Keeping water safe in your premises

Affinity Water

September 2014
Asset Management document control sheet

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1 Introduction

1.1 Keeping water safe and available for everyone

An important part of what we do is to keep water safe in order to protect water quality and conserve supplies. As your water supplier, we have a duty to prevent waste, misuse and contamination. We also need to ensure that water is not being unduly consumed and that it is being measured accurately.

The Water Supply (Water Fittings) Regulations 1999 place a duty on us to take enforcement action for contraventions of the Regulations. This document sets out our policy and provides information on enforcement action that we may take in the event that we become aware of any contraventions.

Enforcement includes the prevention, assessment and actions resulting from the identification of non-compliance.

For England and Wales, the Water Supply (Water Fittings) Regulations and their Schedules are Statutory Instruments (1999 No. 1148 and No. 1506) available from HMSO and via the Internet link below.

Water Supply (Water Fittings) Regulations 1999 (England and Wales)

1.2 Preventing contraventions

We recognise that most of our customers want to comply with legal requirements so we work with our customers to try to encourage compliance and avoid unnecessary action.

Providing guidance: Our technical administration team are available to answer your fittings regulations queries and provide guidance to ensure your water systems comply with regulations. We can advise owners/occupiers of domestic premises when a water quality question is raised.

Promoting qualified contractors: We promote the use of ‘Approved Contractors’ registered on an ‘Approved Contractors Scheme’ and we encourage customers to use WaterSafe to find one. WaterSafe is a water industry funded online search facility bringing together thousands of qualified contractors. We provide the opportunity for plumbing businesses or sole traders to become recognised by offering training and accreditation for Approved Contractor status and we carry out audit inspections to ensure they meet the required standards.

Approving proposed work: We can advise on proposed plumbing work notifications and we receive and manage the work certificates of Approved Contractors.

Working with local authorities: We work with Local Authorities and Health Agencies to protect and preserve water that is supplied or distributed on to other destinations.

Protecting public events: We inspect installations and provide guidance on complying with regulations for public events like fairs, shows, concerts or carnivals.

Inspecting public and business premises: Non-household premises pose a greater risk of waste and contamination so we pro-actively inspect business premises and public buildings to ensure owners continue to protect the public.
**New developments:** We visit new and existing premises being built or converted and advise on ways to legally supply them. We offer advice for private water supply owners to avoid cross or misconnections with the public water supply.

**Keeping informed:** We are members of plumber system designer forums and work with other trade and professional bodies to ensure we are both kept up to date with system design and products.

### 1.3 Your responsibilities as designer, installer, premise owner or occupier

If you own or occupy premises that are connected to the public water supply, you have a legal duty under the *Water Supply (Water Fittings) Regulations 1999 (Regulations)* to ensure that the water systems within those premises meet the standards set out in the Regulations.

If you design, install, maintain, alter or remove water fittings you must ensure that the Regulations are complied with.

You must notify us if you intend to install a water fitting in connection with certain proposed works which are stipulated in the Regulations. Fittings and appliances must comply with the Regulations and any work carried out must be done in a workmanlike manner that ensures any technical requirements specified in the Regulations are met.

The Regulations place legal obligations on Approved Contractors (individuals that are members of an Approved Contractor Scheme) to issue their customers and us with certificates of compliance for work they have undertaken.

As part of an Approved Contractor Scheme, a member is deemed competent and having the relevant knowledge of the Regulations that is required for the work they are undertaking and this authorises them to issue certificates where they are required.

### 1.4 The Water Regulations Advisory Scheme Ltd (WRAS)

WRAS is an advisory body established and funded by water companies to promote compliance with the Regulations. It provides a free technical enquiry service; publishes guidance and maintains a directory of products which comply with the Regulations. WRAS also administers one of the Approved Contractor Schemes, the Water Industry Approved Plumber Scheme (WIAPS).

We actively work with the Water Regulations Advisory Scheme (WRAS) to ensure there is national consistent interpretation and enforcement of the Regulations and this is made available to you in publications and on the WRAS website.
2 General principles for enforcement

2.1 Proportionality

When considering enforcement action, we will look at the seriousness of the contravention as well as any history i.e. persistent actions in contravention of the Regulations that may have been identified during our investigations. We will look at the situation case by case and take account of the degree of risk that was posed so that our response to the failing is proportionate and measured.

2.2 Transparency

We will work with you to ensure that you understand what is required of you and in turn what you can expect of us as your water supplier. We will ensure this policy is made easily accessible on our website and in paper from our teams upon request.

We operate an easy to understand complaints process which is accessible to you in the event that you wish to complain.

Where we do consider that your action has contravened the Regulations, we will provide clear and concise information describing the contravention and the Regulations requirements and we will notify you of any deadline you must achieve in completion of any remedial works.

2.3 Consistency

We will ensure that our decisions are consistent so that we take a similar approach in similar cases to achieve similar outcomes.

2.4 Accountability

In fulfilling our enforcement duties, we are accountable to our regulators, our customers and other stakeholders to ensure we have policies and standards in place that we can be measured against. Our stakeholders include:

- Department for Environment, Food and Rural Affairs (Defra)
- The Drinking Water Inspectorate for England (DWI)
- Public Health England (PHE)
- OFWAT
- Consumer Council for Water (CC Water)
- Local Authorities across our supply region
- Other water companies with whom we have supply arrangements.
3 Enforcement process

Where a contravention of the Regulations comes to light, we will take appropriate action. How we choose to respond will depend on the circumstances of each case. We will consider the nature and potential consequences of the offence and consider the range of options available in selecting an appropriate approach.

3.1 Advisory or warning letter

If a contravention of the Regulations has come to our attention, we may in the first instance write to you to advise you of the contravention, the Regulations and the remediation work we require you to complete.

We may choose to send you a warning letter to remind you of the need to comply with the law ‘without prejudice’ to other enforcement action that we may take.

3.2 Notice

We may serve a notice asking you to correct the contravention within a specified timescale. We may also choose to enact others powers of enforcement where we consider them to be appropriate to the circumstances of the case.

3.3 Direct intervention

In specific circumstances, we have the legal power to enter your premises and carry out improvements or disconnections as we deem necessary for the protection of public health, persons or property. We may recover our reasonable costs for taking this action from the owner or occupier of the premises.

3.4 Simple Caution

Where an offence is admitted, we may choose to offer a ‘Simple Caution’ in place of initiating a prosecution. We may decide to do this where there is sufficient evidence for a realistic prospect of conviction but it is not in the public interest to prosecute.

3.5 Prosecution

We may prosecute those who are suspected of committing an offence and will apply the Crown Prosecution Service (CPS) Code for Crown Prosecutors and the relevant codes of practice of the Police and Criminal Evidence Act 1984. The following factors will be taken into account:

- Whether there is sufficient, admissible and reliable evidence that the offence has been committed;
- Whether there is a realistic prospect of conviction;
- Whether a prosecution is in the public interest.
The CPS criminal prosecutions principles apply:

**Evidential stage:** The Prosecutor must be satisfied that there is enough evidence to provide a ‘realistic prospect of conviction’ against the defendant. This is an objective test and separate to the test the courts apply of ‘beyond reasonable doubt’. The Prosecutor will consider whether the evidence can be used and is reliable. They must also consider what the defence case may be and how that is likely to affect the prosecution case. This ‘Threshold Test’ is applied to ensure there are no evidential weaknesses in the case. Further investigations may be required by the investigator to secure the evidence. If the case does not pass the evidential stage, it shall not go ahead, no matter how important or serious it may be.

**Public interest stage:** If the case does pass the evidential stage, the Prosecutor must then decide whether a prosecution is needed in the public interest. They must balance factors for and against prosecution carefully and fairly.

We will only proceed to prosecution if a case has passed both stages.
4 Complaints procedure

4.1 Contacting us in the first instance

If you have a complaint about the way we enforce the Regulations please call our Fittings Regulations Team. Their details are at the end of this policy. Once we have received your complaint, we will start investigating it as soon as possible.

If you have contacted us by phone we will try to resolve your problem immediately. However if that is not possible, we will let you know and arrange to call you back as soon as we have an answer.

If you have sent us a letter or email we will send you a response with 10 working days and if we fail to do this we will pay you £20. If further investigations are needed to address your issue, our response will include an explanation of what we intend to do and when we intend to do it.

4.2 Escalating your complaint

If you are still not satisfied and feel that our response has not addressed your concerns in full, please do not hesitate to get back in touch.

At your written request your complaint will be reviewed by a senior manager who was not involved in the original investigation. They will independently examine the issues you have raised looking at the way it was handled in the first instance.

You will receive a response to this second enquiry within 10 working days.

4.3 Consumer Council for Water (CC Water)

If you are still not satisfied with the outcome upon receipt of our second response, you can appeal to CC Water (an independent organisation representing the interests of customers) for a further opinion. You can find the contact details at the end of this policy.

4.4 Water Regulations Advisory Scheme (WRAS)

If the issue is regarding a technical decision, we will engage the Water Regulations Advisory Scheme (WRAS) for a view. WRAS is an advisory body funded by water companies which promotes compliance with the Water Fittings Regulations.

WRAS facilitates consistent interpretation of the Regulations and provides a free technical enquiry service.

4.5 Department for Environment, Food & Rural Affairs (Defra)

In some circumstances we may ask Defra or an independent arbitrator to assist.
5  Further information and contacts

5.1 Affinity Water Network Regulations

Affinity Water Network Regulations                Telephone:  01279 775436
Redricks Lane                                      Email:    network.regs@affinitywater.co.uk
Sawbridgeworth                                    Website:  www.affinitywater.co.uk/fittings
Hertfordshire                                      CM21 0RL

5.2 Water Regulations Advisory Scheme (WRAS)

WRAS Ltd                                           Telephone:  0333 207 9030
Unit 13 Willow Road                                E-mail:   info@wras.co.uk
Pen-y-Fan Industrial Estate                        Website:  www.wras.co.uk
Crumlin, Gwent,
NP11 4EG

To obtain a free copy of the Water Supply (Water Fittings) Regulations 1999 go to:
http://www.wras.co.uk/Get_a_copy

5.3 Consumer Council for Water (CC Water)

Consumer Council for Water                        Telephone:  020 7931 8502
First Floor, Victoria Square House                  E-mail:   londonandsoutheast@ccwater.org.uk
Victoria Square
Birmingham
B2 4AJ

Consumer Council for Water                        Telephone:  020 7931 8502
First Floor, Victoria Square House                  E-mail:   londonandsoutheast@ccwater.org.uk
Victoria Square
Birmingham
B2 4AJ

5.4 WaterSafe

To find a plumber in your area visit www.watersafe.org.uk.
6 Policy review

This policy will be reviewed on an annual basis or when necessary following regulatory changes or industry issued guidance.

