

Water - Requirements for the Provision of Cold and Heated Water

Document Number PD2005_344

Publication date 27-Jan-2005

Functional Sub group Corporate Administration - Asset Management
Clinical/ Patient Services - Nursing and Midwifery
Personnel/Workforce - Occupational Health & Safety

Summary Reflect best practice in the supply of temperature controlled warm water.

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Applies to Area Health Services/Chief Executive Governed Statutory Health Corporation, Board Governed Statutory Health Corporations, Affiliated Health Organisations - Non Declared, Community Health Centres, Dental Schools and Clinics, Environmental Health Officers of Local Councils, NSW Ambulance Service, NSW Dept of Health, Private Hospitals and Day Procedure Centres, Private Nursing Homes, Public Hospitals

Distributed to Public Health System, Community Health Centres, Dental Schools and Clinics, Environmental Health Officers of Local Councils, NSW Ambulance Service, NSW Department of Health, Public Hospitals, Private Hospitals and Day Procedure Centres, Private Nursing Homes

Review date 27-Jan-2010

File No. A9896/3

Previous reference 2004/10

Issue date 30-Dec-2004

Status Active

Director-General

This Policy Directive may be varied, withdrawn or replaced at any time. Compliance with this directive is **mandatory** for NSW Health and is a condition of subsidy for public health organisations.

CIRCULAR

File No	A9896/3. A4734/1
Circular No	2004/10
Issued	30 December 2004
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REQUIREMENTS FOR THE PROVISION OF COLD AND HEATED WATER

This Circular replaces Circular 2002/10.

Changes in content in this Circular are found in Sections: 1, 2, 7, 8 and Appendix A.

1. CURRENT BEST PRACTICE

In health care facilities, the supply of temperature controlled warm water is required to minimise the risk of accidental scalding of patients during ablutionary or bathing procedures.

This Circular is reflective of best practice applicable to health care delivery in New South Wales and has both management and operational implications.

Senior management should draw the circular to the attention of **all** personnel engaged in health care delivery and to engineering services personnel. A number of serious non-compliance issues with this document have been brought to the attention of the Department. Chief Executive Officers shall ensure compliance with all aspects of the circular.

1.1 Safety Check

A regular safety temperature check of warm water supply from at least one ablution outlet fixture (preferably a hand basin) serviced by each Thermostatic Mixing Valve (TMV) / warm water supply system shall be instituted by site management. Further details are contained in section 8.2.

This check shall be conducted at least monthly and the temperature shall be recorded in a maintenance services logbook.

Distributed in accordance with circular list(s):

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In accordance with the provisions incorporated in the Accounts and Audit Determination, the Board of Directors, Chief Executive Officers and their equivalents, within a public health organisation, shall be held responsible for ensuring the observance of Departmental policy (including circulars and procedure manuals) as issued by the Minister and the Director-General of the Department of Health.

1.2 Scalds / Incidents involving Warm Water

All incidents involving a scald to the skin of either a patient or staff member shall be notified to management in line with current NSW Health policy.

Any organisation other than a health care facility which uses the requirements contained in this Circular should have in place a procedure where any incident involving a scald is reported to management and then management for the organisation should report the incident to the local Public Health Unit (see section 9 of this Circular for a list of contact details of Public Health Units).

1.3 Bathing / Ablution Procedures Utilising Warm Water

Each facility/service is to have a nursing policy/practice on patient hygiene. This nursing policy/practice should address the requirements for the differing age ranges, acuity and ability levels (ie. cognitive, understanding of English language instructions and mobility) of their patients.

The policy/practice is to contain a requirement for patient risk assessment in relation to showering/bathing including the categorising of patients into high, medium, low or self harm risk; and their risk management requirements (ie. observation frequency (visual checks) and supervision type (direct or indirect); nursing documentation is to specify the risk category for each patient). [Source: Nursing & Midwifery Office, NSW Health, November 2004]

1.4 Safety Alert

The Department has been advised of a number of operational malfunctions of Thermostatic Mixing Valves (TMV) in both public and private health care facilities resulting in serious scalding injury.

These malfunctions have resulted from such causes as inadequate system design, installation, commissioning, operation, maintenance/service and site management.

