as a Science Technician advancement option. Report completion was then delayed to allow new hazardous substance management guidelines to be published and considered.

A. Equitable Work for Science Technicians

In pursuing the Teacher Aide equity claim, NZEI emphasised that equitable work also requires security and safety, professional development, and an opportunity to advance. Fairness in aspects of employment other than pay deserve consideration.

Science Technicians are less likely than Teacher Aides to be hired on fixed term contracts, and students rarely assault them; however workplace chemical safety is not always assured. In many schools, facilities for storage and use of chemicals are sub-optimal. Science Technicians are expected to not only ensure their own safety with chemicals, but also contribute to safe handling and use of chemicals by Science Teachers and students. They may also advise staff in other faculties.

The obligations on schools to suitably handle chemicals implies that technicians need professional development in hazardous substance management, and particularly so because Science Teachers rarely receive any. Appropriate professional development in hazardous substance management, with a recognised qualification, can also enable some Science Technicians to then become LMs.

As with the Science Technician role, the LM position currently shows pay equity issues – indeed, the issues are more pronounced. If these can be resolved, the added LM responsibility could be seen as a meaningful advancement for some suitably-qualified and experienced Science Technicians, in line with the expectation that career progression should be available.

B. Appointment of School Laboratory Managers

In 2007, a voluntary Code of Practice (COP) for School Exempt Laboratories to manage hazardous substances came into operation. Adherence to this COP directed each school to have an LM to take the hazardous substance responsibility. In 2008, Sheryl Fitzsimons (pers. comm, 2015), in a limited survey of schools, determined progress with such appointments. She recorded that 13% (6/46) of appointees were then Science Technicians. At that time, 44% of the schools providing information had not made LM appointments.

Michelle Kiernan and I later looked at the matter during more extensive surveys (Kiernan and de Stigter, 2015); (Kiernan and de Stigter, 2017). In 2015, 17% (23/133) of schools with LMs had appointed technicians, while a further 25% had no LMs. In the 2017 update, 20% (34/169) of schools with LMs had Science Technicians in the role, while 28% of the schools then surveyed had no LMs. (The increase in the percentage of schools without LMs is not believed to indicate a drop in LMs, but suggests that the increased survey response included more smaller schools which may be less likely to have LMs.)

C. 2019 Science Technician survey

In November 2019, Science Technicians who were LMs were invited to respond to some questions, and 39 did so. (Two who were continuing as technicians but relinquishing the LM role were not counted. One of these gave it up because there was little extra pay for the work; the other, none.) Of the 39 relevant responses, 35 were in State or Integrated schools, and 4 in Independent schools. So the number of Science Technician LMs increased again in two years (despite some dropping out) to 39, from the 34 in 2017. It was not determined whether the increase in technician LMs was due to substituting for teachers previously in the role, or to first appointments in schools where there had not been an LM.

(1) Science Qualifications

Science qualification varied across the LM group; one LM was qualified at less than Level 6 on the NZ Qualifications Framework; 16 at Level 6; 11 at Level 7; 5 at Level 8; 2 at Level 9 and 4 at Level 10. The median qualification level was Level 7: equivalent to a Bachelor's degree.

(2) Science experience – prior to a school/ in a school

The experience of technician LMs in chemistry labs - prior to school employment - ranged from none to 32 years, with a median of 8 years. Following this, they had then been employed by a school in a science capacity for a range of time: from less than a year, up to 27 years. The median of such school employment was 11 years.

(3) Specialised hazardous substance study

Of the 39 survey respondent LMs, only 12 reported any formal training particularly related to chemical safety. Two had studied at University of Otago. One had completed the Level 8 paper: HAZA401 Managing Chemical Hazards, and the other had a Post-graduate Certificate in Health Science which included HAZA401.

A further 5 had completed the LM programme from Real World Education which has now been phased out. Additionally, there were 4 with Certified Handler certificates, and one technician had taken the Caretaker Health & Safety Training, Stage 2, offered by Safety Matters.

This is rather disappointing, because 40 school Science Technicians completed HAZA401 (or HAZX401 as it was earlier known) in the period up to 2015 (Kiernan and de Stigter, 2015) in order to play a role with these hazardous substances in schools. Almost all have either not been given such a role, or they have now abandoned it or retired. The current Science Technician (and Science Teacher) LMs are generally less qualified in chemical hazards.