This policy was last reviewed August 2014.
In general, laboratories should be regarded as presenting the highest level of backflow risk (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk.

The only specification approved by the Regulator for the purposes of Schedule 2 Paragraph 15 (5) of the Water Supply (Water Fittings) Regulations, Byelaws in Scotland, is that identified in section 6.3 of the Defra Guidance to the Water Supply (Water Fittings) Regulations. For further information on the Regulators’ Specification for backflow prevention arrangements and devices please refer to interpretation E03.

A tundish is not listed or defined as a backflow prevention device in the Regulators’ Specification for backflow prevention arrangements and devices. Therefore unless a tundish arrangement meets the requirements for one of the backflow prevention devices identified in this specification it will not be accepted as a backflow protection device.
Please note
The use of Anti-Siphon Nozzles will limit the use / experiments which can be carried out.
The client should be contacted prior to specifying this method of backflow protection.

EEW Note: - The provision of single check valves or double check valves at emergency eye wash stations must be discussed with the local water supplier as variations may occur dependent upon equipment used and any flushing programme required under health and safety.

Drawing No 2-112008/A v2
Typical Laboratory & Domestic Hot & Cold Water Layout

Note:

- If the sink is to be used for lab experiment set up or for washing Lab glassware etc the taps will require to be fitted with Anti Siphon Nozzles.

Note:

- The use of Anti-Siphon Nozzles will limit the use / experiments which can be carried out. The client should be contacted prior to specifying this method of backflow protection.

EEW Note: - The provision of single check valves or double check valves at emergency eye wash stations must be discussed with the local water supplier as variations may occur dependent upon equipment used and any flushing programme required under health and safety.

- TMV Thermostatic Mixing Valve
- EEW Emergency Eye Wash
- ASN Anti-Siphon Nozzle
- DCV Double Check Valve
- SV Servicing Valve
- DT Drain Tap
- SCV Single Check Valve

Laboratory cold water storage cistern with type AB air gap

- Laboratory Technician Area
- Sink

- Laboratory Taps

Please note

- Shower heads to be restrained or fixed to prevent contamination.

- Unless incorporated as part of the valve, ALL TMV’s to have servicing valves on both hot and cold supplies as shown below.

Design: William Mitchell October 2008
25 November 2014

Mr Andrew Miller MP
Chair Science and Technology Committee
House of Commons
LONDON
SW1P 3JA

Dear Mr Miller

Water Fittings Regulation Enforcement in School Laboratories

Thank you for your letter of 6 November 2014. As you are aware we have a statutory duty to enforce the water fittings regulations in our area of supply, enforcement being guided by Defra and industry agreed guidance.

Enforcement Policy

I have enclosed with this letter our enforcement policy ‘Keeping water safe in your premises’

The principles set out in this document apply equally to all premises which fall under the remit of the water fittings regulations and includes schools.

Affinity Water works with the Water Regulations Advisory Scheme (WRAS) to achieve the objectives of protecting public health and encouraging water efficiency. We support consistent ways for water companies to enforce on specific topics such as school laboratories’ water systems. When - as an industry - we have agreed upon a way of enforcement, this is made available publically on the WRAS website in the form of guidance interpretations.

WRAS guidance relating to risk assessment

Effective enforcement of the water fittings regulations requires a site specific risk assessment and categorisation of the risks associated of all water systems that make up a plumbing system in premises. There are five levels of risk, each reflecting the risk to human health, level 1 the lowest posing no risk; level 5 the highest, a serious health hazard. The level of risk posed by a water system will determine whether backflow protection has to be provided. Backflow prevention devices or arrangements, which are recognised as meeting or exceeding the fluid category classification, will be required to offer users protection from any potential backflow of contamination for systems categorised as being fluid category 2 or higher.

The processes employed to determine the risk posed by a water system are the same for all premises. To facilitate compliance and support consistency of application we have, with assistance from WRAS, produced a number of technical interpretations and other advice. These are published on the WRAS website where they are free to access https://www.wras.co.uk/consumers/resources/. There are two particular interpretations, which relate to secondary school laboratories. For ease of reference these are enclosed with this letter.
In line with the key objective of preventing contamination of drinking water supplies, identifying the level of risk posed is crucial in establishing backflow prevention requirements. This is achieved by ascertaining the manner in which water fittings or water using appliances are used or intended to be used and the nature of substances to which they may become exposed. What is paramount is ensuring that those within premises, as well as the wider community, are not placed at risk.

Secondary School laboratories

Whilst generally many of the activities undertaken and substances used in laboratories are considered to be fluid category 5 risks, we have recognised that this is not always the case in respect of water systems in secondary school laboratories. This view is reflected in interpretation B01, which clarifies that following a risk assessment, water systems in secondary school laboratories may be categorised as being lower than a fluid category 5 risk.

Three layout diagrams were developed by the UK Water Industry in response to a request for assistance in identifying how plumbing systems in school laboratories could satisfy the requirements of water fittings regulations/byelaws. Copies of these layouts are enclosed with this letter.

Please be aware that these diagrams have been developed for guidance purposes only: the details provided in all three diagrams demonstrate how compliance in respect of the legal requirements relating to backflow protection can be achieved and are not intended for use as designs for actual plumbing systems.

Appropriate protection devices or arrangements

Affinity Water will not design plumbing systems; our role is to assess and determine the level of risk posed by a plumbing system. Although we will offer guidance to enable compliance, it is the job of designers, installers or the user to specify and install adequate backflow protection. The Regulators' Specification for backflow prevention arrangements and devices identifies what can be accepted by the company as offering backflow protection against specific risks.

Interpretation B41 recognises that there are limitations to the use of a Type DC device, one form of acceptable backflow protection, when attached to the outlet of a laboratory type tap. Similarly interpretation E06 recognises that, where a tundish arrangement meets the requirements for one of the backflow prevention arrangements or devices identified in the regulators specification, it can be accepted as an equivalent to that device. These arrangements have been used in school laboratories to provide fluid category 5 backflow protection for a laboratory tap.

Yours sincerely,

Richard Bienfait
Chief Executive Officer
Typical Laboratory & Domestic Hot & Cold Water Layout

EEW - The choice location and number of single check valves or double check valves at emergency eye wash stations must be discussed with the local water supplier as variations will occur dependent upon the style of proposed eye wash equipment and the presence of any flushing programme.

Note
This drawing shows all lab taps supplied from a single storage cistern, therefore, to prevent any contamination from the laboratory on this floor level to the laboratory on the lower level the laboratory taps will require to be fitted with anti-siphon nozzles.

It would be recommended however that each lab is supplied from a suitably sized cold water storage cistern with a type AB air gap with insect screen as shown on the floor below.

Please note
The use of Anti-Siphon Nozzles will limit the use / experiments which can be carried out. The client should be contacted prior to specifying this method of backflow protection.

EEW See notes above
Laboratory Taps with anti-siphon nozzle
EEW See notes above
Laboratory Taps with anti-siphon nozzle

Raised float valve housing with type AB air gap with insect screen

Note
If the sink is to be used as a lab experiment set up sink or for washing experiment glassware etc the taps will require to be fitted with Anti Siphon Nozzles

Drawing No 1-112008/A v2
From the Chief Executive

Andrew Miller MP
Chair, Science and Technology Committee
House of Commons
LONDON SW1A 0AA

13th November 2014

Dear Mr. Miller,

Thank you for your letter dated 6th November regarding categorisation of school laboratories.

Anglian Water classify all laboratory premises as a fluid category 5 in accordance with our POSWSH (Policies, Standards and Procedures for Water Supply Hygiene) policy, which is the highest risk should backflow occur.

School laboratory taps are classed as fluid category 5 and are normally required to be fed from a storage cistern and not directly from the mains supply, however in line with WRAS industry guidance (B01 – Laboratories – risk of contamination by backflow), Anglian Water will undertake a risk assessment when carrying out an inspection. This will determine if a lower fluid category can be applied, in some cases this can be to fluid category 4, but never lower than that. The risk assessment will take into account such things as the chemicals being used, the type of laboratory work being undertaken, the attitude and approach of the users, and the expertise and knowledge of any maintenance staff within the school.

Should the risk assessment conclude that fluid category 4 is appropriate, then in such cases a RPZ (reduced pressure zone) valve may be fitted allowing the taps to be fed via the mains supplies. This RPZ valve requires yearly testing and a record of these tests are kept by the Water Regulations department. (Overdue tests are pursued and if required, enforcement action taken.)

In some cases a ‘DC’ pipe interrupter device may be fitted to a tap outlet to provide point of use protection to fluid category 5. These would only be permitted where there is a clear understanding by the users that they should not be removed or altered.
To ensure continued compliance, school laboratory installations are inspected via an ongoing cycle of visits, usually at intervals no longer than five years. These inspections will consider whether the existing risk assessment is still valid.

I hope this letter provides you with sufficient information, but please do not hesitate to contact me if any further clarification of our company policy is required.

Yours sincerely,

Peter Simpson
Andrew Miller, MP Chair  
Science and Technology Committee  
House of Commons  
London  
SW1P 3JA

26 November 2014

Dear Mr Miller

Re: Secondary School Laboratories / Water Regulations

Thank you for your letter, received on 7 November and I answer your query as follows.

Bristol Water carries out a site specific case by case risk assessment on every application/notification and notification of installation it receives under Regulation 5 of the Water Supply (Water Fittings) Regulations (WSWFR). This is in line with the WSWFR.

In general, plumbing systems associated with laboratories are regarded as presenting a high level of risk to human health and are assigned a fluid category (FC) of 5, in accordance with WSWFR. The WSWFR guide ‘determination of risk’ (page 6.4), gives examples of FC5 risks, listing laboratories, but not stipulating school laboratories. However, taking into account Health and Safety controls, which should be in place, laboratories within secondary schools can be considered less than a FC5. The make up of this risk assessment would take into account the following factors:

- Location/equipment/additional equipment/chemicals to be used/housekeeping/maintenance of equipment/school policies and procedures/location of laboratory tap and hoses in conjunction with other risks, such as laboratory sinks, fume cupboards, dissection etc.