The WorkCover Authority of NSW issued a Safety Alert (Safety Guide No. 4517) in regard to Thermostatic Mixing Valves installed in the healthcare and accommodation industries in 1999.

(<http://www.workcover.nsw.gov.au/Publications/OHS/SafetyGuides/default.htm>)

There are a number of key documents which detail the correct system design, installation, commissioning, operation, maintenance/service and site management procedures, which shall be followed in regard to TMV's and Warm Water Supply Systems (WWS). These documents include:

- the TMV / WWS supplier's instructions (latest current publication),
- the Code of Practice for Thermostatic Mixing Valves, 1990 (HOSPLAN – under review),
- relevant Australian Standards.

Incorrect system design, installation, commissioning, operation and maintenance/service and site management procedures for warm water and hot water supply systems can result in unsafe conditions being created for people during bathing and ablutionary procedures, possibly resulting in scalding and death.

2. HOT, COLD & TEMPERATURE-CONTROLLED WATER INSTALLATIONS

Tapware used in healthcare facilities shall be approved to the relevant AS 3718.

Installations shall be carried out in accordance with the requirements of AS 3500.

2.1 Warm and Cold Water Installations

Warm and cold water installations (ie. those where warm and cold water is supplied through either separate taps and a common outlet or a single lever mixer) shall be provided for patient baths, patient showers and patient handbasins and for staff handbasins in any areas through which a patient might pass.

2.2 Cold Water Only Installations

Cold water only installations may be provided for low level handbasins at toddler height and (as an alternative to hot and cold installations) for handbasins in public areas.

2.3 Hot and Cold Water Installations

Hot and cold water installations (ie. those where hot and cold water is supplied through either separate taps and a common outlet or a single lever mixer) shall be provided for all other areas. The hot water system shall comply with:

- *Public Health Act 1991,*
- *Public Health (Microbial Control) Regulation 2000,*
- AS/NZS 3666.1 and .2, 2002, Air-handling and water systems of buildings,
- NSW Code of Practice - Plumbing and Drainage, 2nd Edition, July 1999, (Committee for Uniformity of Plumbing and Drainage Regulation) particularly Part 4 Section 1 and AS/NZS 3500 National Plumbing and Drainage Code,
- the overriding requirements of Section 2.6 and 3 of this Circular.

2.4 General Requirements for the Provision of Warm Water

Where warm water is provided, all relevant documents listed as well as the Tables shown in Sections 2.5 and 2.6 of this Circular, shall be complied with.

Dead legs in pipework shall not exceed 10 lineal metres.

2.5 Temperature Coding for Water Tap Outlet Fixtures

Draw-off taps at the outlet fixtures (eg. bath, shower and hand basin) shall be clearly identified using the following tap identification. This identification shall be either the tap indicator lettering or colour or the tap handle and is to be used on all new or upgraded installations.

Tap	Water Temperature	Tap Indicator Lettering	Tap Indicator Colour	Tap Handle Colour
Hot	> 43.5°C	H	Red	Red
Warm	38.0°C to 43.5°C	W	Yellow	Yellow
Cold	-----	C	Blue	Blue

In accordance with the NSW Code of Practice - Plumbing and Drainage, 2nd Edition, July 1999, Part 4 Section 1, where hot water is being delivered to an outlet of a sanitary fixture, used primarily for personal hygiene purposes at a temperature exceeding 50°C, such fixture shall have a sign, using symbol and red writing on a white background in appropriate languages, displayed adjacent to the sanitary fixture which states, "Warning – this fixture may deliver hot water which will scald."

2.6 Warm Water Temperature Requirements for Patient Use

Patient classification	Allowable range at outlet fixture	Safety cut off temperature whenever the cold water fails
Adult	40.5°C to 43.5°C	46.0°C
Children & neonates	38.0°C to 40.5°C	43.5°C