(4) Time allocated

Of the 28 State and Integrated schools with technician LMs which provided Science teaching hours data for calculations, 18 had been assigned no extra time for LM duties. The service factor (ratio of technician hours to teaching hours) for this group of 18 ranged from 0.11 to 0.30, with a median of 0.215. The other 10 schools with Science teaching hours provided had given extra time for the LM duties. The service factor (excluding such extra time) for this group ranged from 0.11 to 0.32, with a median of 0.20, and the extra time ranged from 0.5 hours/week to 10 hours/week, with a median of 4.5 hours/week for the LM role.

In Independent schools, service factor ranged from 0.23 to 0.49. Time provision for the LM role also varied from 0 to 7.5 hours/week.

(5) Pay rates

The survey found that 40% (15/37) of Science Technician LMs in State and Integrated schools were paid no extra for taking the role, and a range of mechanisms was used to pay a premium to the others. In the NZEI support staff collective agreement, it is not clear how such a payment can best be structured, or even what level is appropriate. However, under the PPTA contract, a Management Unit School Science Technicians as Laboratory Managers

(MU), currently at \$5000/year (together with one unallocated teaching period) can be assigned for taking just such a significant responsibility.

In the 2015 hazard management survey, some schools had identified the MU as appropriate reward for teacher LMs. In our 2019 data it is apparent that the equivalent was then available to a few Science Technician LMs, described as being on the support staff C or D scale (which share a common step, so the same base payment can be described as either C or D) but with an increase to the standard hourly rate (described as a “loading”).

Of the 22 State and Integrated school Science Technician LMs who acknowledged some pay for the LM role, not all have given further details. However, 7 received an MU equivalent (\$3.42/hour based on 37.5 hours/week and term-time-only employment) and 2 LMs were being paid more than 1 MU. Nine others reported lesser hourly rate increments, from \$0.60/hour to \$2.57/hour, with the median of these at \$1.30/hour. A number of respondents reported that their managers or Boards had refused to pay them on the D scale, though 5 of the 7 who reported being paid the equivalent of 1 MU were paid it through the D scale, and some others with LM salary loadings were also on the D scale. The NZEI Support Staff collective agreement guidelines have not apparently been helpful.

(6) Tenure as Laboratory Manager

Experience as the school LM ranged from two Science Technicians in the role for less than a year, to one who had been an LM for 14 years, and representing almost every number of years between. However, the median tenure was 3 years.

(7) Non-LM stories

While the survey data were being collected, a number of people who were not LMs emailed comments related to LM appointments. These add to an understanding of the context of appointments – and reasons that more technicians are not LMs. The details are given in Appendix 1: Survey Stories.

(8) Post-survey events

Between November 2019 and March 2020, further changes in Science Technician LM roles were reported. One technician LM resigned and left the country. Another school which previously had a technician LM appointed a new technician LM. In four more schools, technicians were newly appointed, or newly identified as LMs. At March 2020, the number of Science Technician LMs was believed to be 42.

PPTA agreed in October 2020 to job-size a teacher LM position. Some job-evaluation interviews were carried out in 2021. (It may then be possible for NZEI and PPTA to look together at defining and valuing an LM role performed by either a Science Teacher or Science Technician.)

In November 2021, Safety and Science/Putaiiao (Ministry of Education, 2021) was published to enable schools to interpret the 2017 Hazardous Substances Regulations (NZ Government, 2017).

D. Nominalism and Appointment of LMs

The 2015 survey data indicated that a large proportion of the LM appointments were nominal only, as judged from the time allocated for the work, the absence of sufficient (or any) payment for it, and the appointment of some who had no specialist chemical knowledge. On these criteria, it was estimated that fewer than 20% of the appointments made should be considered meaningful. In 2017, there were more Science Technician LMs than in 2015, but their situation had not improved markedly. Allowing for schools with no LMs at all, fewer than 15% of schools have made proper LM appointments.

Over the next few years, a further increase in the number of Science Technician LMs might be expected. Moreover, if the Ministry of Education provides the funding for functional (rather than token) appointments, this increase may be significant in both number and consequence.