Generally, we would categorise the water system supplying a laboratory within a secondary school as a FC4 risk and the minimum backflow protection required would be a mechanical, type BA device (Reduced Pressure Zone valve). This means that the laboratory taps can be mains water fed, removing the need for stored water i.e. storage cistern (tank) and pump.
The Standard Industrial Classification (SIC) codes link property types to FC risks within the WSWFR. Secondary schools are listed as a FC2 risk, however, we believe that this classification is not taking into account schools that have a laboratory.

I hope the information I have provided is helpful and I trust that I have explained the situation and answered your questions satisfactorily.

Yours sincerely,

[Signature]

Luis Garcia
Chief Executive
18 November 2014

Liz Barber, Director of Finance & Regulation
Yorkshire Water
PO Box 52
Bradford
BD3 7YD

Dear Ms Barber

Anti-Syphon Adapters

I have responsibility for Health and Safety at the College. During the summer the College has been made to install Anti-Syphon Adapters to all taps in two refurbished Science laboratories to reduce the risk of any contaminants feeding back into the main header-tank. However, this has had a direct knock-on effect on the Colleges’ ability to educate its students to the level required by the A Level curriculum. This issue is also affecting Lady Lumleys, a neighbouring secondary school which has had similar laboratory refurbishment. The adapters fitted prevent a number of vital experiments from being performed as, with the adapters fitted, the taps cannot provide the appropriate water flow/pressure for the practical experiments, nor can they be used for combustion and smoking demonstrations that are also required. They also prevent taps in labs from being used for eye wash irrigation, via rubber tubing which is the recommended method for dealing with chemical splashes in eyes.

There are 7 experiments as part of the AS/A2 qualifications that cannot be taught as a direct result of having the adapters fitted. Moreover, A2 Chemistry requires students to undertake an individual investigation and the adaptors are severely restricting the student’s choice in this area. Elements of the BTEC Science syllabus (Edexcel) require the students to carry out distillation and crystallisation practical experiments which similarly cannot be undertaken. This means our students cannot complete mandatory elements of the course. Therefore, the installation of these adaptors is having a direct, immediate, and negative consequence on the teachers’ ability to educate their students, and on the students’ ability to achieve the grades they deserve. Clearly, this situation is not tolerable.

After consulting guidance on the WRAS website I understand that:

**Backflow prevention B01 Risk assessment**

"In general, laboratories should be regarded as presenting the highest level of backflow risk (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk"
Steve Jones, Director, CLEAPSS, has indicated that his organisation will support the College with the risk assessment process with a view to the College being categorised as a “Category 4” risk, using the same approach that they recently used successfully in the Thames Water area.

Please, as a matter of urgency, can you review this situation and advise us of an appropriate action to enable the College to perform the necessary experiments required to fulfil the requirements of the curriculum, and one that will not subsequently be overturned on following further inspections.

Yours sincerely

[Signature]

Peter Shepherdson
Learning and Contracts Manager

cc: Keith Prythech, Headteacher, Caedmon College Whitby
    Richard Simpson, Chair of Governors, Caedmon College Whitby
    Richard Bramley, Headteacher, Lady Lumleys School
    Steve Jones, Director, CLEAPSS
    Richard Flint, Chief Executive, Yorkshire Water

The Rt Hon, Robert Goodwill, MP
The Rt Hon, Nicky Morgan MP, Secretary of State for Education
The Rt Hon, Andrew Miller, MP, Chair, House of Commons Science and Technology Select Committee
Andrew Miller MP  
Science and Technology Committee  
House of Commons  
London  
SW1P 3JA

24 November 2014

Dear Andrew Miller MP,

Re: Water Supply Regulations used for categorising Secondary Schools

Thank you for your letter which we received 6 November 2014 regarding the above.

Our Chief Executive is currently preparing a full written response to the points which you have raised in your correspondence. It is anticipated that this response will issue within the next 5 working days.

I hope you find this helpful.

Yours sincerely,

PATRICIA CONNOLLY
Customer Relations Centre

For enquiries, call us on 08458 770030
Andrew Miller MP
Science and Technology Committee
House of Commons
London
SW1P 3JA
Tel 0845 8770030
Date 24 November 2014

Re: Water Supply Regulations used for categorising Secondary Schools

Thank you for your letter dated 6 November 2014 regarding the above.

In response to the concerns raised I can advise effective enforcement of the water fittings regulations/byelaws requires a site specific risk assessment and categorisation of the risks associated of all water systems that make up a plumbing system within a premises.

There are five levels of risk, each reflecting the risk to human health, level 1 the lowest posing no risk level 5 the highest, a serious health hazard. The level of risk posed by a water system will determine whether backflow protection has to be provided. Backflow prevention devices or arrangements, which are recognised as meeting or exceeding the fluid category classification, will be required to offer users protection from any potential backflow of contamination for systems categorised as being fluid category 2 or higher.

The processes employed to determine the risk posed by a water system are the same for all premises. To facilitate compliance and support consistency of application NI Water, assisted by WRAS, have produced a number of technical interpretation and other advice. These are published on the WRAS website where they are free to access - https://www.wras.co.uk/consumers/resources/.

In line with the key objective of preventing contamination of drinking water supplies, identifying the level of risk posed is crucial in establishing backflow prevention requirements. This is achieved by ascertaining the manner in which water fittings or water using appliances are used or intended to be used and the nature of substances to which they may become exposed. What is paramount is ensuring that those within premises, as well as the wider community, are not placed at risk. It is the risk that defines protection requirements and not the cost.
Whilst generally many of the activities undertaken and substances used in laboratories are considered to be fluid category 5 risks, Northern Ireland Water has recognised that this is not always the case in respect of water systems in secondary school laboratories. This view is reflected in interpretation B01, which clarifies that following a risk assessment, water systems in secondary school laboratories may be categorised as being lower than a fluid category 5 risk.

Three layout diagrams were developed by the UK Water Industry in response to a request for assistance in identifying how plumbing systems in school laboratories could satisfy the requirements of water fittings regulations/byelaws. Please find copies of these enclosed for your convenience.

Please be aware that these diagrams have been developed for guidance purposes only, the details provided in all three diagrams demonstrate how compliance in respect of the legal requirements relating to backflow protection can be achieved and are not intended for use as designs for actual plumbing systems.

Please note, NI Water does not design plumbing systems. Our role is to assess and determine the level of risk posed by a plumbing system. We will offer guidance to enable compliance however it is the job of designers, installers or user to specify and install adequate backflow protection. The Regulators’ Specification for backflow prevention arrangements and devices identifies what can be accepted by water undertakers as offering backflow protection against specific risks.

Interpretation B41 recognises that there are limitations to the use of a Type DC device, one form of acceptable backflow protection, when attached to the outlet of a laboratory type tap. Similarly interpretation E06 recognises that a where a tundish arrangement meets the requirements for one of the backflow prevention arrangements or devices identified in the regulators specification it can be accepted as an equivalent to that device. These arrangements have been used in school laboratories to provide fluid category 5 backflow protection for a laboratory tap.

NI Water is aware that some schools report health and safety concerns from splashing from Type DC devices and accepted tundish arrangements. This concern has led to air gaps being deliberately blocked, an action that compromises the effectiveness of the device to prevent backflow of contaminated water into the drinking water supplies placing water users at risk.

These incidences serve to highlight the need for those responsible for water fittings and water safety in schools to understand their legal obligation in respect of water fittings regulations/byelaws including the potential risks and limitations associated with specific backflow prevention arrangements.

Should you have any further queries in relation to this, our Water Fittings Regulation manager, Michael McGreevy would be happy to discuss this with you. You can contact him via email Michael.McGreevy@niwater.com

I trust this information has been helpful.

Yours sincerely,

Sara Venning
Chief Executive

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19 November 2014

Mr A Miller MP, Chair
Science and Technology Committee
House of Commons
London
SW1P 3JA

Dear Mr Miller

Water Supply (Water Fittings) Regulations 1999 Schools

I am writing further to your letter dated 6 November 2014 regarding the above mentioned matter.

Portsmouth Water categorise school laboratories as a fluid category 5 risk. This risk categorisation is consistent with our policy for non-household industrial premises, whereby chemicals and biological waste may be present.

For fluid category 5 risks, Portsmouth Water require protective measures to be in place in the form of an interposed break cistern.

In the last eighteen months we have advised design consultants and inspected five school installations which have carried out installations in the manner we have prescribed.

I trust that the information is of some assistance to you. Please feel free to contact me if I can be of any further help.

Yours sincerely

[Signature]

R C PORTEOUS
Engineering Director
28 November 2014

Andrew Miller MP
Chair
Science and Technology Committee
House of Commons
LONDON
SW1P 3JA

Dear Mr Miller

School Laboratories

Thank you for your recent letter about the way in which school laboratories are categorised by water companies.

Requirements for plumbing systems within premises in Scotland are regulated in part through the application of the Water Supply (Water Fittings) (Scotland) Byelaws 2014 (Water Byelaws). The Water Byelaws set out the design, maintenance and operating standards required of plumbing systems in all types of premises to protect public health and safeguard supplies by preventing the contamination, waste, misuse, undue consumption and erroneous measurement of water supplied.

Technically similar to the Water Supply (Water Fittings) Regulations 1999 (WFR), the assessment of risk from backflow is guided by fluid category designations as found in Schedule 1 of both the Water Byelaws and WFR.

Set by UK Government, Schedule 1 details five fluid categories to be used in assessing the risk posed by backflow. The Water Byelaws then provide for the enforcement of appropriate measures of protection against each category using backflow prevention devices or arrangements meeting the “Regulators Specification”, with these specifications set by UK Government.

In Scotland, the categorising of Schools and the risk they may pose is assessed in the same manner as all other premises, through a site specific risk assessment. In carrying out our risk assessments for schools we utilise guidance found in:

- The outcomes of previous discussions with both the Consortium of Local Education Authorities for the Provision of Science Services (CLEAPSS) and the Scottish Schools Education Research Centre (SSERC).
- Information gathered through discussions with designers, installers and site operators.
- Experience/findings gained through previous inspections.

In carrying out our statutory duty to enforce the requirements of the Water Byelaws, we aim to take a proportionate approach to risk, mindful of the importance of maintaining the integrity of the public water supply, the role proper enforcement plays in protecting public
health and supporting the health and safety of all those who may consume water within premises.

I hope this is helpful but if you have any further questions please do not hesitate to contact our Public Affairs team who are always available to address any issues raised by your office. They can be contacted on 01383 848272.

Yours sincerely

Douglas Millican
Chief Executive
Dear Mr Miller MP

Thank you for your letter dated 6 November 2014, requesting details of our enforcement policy with regard to school laboratories.

I understand that you have also contacted WRAS who have provided you with their own response.

Attached is a copy of our Enforcement Policy that lays out the general principles we follow as part of our Statutory Duty to protect drinking water supplies.

I will assume you have some knowledge about fluid categorisation and the degree of risk they represent.

From the water company’s perspective, our primary concern is to ensure the water supply remains safe. Each installation is treated as unique and is individually risk assessed. With each risk assessment we make we aim to be fair, proportional, consistent and transparent.

As far as school laboratory sinks are concerned, the risk will be dependant in the individual circumstances. Factors will include the exposure to any contaminating material, the potency of that material, volume, any other backflow mitigation in place and the overall management of the facility.

As a starting point, sinks, under the Water Fittings Regulations are defined as category 5 receptacles, requiring level 5 protection (i.e. an air gap between the tap orifice and the water level thereby preventing any chance of backflow). This can normally be achieved by the gap between the end of a tap and the spill-over level of the sink. Sinks within laboratories may be considered higher risk due to the contaminating substances that may come into contact with the water. This could be through connection of hoses to taps or even submergence of taps, both of which will compromise the air gap protection. In these circumstances, if the risk is assessed as sufficiently high, a break cistern is normally required (i.e. where the air gap is provided via a break tank cistern). However, where the risks may be considered less serious, the category may be assessed as less than a 5 and so devices such as a “DC pipe interrupter” may be appropriate.

There may be specific laboratory equipment that will require an individual risk assessment, i.e. fume cupboards, washing, developing or x-ray machines.

I hope this has answered your question, but if you have any further queries please come back to me.

Yours faithfully

Roger Harrington
Managing Director

Switchboard: 01202 591111 Extn 2211
Direct Tel: 01202 597126
E-Mail: roger.harrington@sembcorp.com
Andrew Miller MP  
Chair  
Science and Technology Committee  
House of Commons  
LONDON  
SW1P 3JA

Severn Trent Water Limited  
Severn Trent Centre  
PO Box 5309  
Coventry  
CV3 9FH

Tel  024 7771 5814  
Fax  024 7771 5872  
www.severntrent.com  
www.stwater.co.uk

Dear Mr Miller

Thank you for your letter dated 6 November, I am pleased to comment as follows:

Severn Trent Water has a Water Fittings Regulations enforcement policy which sets out our commitment to undertake inspections at domestic and non-domestic properties. We do not have a policy which is specific to secondary school laboratories as we take into account all properties based on the level of risk under the following headings:

- **High Risk Premises**  
  Heavy Industrial, Commercial and Agricultural

- **Public Buildings**  
  Education, Medical, Sport Centres, Hostelries & Exhibition Halls

- **Private Water Supplies**  
  Water abstracted from an alternative source other than water provided by the water undertaker, i.e. Borehole, River and Spring

- **New Connections to the public water supply**  
  e.g. Domestic or Non-Domestic premises

We also undertake reactive inspections at premises where a potential risk to public health has been identified.

Our proactive inspection program is based on a selection of properties which are classed as being high risk and is linked to Standard Industrial Classification (SIC) codes where property types have been rated against the fluid categories within Schedule 1 of the Water Supply (Water Fittings) Regulations. Schools and Colleges do not have a specific SIC code so these are not scheduled into our proactive inspection procedures. We can confirm that when notified of any alterations, extensions or refurbishments to educational establishments, we will carry out a water fittings inspection to check against the possible risk of waste and contamination of the water supply.

All inspections are based on a dynamic risk assessment and are site specific and we will determine the appropriate protection required to safeguard the public water supply based
on how the water is being used and the likelihood of the water supply being contaminated. Areas such as science labs, kitchens etc. use equipment and chemicals which, under the right circumstances, have the potential to contaminate the drinking water supply.

All our Water Fittings Inspectors are fully qualified and will discuss with the site owner all findings from the inspection and will offer sound advice on the necessary safeguards to install to ensure compliance with the Regulations. A formal letter and contraventions report will follow shortly after confirming the required actions and agreed timescales.

With regards to guidance received from WRAS, we do not use any of the information provided to feed into our categorisation process as our process is simply based on the types of properties listed under the SIC codes. We do however, use the guidance from the Water Regulations Guide (second edition), which includes the Regulators specification for backflow prevention arrangements and devices and it is this which we base our risk assessments on.

I trust that this has answered your questions and will be of use, please feel free to contact our Water Fittings Regulations team if you require any further help or information.

Yours sincerely

Liv Garfield
Chief Executive
21 November 2014

Andrew Miller MP
Chair – Science and Technology Committee
House of Commons
London
SW1P 3JA

Dear Mr Miller

Secondary School Laboratory – water fittings

I thank you for your letter dated 6 November 2014 in which you have set out concerns over the way school laboratories are categorised for the protection of possible contamination of potable water supplies.

South East Water works closely with the Drinking Water Inspectorate, National, Regional and Local Authority environmental health bodies and the water Regulations Advisory Service to ensure we are compliant with the Water supply (Water fittings) Regulations and Byelaws.

In general all laboratories are categorised as fluid category 5 – the highest risk – and would require supply via a storage tank with a break in the supply via an air gap. However school laboratories are unlikely to be dealing with bacteria, chemicals or materials that would be considered as dangerous to those found in commercial laboratories and therefore a fluid category 4 would be considered suitable. This category requires that an anti-backflow device is fitted in line in the pipe supplying the laboratory to ensure that no backflow occurs.

South East Water inspects many commercial premises throughout the year to ensure that they are compliant with the regulations and we will ensure that school laboratories are included in this process going forward.

Yours sincerely

Paul Butler
Managing Director
Mr A. Miller  
Science and Technology Committee  
House of Commons  
London  
SW1P 3JA

Dear Mr Miller,  

24 November 2004


Further to your letter dated 6th November, South Staffordshire Water has two distinct operating regions; the South Staffordshire Region and the Cambridge Region. A single Company Policy for the enforcement of the Water Supply (Water Fittings) Regulations 1999 is published and adhered to.

With particular reference to your query above all inspections and enforcement are carried out in accordance with the WRAS Guidance as detailed below:

Water Supply Industry Interpretations and Advice

- **Area of Interest**: Backflow prevention
- **Topic**: Risk assessment
- **Title**: Laboratories - risk of contamination by backflow
- **Clause Reference**: Schedule 2 paragraph 15 & G15.3
- **Reference Number**: B01
- **Decision Date**: October 2000

The above document states “In general, laboratories should be regarded as presenting the highest level of backflow risk (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk.”

Therefore in both regions we would deem Secondary Schools laboratories a Fluid Category 4 risk. Back flow protection for this would be by means of type AF air gap arrangement or a BA device as a minimum with a DB or DC device fitted on the lab taps where a rubber hose can be fitted.

Due to the large number of Universities within our Cambridge Region we have reviewed these and can confirm that University labs would be deemed a Fluid Category 5 risk. The laboratory supplies have to be fed from a dedicated storage cistern incorporating a type AA or AB air gap arrangement.

I trust this response satisfies your request, however should you require any further clarification please do not hesitate to contact me on 0333 400 1451.
Yours sincerely,

[Signature]

Dr Andrew Lobley
Head of Water Quality and Compliance

On behalf of
South Staffordshire Water PLC
Andrew Miller MP, Chair
Science and Technology Committee
House of Commons
London
SW1P 3JA

26 November 2014

Dear Mr Miller

I am writing further to your letter dated 6th November concerning the categorisation of secondary school laboratories with regards to mitigating the risk of backflow in compliance with the Water Supply (Water Fittings) Regulations 1999 ("the Regulations"). This has been forwarded to me for reply as Mr Loughlin is currently away from the office.

As you will be aware "the Regulations" are government regulations which determine how plumbing systems are installed, used and maintained and were put in place, primarily, to protect public health. Under the Water Industry Act, the government has made water companies responsible for enforcing "the Regulations" with stringent penalties for failure to exercise this duty. Schedule 1 of the Regulations identifies the fluid categories, while the backflow prevention requirements linked to the fluid categories are determined in Schedule 2.

The categorisation of school laboratories is determined by a number of factors. They are initially considered to be a Fluid Category 5 risk as per Water Regulations Advisory Scheme (WRAS) guidance BO1. An assessment will then be undertaken to determine the actual risks presented. WRAS (Water Regulations Advisory Scheme) guidance B01 states the following:

*In general, laboratories should be regarded as presenting the highest level of backflow risk (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk.*

Further WRAS guidance B41 also provides additional guidance on the use of a type DC device backflow preventer and "air gaps to drain".

During an inspection of an established school, our regulations officer will typically consider WRAS and industry guidance, the impact and severity of a backflow incident, the activities and
working practices taking place or that are likely to take place, the presence of appliances and specialist equipment. For example, washing machines (equipment and protective clothing) fume cupboards, X-ray machines and autoclaves. The location of laboratory taps with the facility to connect a hose, the presence of hoses and how they are being used, the types of chemicals, housekeeping arrangements and documentary evidence of safe systems of work also need to be considered. This will help determine whether the risks are adequately mitigated and could justify permitting backflow protection at a less than Fluid Category 5.

In addition to the relevant level of backflow protection required at the point of use, it is possible that in conjunction with control measures, further backflow protection could be required in the form of zone and or whole-site backflow protection. This has the benefit of protecting public health by helping to reduce the number of people and areas affected by any potential backflow.

Where the water usage in a school laboratory is assessed as being less than Fluid Category 5 owing to reasons outlined above, the school’s representative is required to provide written confirmation and assurances of the activities undertaken in the laboratory, which will be recorded on the premises file.

For a new school the same assessment process is not always possible as the end user is usually not available. Regulation 5 requires prior notification of new plumbing installations and proposed alterations to existing systems although this only provides basic information on the plumbing system layout and proposed end use fittings. In these situations, where written guarantees, details of the laboratory and likely activities are not available, Fluid Risk Category 5 backflow protection is required to safeguard public health and the wholesome water supply throughout the premises.

I hope this brief explanation of our responsibilities and how we discharge them may help you prepare for your forthcoming committee meeting.