The Science Technician pay equity review provides one avenue to make representations about correcting the deficit in funding. Science Technicians are routinely involved with hazardous substances and need training in that responsibility. They have also proved to be more available and prepared than teachers to obtain formal hazardous substance management qualifications suitable for the LM role. Science Technicians deserve to have the opportunity for career progression, and the step up to LM would be a suitable progression for many – if the role and its associated PD are funded.

Many of the 25-28% of schools which have failed to make an LM appointment would be happy to appoint a Science Technician (or Science Teacher) LM and provide suitable PD to meet hazardous substance management obligations - if they could do so without taking the increased pay and training costs from a restricted operations grant. (See Section F, which deals with the responsibility to do so.)

If/when the number of Science Technician LM candidates justifies it, appropriate training will be required. STANZ previously had a facilitating role in liaison with the University of Otago, and later with Real World Education, concerning LM training courses.

E. The Context for Laboratory Manager Performance

Funding the appointment and training of an LM is not all that is required to enable appointees to work effectively. Safety & Science is now the guidance document for hazardous substance management in schools replacing the 2007 Code of Practice. The school's laboratory safety plan should be largely based on this. It is important that the Ministry of Education directs schools to adopt its use. As outlined in a Today's Schools Review Report (TSRR) submission (de Stigter, 2019) the Ministry of Education never directed schools to adopt the 2007 hazardous substances COP (although they directed schools to adopt other safety codes) and this is a major reason that COP has been ineffective, and hazardous substance management has been correspondingly inconsistent, and not considered a priority.

The TSRR submission also details the ineffectiveness of the Board Assurance Statements which ERO has requested regarding hazardous substance management. It will not be enough in future for the BOT to claim as earlier requested that "Science Teachers are familiar with the requirements" or that "since the last ERO review ... the board reviewed health and safety policies ... about the use of hazardous substances for the teaching of science and technology". Nor will it be enough to make an assurance at review that the board has policies related to hazardous substance management – not even that the school has appointed an LM to take care of such things!

For a School LM to operate effectively – with the performance and in-school support that might be expected – the Board Assurance Statement ahead of a school review will need to say something like: "an external audit of hazardous substance management procedures has been performed by a registered hazardous substances specialist and met hazardous substances requirements based on interpretations in Safety & Science and the school's laboratory safety plan." Funding a periodic specialist review of chemical safety practices should be seen as necessary back-up for the LM role. Where the school has evident deficiencies in its chemical storage and laboratory facilities, there should also be provision for these to be upgraded.

Valuing the LM position under the current NZEI grading rules is determined by reporting and level of accountability. The primary focus of the LM is to ensure that chemical procedures and the chemicals used in science laboratories are suitable and safely handled. To achieve this requires a direct and close relationship with the Head of Science, so that the two speak with the same voice on this.

There are various other reporting relationships which may be expected of the LM: with the Health & Safety Committee, the Principal, or another designated senior manager, and the Board of Trustees. Writing periodic reports when needed by these interested parties is important, but the true value of performance achievements is directly realised within Science. The significance of those achievements may require a critical look at the way that grading rules are used to determine a salary level.

F. Legal responsibility for Hazardous Substance Management

According to the Hazardous Substances Regulations (NZ Government, 2017) the “PCBU with management or control of a laboratory must ensure that at least 1 person is designated as a laboratory manager.” Under the Health and Safety at Work Act, (NZ Government, 2015) the responsibility for that appointment would rest with an Officer, who is considered to be the person in that PCBU (organisation) with the authority and responsibility to ensure safe practices. (See Appendix 2 for the full text about the Officer.)

Since school Board members are regarded as unpaid volunteers (under Section 51 of the Act), and so without personal liability, the Officer role in a school is identified to be that of the Principal. How then can about 85% of secondary Principals apparently ignore their hazard substance management responsibility and their personal liability for it?

I asked a principal who has not appointed a LM whether he intended to do so. His answer was something like: “No, because our school is not funded for it by the Ministry of Education, and I am not authorised to use Board funds for the purpose.”

My TSRR personal submission about hazardous substance management as an unfunded expectation of schools was not acknowledged; the funding situation has not since improved. In the absence of any kind of response, the assumptions about responsibilities of school principals for LM appointment (and more generally, ensuring hazard management in laboratories) deserve to be revisited.