Yours sincerely

Dr Stephen Bird
Chief Operating Officer (Wholesale)
Andrew Miller MP  
Chair Science and Technology Committee  
House of Commons  
London  
SW1P 3JA

Dear Mr Miller

Water Fittings Regulation Enforcement in School Laboratories

Thank you for your letter of 6 November 2014 in which you raise the issue of the way in which school laboratories are classified under the Water Fittings Regulations.

As you are aware, water undertakers have the statutory duty to enforce the water fittings regulations/byelaws in their area of supply. Enforcement is guided by Defra and industry agreed guidance. This national policy document is called 'Keeping Water Safe in Premises: Water industry policy for the enforcement of the Water Supply (Water Fittings) Regulations and the Scottish Water Byelaws'.

The principles set out in this document apply equally to all premises which fall under the remit of the water fittings regulations /byelaws, which include schools. Following the publication of this document, we have developed our own enforcement policies.

Effective enforcement of the water fittings regulations/byelaws requires a site specific risk assessment and categorisation of the risks associated with all water systems that make up a plumbing system in premises. Currently there are five levels of risk, each reflecting the risk to human health; level 1 the lowest, posing no risk, with level 5 the highest, constituting a serious health hazard. Guidance on how to assess these risks has been developed for and with the industry to ensure there is a national, consistent approach.

The level of risk posed by a water system will determine whether backflow protection has to be provided. The processes employed to determine the risk posed by a water system are the same for all premises and are based on industry guidance.

Whilst generally many of the activities undertaken and substances used in laboratories are considered to be fluid category 5 risks, water undertakers have recognised that this is not always the case in respect of water systems in secondary school laboratories.
Therefore Southern Water, like many other water companies, classify secondary school laboratories as a fluid category risk 5 until a site risk assessment has been carried out. This assessment will therefore require an inspection of the school by one of our Water Fittings Inspectors. Following the inspection the risk may remain the same or it might be downgraded to a fluid category 4. Again, specific national guidance has been developed to assist in the categorisation of these risks in such circumstances. These guidance documents and policies can be found on the Water Regulation Advisory Scheme (WRAS) website.

I hope that this has answered your question, but please do not hesitate to contact me if you require any further information.

Yours sincerely

Matthew Wright
Chief Executive Officer
Dear Mr Miller,

Water Fittings Regulations 1999 – Secondary school laboratories

Thank you for your letter of 6th November 2014 to Mr Phillips-Davies. I have been asked to respond on behalf of SSE Water. I will provide some information about SSE Water and then respond in the order of your letter.

SSE Water has been licensed as a water and sewerage company since 2007. To date, we have not had to grant consent under the Regulation 5 notification/consent process for a secondary school with a laboratory. However, we are aware that secondary schools are planned within a small number of our licensed areas.

Our approach will be to consider a secondary school laboratory as a Fluid Category 5 (FC5) risk. SSE Water will categorise each secondary school individually under the Water Fittings Regulations to allow for variation between schools. However, secondary schools with a laboratory will in effect be categorised as one class of risk.

For schools to comply with the backflow prevention requirements of the Regulations our preference will be for the installation of a dedicated cistern with a permanent air gap (Type A protection). Such an installation could provide ‘zonal’ protection for the Science block, or it may be more appropriate for smaller units to be installed within each laboratory. Water from the dedicated cistern(s) to the laboratory taps could be pumped to ensure adequate pressure and flow for all downstream uses. We will require laboratory taps – swan neck or pillar taps – to be installed, and will recommend that point-of-use (Type DC) protection is incorporated or installed on each tap.

If our preferred approach was not acceptable, we would be willing to discuss an alternative installation that included a Reduced Pressure Zone valve (RPZ valve) (Type BA device for FC4) for the zonal protection, and for Type DC point-of-use protection on each laboratory tap. In this situation we would require a signed agreement with a responsible person within the school to ensure that the conditions specified in the Water Supply Industry interpretations and advice note (B41) are adhered to. This advice note is reproduced as Appendix 1.

In either of the above situations we will not require ‘whole site’ protection.
We will require a stop tap to be fitted within each laboratory room to ensure the water can be isolated in an emergency. If dedicated, plumbed-in eye washes are required these must be provided directly from the mains water supply and not via a dedicated cistern. Any additional equipment that might require backflow protection should be highlighted through the Regulation 5 notification process and we will deal with such items on a case-by-case basis.

The SSE Water approach – FC5 for a secondary school laboratory – derives from the Water Fittings Guide which lists laboratory, albeit under medical, industrial and commercial headings, within Table G6.1e. There is no specific mention of school laboratories elsewhere in the Guide.

Our preferred installation – a Type A dedicated cistern - helps maintain consistency with the DETR Guidance note G15.5 which states that “wherever practicable systems should be protected against backflow without the necessity to rely on mechanical backflow prevention devices.” The use of a Type BA mechanical device for zonal protection (i.e RPZ valve) comes with additional ongoing maintenance requirements for the owner / occupier and additional administration for the water company. Where possible, we would seek to avoid this.

We are aware of the Water Supply Industry interpretation and advice (ref B01, October 2000) which is reproduced as Appendix 2. This advice does provide the water companies with some flexibility. However, as we are responsible for enforcing the Water Fittings Regulations at the time of installation and as an ongoing requirement, we believe that the installation of a Type A backflow prevention device in a school laboratory provides greater assurance of ongoing compliance. Water companies have limited ability to be fully assured of the implementation of the health and safety restrictions referred to in advice note B01, and as a result we believe it is prudent to maintain our preferred approach wherever possible.

I hope that this answers sufficiently the questions in your letter but if you need any further information, please come back to me in the first instance.

Yours faithfully

Anthony Giblin  MSc, DIC
Water Quality Manager
SSE Water

Cc: Dr Stephen McGinness, Clerk of the Science and Technology Committee (mcginness@parliament.uk)
cc Aileen Boyd, SSE, Regulation team;
cc Kevin Bennett, General Manager – Water;
cc John Gibson, SSE Water Operations Manager.
Appendix 1 - Water Supply Industry Interpretations and advice (ref B41).
Decision date May 2010, revised March 2014).

Type DC arrangements installed on laboratory taps are a permitted means of point-of use fluid category 5 backflow protection in all laboratories.

Users of such arrangements must be aware that the acceptability of such arrangements is dependent upon the outlet, including the outlet of any hose attached:

1. remaining unrestricted which would mean that it could not be attached to any apparatus that would create a back pressure;
2. discharging at least 150mm below the air vents of the DC device, ruling out raising the hose outlet above this point; and
3. the spillover level of the any receiving vessel is at least 150mm below the air vents

Only arrangements which satisfy these requirements will be accepted. Where such arrangements are identified as being used inappropriately, the Water Supplier can require an alternative means of backflow protection at the point of use in those premises.

Where the consequence of a backflow incident would be especially serious because of the nature of the substances handled in specific laboratories, a risk assessment should be made to decide whether zone or whole-site protection is required in addition to the point of use protection.

Appendix 2 - Water Supply Industry Interpretations and advice (ref B01)
Decision date – October 2000.
In general, laboratories should be regarded as presenting the highest level of backflow risk (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk.
Dear Mr Miller

Categorisation of School Laboratories

Thank you for your letter of 6 November 2014 regarding the way in which school laboratories are categorised by water companies.

We have seen the letter from WRAS to you dated 19 November 2014 and fully support the statements set out in their response. Our policy is to use WRAS guidance and feedback from the WRAS Technical Support Groups, of which we are a member, to achieve consistent enforcement across the industry as far as is practicable.

Please note we assess each school laboratory individually based on the risk level of the activities undertaken within it, including whether the laboratory is used for A-Level work which is likely to include chemicals and biological material of a higher risk level.

If you would like any further information please do not hesitate to let me know.

Yours sincerely

[Signature]

Anthony Ferrar
Managing Director
Thursday 27 November 2014

Dear Mr Miller

Further to your enquiry about the risks posed by school laboratories to human water supply, I can confirm that we follow strict regulations set out in the Water Supply (water fittings) Regulations 1999.

Specifically, we work to Government guidance [1], requiring us to make an initial assessment of such laboratories as a fluid category five risk. For context, the legislation designates a category five risk as the highest possible – reserved for those substances ‘representing a serious health hazard because of the concentration of pathogenic organisms, radioactive or very toxic substances’. [2]

Beyond the legislation, we also support and adopt the stance established by the Water Regulation Advisory Scheme Technical Committee. Their additional guidance states:

‘In general, laboratories should be regarded as presenting the highest level of backflow risks (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk.’ [3]

It is clear that the separation and protection of the domestic plumbing system from the potential contaminants emanating from school laboratories is a priority for the protection of both students and staff.

This is why, in most cases, designers and installers of internal water systems will assess the risk themselves as a fluid category five risk, and so supply water to laboratories with a dedicated break tank containing an air gap – thus eliminating the risk of contamination.

However, due to the complexity and variety of installations, some designers and installers may wish to use different isolation methods – such as zonal and point of use backflow protection. This can also be acceptable under the regulations where prior notification (under regulation 5) to water suppliers is sought and given.
When we receive a valid notification from an installer, a risk assessment can normally be carried out and consent or rejection of the proposed plumbing works given in relatively short order. In cases where a rejection is given to the proposed plumbing works, we would always work with the designers and installers on how they can adjust their plans to meet or requirements and the regulations.

It has been our experience that the vast majority of issues that come up relating to the compliance of laboratories are normally where notification has not been submitted to us at all, or where prior advice has not been sought from us prior to designing the system.

As a minimum, the information required to aid us in risk assessing and, potentially, downgrading a laboratory from the initial category five risk would include the following:-

- Information on the chemicals used (normally the safety data materials sheets produced under the HSE’s Control of Substances Hazardous to Health criteria)
- Information on the types/frequency of experiments and equipment/appliances used
- The risk assessments/operating manuals produced by the school and other supporting documentation/guidance

As an example of the risk assessed approach taken by Thames Water, we have been working with a school in North London and the Consortium of Local Education Authorities for the Provision of Science Equipment (CLEAPSE) on the risk assessment of laboratories which has provided sufficient evidence for us, notwithstanding adequate backflow protection being provided at the sinks, to downgrade the laboratories at this site to a fluid category four risk.

We recognise and embrace the need to be as flexible as possible in dealing with these risk assessments, but balance this against our absolute responsibility to protect human health. We have worked with CLEAPSE and WRAS to suggest the development of national guidance in this area.

In so doing, they will support a level playing field across all water industry supply areas, whilst also ensuring the minimum standards for the protection of human health are met.
I hope this response fully answers your questions. If you have any further questions, please ask a member of your team to contact Joseph Boysen in our Customer Resolution team on 0800 0093965. Our offices are open between the hours of 9am and 5pm, Monday to Friday.

Yours sincerely

[Signature]

Martin Baggs
Chief Executive Officer

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1 Table G6.1e within official guidance accompanying the Water Supply (water fittings) Regulations 1999
3 Water Regulations Advisory Scheme: Water Supply Industry Interpretations and Advice, Schedule 2 paragraph 15 & G15.3, reference number B01, October 2000
Dear Mr Miller,

**United Utilities - Water Fittings Regulation Enforcement**

Thank you for your letter dated 6 November regarding information for your forthcoming Science and Technology Committee meeting.

In response to your question regarding backflow requirements for school laboratories, United Utilities adopts a risk based approach to all of its inspections relating to the enforcement of the Water Supply (Water Fittings) Regulations 1999. This same risk based approach is also applied to school laboratories.

The water fittings regulations set out the legal requirements applicable to the design and installation of plumbing systems in premises that receive water supplied by a water undertaker. Compliance with these requirements play an essential role in preventing contamination of the public drinking water supplies, thereby protecting public health, safeguarding water supplies, and promoting the efficient use of water within customers’ premises.

Water undertakers have a statutory duty to enforce the water fittings regulations in their area of supply, enforcement being guided by Defra and industry agreed guidance.

United Utilities has published its Enforcement Policy and Code of Practice, both of which are available via our website. For ease of reference, please find enclosed copies of same.

Effective enforcement of the water fittings regulations requires a site specific risk assessment and categorisation of the risks associated of all water systems that make up a plumbing system in a premises.
There are five levels of risk, each reflecting the risk to human health, level 1 the lowest, posing no risk to level 5 the highest, a serious health hazard. Level 1 requires no backflow protection and level 5 requires the highest backflow protection.

School laboratories can be between level 3 up to level 5. United Utilities determines the risk on many factors. Close liaison with Local Education Authorities (LEA), architects, consultants and builders help determine the level of risk. The level of risk is dependent on the age group and curriculum and whether the student will carry out dissection or use chemicals in the laboratory.

United Utilities has worked closely with the development of the new Academy schools. Dependent on the type of use, we have rated laboratories level 3 through to 5. Other factors are taken into consideration by the LEA as some backflow protection devices may cause other health and safety risks to the students. DC devices offer level 5 protection but, used incorrectly, can result in water being spilt on floors and work surfaces causing other health and safety issues.

Further advice and guidance documents are available on the Water Regulations Advisory Scheme (WRAS) website: https://www.wras.co.uk/consumers/resources/

I hope you find the above information helpful and, should you require any further assistance, please do not hesitate to contact me.

Yours sincerely

Steve Mogford
Chief Executive
Water Fittings Regulations 1999
Code of practice

Introduction
The Water Supply (Water Fittings) Regulations 1999 (SI 1148, amendment SI 1506) exist to prevent waste, misuse, undue consumption, contamination and erroneous measurement of water. As the water undertaker for your area, paragraph 10 of the Regulations places United Utilities under a specific duty to enforce the Regulations, and paragraph 9 gives United Utilities the power to carry out inspections on premises.

This Code of Practice tells you how we will enforce these Regulations.

Principles of enforcement
Enforcement is necessary to protect water supplied from a supplier to the point of use from risks of waste, misuse, undue consumption, contamination and erroneous measurement of water. United Utilities will carry out enforcement activities in a consistent, fair, practical and cost effective manner that helps sustain a safe environment.

United Utilities expect that its customers will want to comply with the Regulations and we will work with them to promote and encourage best practice. To fulfil our responsibilities, United Utilities will take firm action, including prosecution, against those who consistently or deliberately refuse to comply with the Regulations, and by doing so put the public health at risk and endanger supplies.

Proactive enforcement will include provision of information literature, inspection of premises and handling telephone enquiries. In normal circumstances, these services are free of charge. We welcome the opportunity to comment on the technical design of water installations and fittings.

Where we are notified of a water fittings risk, we will employ a reactive enforcement process as appropriate.

United Utilities supports the development of national and European standards and the testing of water fittings and materials for conformity with these standards. We will make this information available to our customers to raise awareness of best practice.

Openness
United Utilities will produce information in plain English and make it easily available.

We will consult recognised interest groups about how we enforce the Regulations, including charges that we will make.

Our aim will always be to help those with problems so that they can be resolved in a mutually beneficial and confidential manner.

United Utilities supports the Water Regulations Advisory Scheme (WRAS) which co-ordinates the uniform interpretation and application of the legislation. WRAS's constitution requires it to liaise with architects, designers, manufacturers, factors, installers, individual users and other interested groups, and to provide them and water suppliers with advice and technical support.

Standards
The detailed standards for water fittings and installations are fully explained in the WRAS Water Regulations Guide. This provides detailed technical and practical explanations.

Working with our customers
Prevention is better than cure. We will work with customers and their representatives to help them achieve best practice and compliance. For property development and re-development, we welcome the opportunity to comment on plans for water services. This early liaison is beneficial to all parties.

Complaints about service
United Utilities aims to work with customers to ensure that the Regulations are applied consistently. If customers dispute our interpretation of the Regulations they can draw on the expertise of WRAS.

Designers, manufacturers, factors, installers and individuals can also access the expertise of WRAS.

Disputes
If you have a dispute with your installer, United Utilities can provide advice on matters of compliance with the Regulations; we will not become involved in contractual matters between installers and building owners.

For certain disputes between a customer and United Utilities, there is an arbitration procedure that is set out in Regulation 13 of the Water Supply (Water Fittings Regulations 1999). This will apply if a customer believes we have imposed unreasonable conditions following notification of proposed work, or if consent for the work to proceed has been withheld. It also covers disputes where we have unreasonably refused to apply for a relaxation of the Regulations from the Government.

Fairness
Everyone benefits from a water system installed in accordance with the legislation because this ensures that water quality is safeguarded; water conservation is equally advantageous.

United Utilities will ensure that all enforcement action is proportionate to the nature of the assessed risk. As far as the law allows, account will be taken of the circumstances of each case.

Prevention of contamination of water arising from backflow and other causes will be given the highest priority, because this can affect the water supply to many customers.

The detail of the technical requirements for protection of backflow can be complex and WRAS produces a...
range of advice leaflets for specific user groups e.g.,
agriculture, dentists. They provide guidance on the
best ways to avoid contamination of water supplies in
specific situations.

United Utilities will continue to pay attention to the
needs of high-risk groups by working with WRAS to
extend the range of literature.

Consistency

United Utilities will take a consistent approach towards
enforcement so that procedures are applied fairly.
All Regulations enforcement staff will be trained to an
acceptable level, and be certificated as such.
Training will be delivered by recognised organisations
providing courses, which include the appropriate
material.

Procedures

The following activities are in place to ensure a uniform
approach to the administration and enforcement of the
legislation throughout the UK.

- Education and awareness

To raise awareness and inform designers,
manufacturers, installers and users of water
systems, United Utilities will make site visits when
necessary and provide information literature.
Where appropriate, presentations will be made to
special interest groups and access will be given to a
local or national telephone advice service.
Through United Utilities and WRAS, installer
bodies, manufacturers and retail chain outlets will
be kept up-to-date on compliance matters.

- Administration

Under the Water Industry Act 1991 Section 73 and
74, United Utilities’ customers are responsible for
ensuring that all apparatus is maintained to operate
efficiently. As a condition of receiving a supply,
approved devices to prevent backflow must be
installed.

For the most serious risk categories, and as a
condition of receiving a supply, approved devices
to prevent backflow must be tested and inspected
regularly. Records of tests and of plumbing system
configuration and alterations must be notified to
United Utilities; records must be kept on
customers’ premises.

United Utilities will consider all Notices of Intended
Work, and may need to carry out an inspection. We
may also request additional information to enable
the proposed works to be assessed for compliance
with the Regulations.

Where an installer is a member of the WaterSafe
scheme, the installer will provide the customer and
United Utilities with a certificate of compliance
with the legislation.

• Inspections

United Utilities will carry out three types of
inspections: Planned, Reactive, Audit.

(i) Planned

These compliance inspections will be scheduled
to United Utilities’ Regulatory Enforcement
Officers via a central team. Inspections are
directed at those new and existing commercial,
agricultural, industrial and domestic premises
where there is a high risk of contamination of
the water supplies. The Standard Identification
Codes (SIC) will be used to identify premises
with a high risk.

We will write to owners and occupiers in
advance of an inspection to explain the risk of
contamination of water supplies, and to make
an appointment for a site inspection.

Sample planned inspections of domestic
properties where members of the WaterSafe
scheme will be carried out on receipt of
a contractors certificate. Those housing
developers not registered with the scheme will
require full compliance inspections.

There will be planned inspections of water use
to detect misuse and leaks.

(ii) Reactive

Inspections will be carried out in response to
customer requests or following other contacts
which make an investigation necessary e.g.,
failure of a water quality test.

Reports of water leaks, discharges or overflows
may also lead to inspections.

Customer contacts about taste, odour,
discoloration or persistent poor pressure can
indicate inappropriate plumbing arrangements
and an inspection may be necessary to identify
the cause.

(iii) Audit

Audit inspections will ensure continued
compliance with our standards for members
of the WaterSafe scheme. The audit of these
members will be carried out by United Utilities’
Enforcement Officers to ensure that our
standards are maintained.

• Enforcement

Whilst United Utilities will normally attempt to
resolve issues by agreement, it will sometimes be
necessary to take immediate appropriate action
in order to fulfil our legal obligations, and in the
interests of public health or safety.

This includes disconnecting the supply and
confiscating apparatus. Where this is necessary, a
written explanation will be provided.
Policy on enforcement of Water Fittings Regulations 1999

1. Introduction
This document forms part of the United Utilities (UU) Water Supply (Water Fittings) Regulations Quality Assurance (WFRQA) System. The objective of this document is to set out United Utilities’ policy with regard to Water Supply (Water Fittings) Regulations 1999, hereafter referred to as the WFR.