If the Officer is a person with the authority and responsibility to ensure LM appointment and appropriate resourcing, then it is clear that State secondary schools do not have an Officer (in the context of hazardous substance management) because Ministry underfunding means there is no finance to direct for that purpose. Furthermore, if a serious harm accident arises in a school with no LM or a nominal one, any implied personal responsibility of the Principal for the non-appointment could be easy to defend – and the Ministry of Education would have a serious case to answer. It would be desirable for the Ministry of Education to accept the need for action before there *is* serious harm.

G. Conclusions

In the absence of a Ministry of Education commitment to resourcing the LM position and hazardous substance management review, and a direction (made on the basis of that commitment) for schools to adopt the Safety & Science guidance document, its utility will be severely limited – as was that of the previous schools Code of Practice - for similar reasons.

In the meantime, LM role appointments for Science Teachers and Science Technicians (in both State and Integrated schools) will continue to demonstrate nominalism and inequity.

Currently, it is difficult to see how schools, and specifically their Principals, can be held responsible for ensuring that hazardous substance management requirements are met. There is therefore a need for all parties with an interest and commitment to safe use of chemicals in State and Integrated schools to make submissions that will lead to funding improvements.



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I. Cover photograph

The cover photo is from 2020 and shows Erin Brown, Science Technician and Laboratory Manager at Massey High. (Used by permission.)

Appendix 1: Survey Stories

1. One ex-LM had never been paid any extra for it, so eventually decided it was time to let it go, and resigned the role. This hadn't apparently led to a better offer from the school.
2. Another respondent reported no LM at the school, and believed the job could be hers if she volunteered for it, as no one else was interested. She saw no point in upskilling for it, however, because she didn't expect to be paid at a higher rate – though maybe there would be more hours.
3. A technician at a school, where the TIC Chemistry officially filled the LM role, claimed that hazard management initiatives and PD attendance and communication were left to her, because teachers were too busy.
4. An informal offer of the school LM role was declined by the technician because no pay increase was suggested.
5. A technician at a school with restructuring taking place was advised she would need to re-apply for her job, combined with the LM role, with no indication of an increased rate for taking on LM. This was seen as a way of assigning an LM role which no one wanted. (However, this enforced role amalgamation did not proceed.)
6. The technician was offered the school LM job, with no suggestion of a change in pay rate, but with an extra 5 hours work/week.
7. After completing the Real Education LM programme, a technician pointed out the school obligation for an LM. She was prepared to take it on, if given more hours. The Head of Science supported the idea, but school management refused. The school still had no LM.

8. At another school, the accountant headmaster is officially the LM, since none of the Science staff were prepared to take the role without pay. However, this “LM” has failed to sign off required Safe Methods of Use (SMUs) for chemicals used in practical work.
9. The Science Technician at a school with no LM reported that there was a new Principal taking over, and Science would try again to get an appointment made.
10. A technician with a very limited part-time role rejected the suggestion she should be LM, because “I don’t have eyes constantly on some members of staff”. There was no mention of compensation in time or money – but it seems the teachers had none on offer for taking the role either.
11. When the previous Head of Science/LM retired, the Science Technician was offered the role, but declined. Although she believed she had the knowledge and qualifications, she felt the LM role required full-time attendance, and she did not want to work the extra time she felt it would require.

Appendix 2: The Health and Safety at Work Act Officer

Section 18 of the Health and Safety at Work Act 2015 (NZ Government, 2015) defines who is and is not an Officer for the purposes of the Act:

18 Meaning of officer

In this Act, unless the context otherwise requires, officer, in relation to a PCBU, –

- (a) *means, if the PCBU is –*
 - (i) *a company, any person occupying the position of a director of the company by whatever name called:*
 - (ii) *a partnership (other than a limited partnership), any partner:*
 - (iii) *a limited partnership, any general partner:*
 - (iv) *a body corporate or an unincorporated body, other than a company, partnership, or limited partnership, any person occupying a position in the body that is comparable with that of a director of a company; and*
- (b) *includes any other person occupying a position in relation to the business or undertaking that allows the person to exercise significant influence over the management of the business or undertaking (for example, a chief executive); but*
- (c) *does not include a Minister of the Crown acting in that capacity; and*
- (d) *to avoid doubt, does not include a person who merely advises or makes recommendations to a person referred to in paragraph (a) or (b).*