The WFR have been created to prevent waste, misuse, undue consumption, contamination and the erroneous measurement of water supplied by an Undertaker.

United Utilities is required to enforce the WFR in furtherance of the objectives of the prevention of waste, misuse, undue consumption, contamination and erroneous measurement of water.

2. Organisational Arrangements
(a) Policy and strategy
- United Utilities WFR Policy and Strategy is the responsibility of the Director - Water Services
- The Water Quality and Public Health Department is tasked to manage policy and strategy issues on behalf of the Director - Water Services
- The Compliance Manager - Policies & Procedures, supports the process

(b) Enforcement
- The enforcement of the WFR is the responsibility of the Network Business Manager - Water
- The Water Regulations Manager is responsible for enforcing the WFR in UU’s area of supply on behalf of the Area Delivery Manager
- Regulatory Enforcement Officers (REOs) report directly to a Water Regulations Manager. The REO is employed full time on WFR enforcement
- Network Customer Inspectors (NCIs) report directly to a Service Delivery Manager who reports to the Area Delivery Manager (ADM). The NCIs are employed part-time on WFR enforcement
- In Network Connections, Project Technicians are responsible for ensuring that proposed development plans are submitted

(c) Quality systems
- In order to provide an integrated and consistent approach to WFR across the region and across functions, a Quality Assurance (QA) system has been established to map all of the processes and procedures linked to WFR. This document forms part of that QA system.

3. Suitability of pipes and fittings
Any fitting that is used in the construction of a water supply or is connected to a water supply must be:
- approved by the DWI under Regulation 31 to come into contact with water; and
- tested and approved for the purpose for which it is proposed (‘fit for purpose’).

A product will be deemed fit for purpose if it is listed in the Water Regulations Advisory Scheme (WRAS) Water Fittings and Materials Directory, British or European standard or with an appropriate BS, EN or CE mark.

4. Relaxations
If there is a demand for a product that does not comply with the WFR, United Utilities can apply to the Department of the Environment, Food and Rural Affairs (DEFRA) for a relaxation of the WFR to allow that product to be installed. United Utilities will consider the following before a relaxation is applied for:
- the risk of waste, misuse, undue consumption or contamination;
- the application of the product;
- any provisions required to minimise risk; and
- experience of the product in other areas of the country.

5. Enforcement
(a) General
Enforcement policy is based on focusing resources on the highest risk first. Principally therefore enforcement resources are focused on the inspection of industrial, commercial and agricultural premises. The relevant aspects of enforcement are outlined below.

(b) Commercial premises
There are a large number of Fluid Category 5 & 4 premises within the United Utilities area. Fluid Categories 5 & 4 represent the highest risk of contamination to water supplies.

All new premises will be inspected for compliance. Existing premises will be inspected on an estimated ‘worst first’ basis. All existing Fluid Category 5 & 4 premises will be inspected or audited every five years.

Water Fittings Section/REOs will produce leaflets on common problems and hold regular seminars for maintenance staff, engineers, architects etc.

If, after the inspection of a property, the remedial work is particularly extensive, costly, or likely to take a long time, the WFS/REO may require the owner of the premises to install temporary backflow protection while the agreed remedial programme is completed. In these circumstances the usual form of protection is a Reduced Pressure Zone (RPZ) valve but lower protection may be acceptable in some cases.

(c) Domestic premises
REOs are responsible for ensuring compliance in new single occupancy and non-approved contractors’ properties. Properties accepted onto the lead and common supply pipe replacement scheme will be inspected by NCIs.

Building developers who use approved contractors may submit contractors’ certificates to release the property for connection. Under the terms of the scheme, the REO will only carry out audit inspections as required by the scheme.
Connections will not be made to new individual properties until the requirements of the WFR are met.

(d) Standpipe hire scheme

A standpipe hire scheme has been in operation since 2007. All standpipes must be fitted with backflow protection and a meter to register the amount of water used by each standpipe. Only United Utilities' standpipes can be used on the UU network. All standpipes are powder coated in UU corporate colour so as to be readily recognised as a UU standpipe. United Utilities’ field staff can easily identify illegally used standpipes. Offenders are given a written warning, which is recorded. Procedures to deal with persistent non-compliance by offenders are in place.

(e) Compliance at United Utilities’ sites

It is company policy to inspect or audit our own operational assets for compliance on a five yearly cycle. This includes water treatment works and wastewater treatment works.

(f) Private leakage

Since 2006, United Utilities has operated a private leak repair policy. The policy allows for a private leak repair to be carried out if the leak is found to be on the portion of the supply pipe between the boundary of the property and the boundary of the building. This policy applies only to domestic customers.

(g) Education policy

In order to improve awareness of the WFR across the region, a number of local and national information and guidance notes are distributed to customers. In addition, the Water Fittings Section and the REOs actively promote and deliver technical seminars on WFR.

(h) Prosecution policy

United Utilities’ policy is to work positively with customers to resolve problems by raising awareness of WFR. Customers are encouraged to seek any advice they need on WFR matters from United Utilities.

In most cases, it is possible to agree with owners of non-compliant premises a realistic programme of works to rectify WFR infringements. If the risk is great enough, temporary backflow protection can be installed at the boundary of the site while the works are carried out. Legal action is only considered as a last resort if these measures are not successful in reaching an agreement.

Inspection charges policy detail

The Water Supply (Water Fittings) Regulations 1999 (SI 1148, amendment SI 1506) exist to prevent waste, misuse, undue consumption, contamination and erroneous measurement of water. Paragraph 10 of the Regulations places United Utilities under a specific duty to enforce the regulations, and Paragraph 9 gives United Utilities the power to carry out inspections on premises.

If items of non-compliance are identified during the inspection, United Utilities has a duty to notify the customer of non-compliance. A Schedule of Contraventions is produced for the customer, together with a timescale to rectify these items. The Water Fittings Section (WFS) pre-programme a date for the inspector to contact the customer to arrange a re-inspection. If, after this re-inspection any of the items identified are found not to be in accordance with the Water Regulations and a further inspection is required, a charge will be applied (minimum charge of one hour) for that and each additional visit. A charge will also be made for any abortive inspection visits in line with the Policy.

United Utilities has submitted to OFWAT the pricing structures through their published charges and tariffs.

It is important to stress that this scheme is not a charge for inspections, it is a charge for the time spent by the inspector for visits, which are in addition to those classed as regulatory.

These charges apply in all instances:

- Where an arranged visit has been cancelled by the customer on arrival of the inspector
- Where any Developer, who calls out an inspector to inspect a service pipe/trench inspection and on arrival the inspector finds there are no trench or pipes to inspect
- Re-inspection(s) of service pipes, when the first inspection results in a fail
- Re-inspection(s) of commercial/agricultural premises, which have failed to complete remedial works, identified during the initial visit
- On site advice to the customer, where the customer has arranged for this facility

Note: this does not include telephone advice by WFS/REOs.

Policy Reference No: WD/P/001/2 Date: 25th April 2014

About us

United Utilities is the North West’s water company. We keep the taps flowing and toilets flushing for seven million customers every day. From Crewe to Carlisle, we work hard behind the scenes to help you live life flow smoothly.

United Utilities WATeR Ltd, Headwater House, Longley House Business Park, Longley Brook Avenue, Warrington WA5 8AQ
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Andrew Miller MP,  
Chair Science and Technology Committee,  
House of Commons  
London  
SW1P 3JA

19th November 2014

Dear Andrew

Water Fittings Regulation Enforcement in School Laboratories

Thank you for your letter of 6 November 2014.

The Water Regulations Advisory Scheme Limited (WRAS) represents and supports UK water suppliers on all matters relating to The Water Supply (Water Fittings) Regulations and Byelaws. Our purpose is to help to protect public health and encourage water efficiency by promoting compliance with these regulations. We do this through:

- Raising awareness and understanding of both the requirements of the water fittings regulations/byelaws and the role they play in safeguarding drinking water supplies
- Administering approvals schemes, processes and guidance
- Providing support and representation for Water Companies

The water fittings regulations/byelaws set out the legal requirements applicable to the design and installation of plumbing systems in premises that receive water supplied by a water undertaker. Compliance with these requirements play an essential role in preventing contamination of the public drinking water supplies, thereby protecting public health; safeguarding water supplies; and promoting the efficient use of water within customers' premises.

As you are aware water undertakers have the statutory duty to enforce the water fittings regulations/byelaws in their area of supply. Enforcement being guided by Defra and industry agreed guidance.

WRAS has no direct involvement in the enforcement of the water fittings regulations/byelaws; its role is solely to facilitate and support consistent enforcement.

Enforcement Policies

In this capacity WRAS and Water UK have facilitated the development of the national policy document ‘Keeping Water Safe in Premises: Water industry policy for the enforcement of the Water Supply (Water Fittings) Regulations and the Scottish Water Byelaws’. A copy of this policy is attached to this letter for your information.

The principles set out in this document apply equally to all premises which fall under the remit of the water fittings regulations/byelaws, which include schools. As part of the development of this policy document, water undertakers have committed to developing their own enforcement policies and making them publically available.
WRAS guidance relating to risk assessment

Effective enforcement of the water fittings regulations/byelaws requires a site specific risk assessment and categorisation of the risks associated of all water systems that make up a plumbing system in premises. There are five levels of risk, each reflecting the risk to human health, level 1 the lowest posing no risk with level 5 the highest, a serious health hazard. The level of risk posed by a water system will determine whether backflow protection has to be provided. Backflow prevention devices or arrangements, which are recognised by the regulations as meeting or exceeding the fluid category classification, will be required to offer users protection from any potential backflow of contamination for systems categorised as being fluid category 2 or higher.

The processes employed to determine the risk posed by a water system are the same for all premises. To facilitate compliance and support consistency of application water undertakers, assisted by WRAS, have produced a number of technical interpretations and other advice. These are published on the WRAS website where they are free to access - https://www.wras.co.uk/consumers/resources/.

There are two particular interpretations which relate to secondary school laboratories, for ease of reference these are attached to this letter.

Secondary School laboratories

In line with the key objective of preventing contamination of drinking water supplies, identifying the level of risk posed is crucial in establishing backflow prevention requirements. This is achieved by ascertaining the manner in which water fittings or water using appliances are used or intended to be used and the nature of substances to which they may become exposed. What is paramount is ensuring that those within premises, as well as the wider community, are not placed at risk. It is the risk that defines protection requirements and not the cost.

Whilst generally many of the activities undertaken and substances used in laboratories are considered to be fluid category 5 risks, water undertakers have recognised that this is not always the case in respect of water systems in secondary school laboratories. This view is reflected in interpretation B01, which clarifies that following a risk assessment, water systems in secondary school laboratories may be categorised as being lower than a fluid category 5 risk.

Three layout diagrams were developed by the UK Water Industry in response to a request for assistance in identifying how plumbing systems in school laboratories could satisfy the requirements of water fittings regulations/byelaws. Copies of these layouts are attached to this letter.

Please be aware that these diagrams have been developed for guidance purposes only, the details provided in all three diagrams demonstrate how compliance in respect of the legal requirements relating to backflow protection can be achieved and are not intended for use as designs for actual plumbing systems.

Appropriate protection devices or arrangements

Water undertakers do not design plumbing systems, their role is to assess and determine the level of risk posed by a plumbing system. Although water undertakers will offer guidance to enable compliance it is the job of designers, installers or the user to specify and install adequate backflow protection. The Regulators’ Specification for backflow prevention arrangements and devices identifies what can be accepted by water undertakers as offering backflow protection against specific risks.
One form of acceptable backflow protection for laboratory taps is a Type DC device attached to the tap outlet. However, there are limitations to the type of backflow protection provided by a Type DC device and restriction to the manner of installation. Guidance to the installation requirements and acceptability of these devices is provided in interpretation B41. Similarly, interpretation E06 recognises that where a tundish arrangement meets the requirements for one of the backflow prevention arrangements or devices identified in the Regulators Specification, it can be accepted as an equivalent to that device. These arrangements have been used in school laboratories to provide fluid category 5 backflow protection for a laboratory tap.

Water undertakers are aware that some schools report health and safety concerns from splashing from Type DC devices or accepted equivalent tundish arrangements. This concern has led to air gaps being deliberately blocked, an action that compromises the effectiveness of the device to prevent backflow of contaminated water into the drinking water supplies placing water users at risk. Attached to this letter are photographs, illustrating the splashing that can occur from use of a Type DC device and a compromised tundish arrangement.

These incidences serve to highlight the need for those responsible for water fittings and water safety in schools to understand their legal obligation in respect of water fittings regulations/byelaws including the potential risks and limitations associated with specific backflow prevention arrangements.

Please do not hesitate to contact me, if you would like to explore any of the points further or if WRAS can provide any assistance.

Yours sincerely,

J. Spinks
Managing Director
Interpretations published on the WRAS website

**Backflow prevention B01**

**Topic:** Risk assessment  
**Title:** Laboratories - risk of contamination by backflow  
**Clause Reference:** Schedule 2 paragraph 15 & G15.3  
**Decision Date:** October 2000

In general, laboratories should be regarded as presenting the highest level of backflow risk (Fluid Category 5) unless, following a risk assessment, there is evidence to the contrary. However, arising from Health and Safety restrictions which should be in place, the laboratories of secondary schools can be considered less than a Category 5 risk.

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**Backflow prevention B41**

**Topic:** Type DC  
**Title:** Use of Type DC arrangements in laboratories  
**Clause Reference:** Regulation 4 (6) (c)  
**Decision Date:** May 2010 (revised March 2014)

Type DC arrangements installed on laboratory taps are a permitted means of point-of-use fluid category 5 backflow protection in all laboratories. Users of such arrangements must be aware that the acceptability of such arrangements is dependent upon the outlet, including the outlet of any hose attached:-

1. remaining unrestricted which would mean that it could not be attached to any apparatus that would create a back pressure;
2. discharging at least 150mm below the air vents of the DC device, ruling out raising the hose outlet above this point; and
3. the spillover level of the any receiving vessel is at least 150mm below the air vents

Only arrangements which satisfy these requirements will be accepted. Where such arrangements are identified as being used inappropriately, the Water Supplier can require an alternative means of backflow protection at the point of use in those premises. Where the consequence of a backflow incident would be especially serious because of the nature of the substances handled in specific laboratories, a risk assessment should be made to decide whether zone or whole-site protection is required in addition to the point of use protection.

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**Enforcement E06**

**Area of Interest:** Enforcement  
**Topic:** Backflow protection  
**Title:** Acceptability of a tundish as backflow protection  
**Clause Reference:** Regulation 4 & Schedule 2 paragraph 15  
**Reference Number:** E06  
**Decision Date:** March 2014

The only specification approved by the Regulator for the purposes of Schedule 2 Paragraph 15 (5) of the Water Supply (Water Fittings) Regulations, Byelaws in Scotland, is that identified in section 6.3 of the Defra Guidance to the Water Supply (Water Fittings) Regulations. For further information on the Regulators’ Specification for backflow prevention arrangements and devices please refer to interpretation E03. A tundish is not listed or defined as a backflow prevention device in the Regulators’ Specification for backflow prevention arrangements and devices. Therefore unless a tundish arrangement meets the requirements for one of the backflow prevention devices identified in this specification it will not be accepted as a backflow protection device.
Laboratory taps fitted with backflow prevention devices

water leaking from air vents on type DC backflow prevention device

backflow prevention compromised on a tundish arrangement
Typical Laboratory & Domestic Hot & Cold Water Layout

EEW - The choice location and number of single check valves or double check valves at emergency eye wash stations must be discussed with the local water supplier as variations will occur dependent upon the style of proposed eye wash equipment and the presence of any flushing programme.

Please note:
The use of Anti-Siphon Nozzles will limit the use / experiments which can be carried out. The client should be contacted prior to specifying this method of backflow protection.

Note:
This drawing shows all lab taps supplied from a single storage cistern, therefore, to prevent any contamination from the laboratory on this floor level to the laboratory on the lower level the laboratory taps will require to be fitted with anti-siphon nozzles.

It would be recommended however that each lab is supplied from a suitably sized cold water storage cistern with a type AB air gap with insect screen as shown on the floor below.

Raised float valve housing with type AB air gap with insect screen

Drawing No 1-112008/A v2
**Typical Domestic & Separate Laboratory Water Services Layout**

Please note:
The use of Anti-Siphon Nozzles will limit the use of experiments which can be carried out.
The client should be contacted prior to specifying this method of backflow protection.

EEW Note: The provision of single check valves or double check valves at emergency eye wash stations must be discussed with the local water supplier as variations may occur dependent upon equipment used and any flushing programme required under health and safety.

Shower heads to be restrained or fixed to prevent contamination.

Raised float valve housing with type AB air gap with insect screen

Unless incorporated as part of the valve, ALL TMV's to have servicing valves on both hot and cold supplies as shown above.

Drawing No 2-112008/A v2
EDW Note: The provision of single check valves or double check valves at emergency eye wash stations must be discussed with the local water supplier as variations may occur dependent upon equipment used and any flushing programme required under health and safety.

- TMV: Thermostatic Mixing Valve
- EEW: Emergency Eye Wash
- ASN: Anti-Siphon Nozzle
- DCV: Double Check Valve
- SV: Servicing Valve
- DT: Drain Tap
- SCV: Single Check Valve

Laboratory cold water storage cistern with type AB air gap

Note: If the sink is to be used for lab experiment set up or for washing Lab glassware etc the taps will require to be fitted with Anti Siphon Nozzles Sink.

Please note: The use of Anti-Siphon Nozzles will limit the use / experiments which can be carried out. The client should be contacted prior to specifying this method of backflow protection.

Typical Laboratory & Domestic Hot & Cold Water Layout

Drawing No 3-112008/A v2

Designer: William Mitchell
Date: October 2019
Mr Andrew Miller MP  
Chair  
Science and Technology Committee  
House of Commons  
London SW1P 3JA

Direct line: 01225 526402  
Direct fax: 01225 528009  
Email: colin.skellett@wessexwater.co.uk  

13 November 2014

Dear Mr Miller,

Thank you for your letter of 6 November.

The Drinking Water Inspectorate require companies to risk assess and monitor the quality of water at public buildings.

In DWI information letter 10/2004, a school is listed as a public building. Wessex Water currently sample public buildings, including schools, as part of our random sampling programme.

In addition to our random sampling programme, we will shortly be starting a campaign to work with those responsible for the quality of water in public buildings to ensure that the plumbing meets the requirements of the Water Supply (Water Fittings) Regulations 1999.

By default, schools are placed in fluid risk category 3, but each individual establishment is assessed on inspection for the real risks presented by the plumbing systems. Where a problem is identified, we will ensure that sufficient advice and support is given to the school to rectify the situation.

I hope this is helpful. If you need any further information, please do not hesitate to contact me.

Colin Skellett  
Chief Executive
28 November 2014

Dear Mr Miller

"Water Fittings Regulation Enforcement in School Laboratories"

Thank you for your letter of 6 November 2014.

As you are aware water undertakers have the statutory duty to enforce the water fittings regulations/byelaws in their area of supply. Enforcement being guided by Defra and industry agreed guidance.

In the case of a Water Regulations inspection, Yorkshire Water’s primary responsibility is to protect public health by preventing contamination from internal plumbing systems. This is achieved by way of a site specific risk assessment and categorisation of the risks associated of all water systems that make up a plumbing system in premises. This assessment ensures the health and safety of all users of wholesome water on the site and that of the wider public. As part of our risk assessment we take into account Defra’s guidance regarding sinks and laboratories. These are categorised within fluid category 5 in Schedule 2, section 6.1, table 6g.1e and can pose a substantial risk to the wholesome water supply.

The water fittings regulations/byelaws set out the legal requirements applicable to the design and installation of plumbing systems in premises that receive water supplied by a water undertaker. What is paramount is ensuring that those within premises, as well as the wider community, are not placed at risk. It is the risk that defines protection requirements and not the cost.

As such, Water Undertakers do not design plumbing systems, their role is to assess and determine the level of risk posed by a plumbing system. Although water undertakers will offer guidance to enable compliance it is the job of designers, installers or user to specify and install adequate backflow protection.

We recognise that there are limitations to the use of a Type DC device when attached to the outlet of a laboratory type tap. It is important to note that this option is but one form of acceptable backflow protection which could be installed in accordance with Fluid Category 5.
Other acceptable backflow protection could be provided via dedicated storage cistern incorporating a type AA or AB air gap.

We will be arranging to meet with the colleges involved to discuss their queries regarding the potential risks and limitations associated with specific backflow prevention arrangements.

Yours sincerely

Richard Flint
Chief Executive