3. COMPARATIVE WATER TEMPERATURE REQUIREMENTS

User/Function	Beverage Preparation	Personal, Ablution	Process Washing
Patient-Occupied Areas (eg. Washbasins, baths and showers; ward areas; consultant's Rooms; treatment areas; clinics and community health centres)	<i>Boiling Water</i>	<i>Adults:</i> 40.5° C to 43.5° C 46° C off <i>Children & neonates</i> 38°C to 40.5°C 43.5°C cut off	
Able-Bodied Patient Use	Boiling Water	<i>Adults</i> 40.5 °C to 43.5°C 46 °C cut off <i>Children & Neonates</i> 38°C to 40.5°C 43.5 °C cut off	
Disabled Patient- Toilets		40.5 °C to 43.5°C 46°C cut off	
Frail or Confused Patient Use	Boiling Water (Dispenser in lockable cupboard)	<i>Adults</i> 40.5 °C to 43.5°C 46 °C cut off <i>Children</i> 38°C to 40.5°C 43.5 °C cut off	40.5 °C to 43.5°C 46 °C cut off (eg. Cup and dish rinsing)
Commercial-Type Kitchens (<i>Staff Access only</i>)	Boiling Water	50 °C max at outlet fixture	
Sinks for Manual Dishwashing (non patient areas)			77 °C min at outlet fixture (use of basket is required for rinsing as the water is too hot for immersing the hands)
Cleaner's Sink/Slop Hopper areas			60°C min at outlet fixture
Laundry Wash Tub (non-patient only)			60°C min at outlet fixture
Staff Ablution Areas (non patient care areas) new and modified installations		50 °C max at outlet fixture	
Auto Dishwashing Machines			60 °C to 70 °C at inlet to machine
Auto Clothes Washing Ref: AS4146			70 °C to 85 °C at inlet to machine
Auto Flusher Sanitiser Ref: AS2437			60 °C at inlet to machine
Auto Utensil Washer/Disinfector Ref: AS2945			60 °C min at inlet to machine

4. WARM WATER SYSTEMS DEFINED

Warm Water Systems are defined in Section 44 of the *Public Health Act 1991*, as systems

“...designed to heat and deliver water at a temperature of less than 60°C at each outlet” and includes systems which utilise a thermostatic mixing valve to deliver water at a temperature of less than 60°C.

4.1 Notification of Warm Water Systems

The *Public Health (Microbial Control) Regulation 2000* requires the owner or occupier of a health care facility where a warm water system is installed to notify the local council (and pay any registration fee) of all the following:

- the type of warm water supply system(s);
- the address of the premises where the system(s) is installed;
- the name, address and business and after hours contact details of the owner / occupier of the premises.

Councils have been advised that where more than one TMV is installed in a health care facility, then collectively the TMVs constitute one system for the purposes of registration and the charging of any fee.

5. REQUIREMENTS FOR THE APPROVAL OF BOTH TYPES OF WARM WATER SUPPLY SYSTEMS

Clause 7 (1)(b) of the *Public Health (Microbial Control) Regulation 2000* requires that

*“a system automatically producing warm water for ablutionary purposes is not to be installed unless it is of a kind **approved** in writing by the Director-General”.*

There are two types of warm water systems; thermostatic mixing valves (TMV) and other systems such as specifically designed water heating systems which do not blend hot and cold water to a predetermined temperature.

NSW Health therefore has two (2) approval specifications that detail the requirements for **equipment suppliers** to obtain approval. These approval specifications detail the operational testing for health care facility premises as well as the vital aspects of industry best practice for the supply, installation, commissioning, maintenance and servicing of the two types of warm water systems.

The specifications are:

- Approval Specification for Operational Testing of Thermostatic Mixing Valves for use in non-domestic buildings in NSW; and
- Approval Specification for Operational Testing of Warm Water Generating Systems not incorporating a Thermostatic Mixing Valve.

Both documents are available from Mr Tony Burns, Legionella Consultant on (02) 6933 9120 or 0428 693 374.

In addition to meeting the requirements of Clause 7(1)(b) of the *Public Health (Microbial Control) Regulation 2000* warm water delivery systems and thermostatic mixing valves shall also comply with the authorisation requirements of Quality Assurance Services (QAS). Those that do not maintain current QAS authorisation will be deleted from the NSW Department of Health listing of approved warm water systems (Attachment A).

6. CURRENTLY APPROVED WARM WATER SUPPLY SYSTEMS OF BOTH TYPES

Systems set out in the *List of Approved Warm Water Systems and Thermostatic Mixing Valves* (Attachment A) currently comply with the requirements of the *Public Health (Microbial Control) Regulation 2000* and QAS authorisation. The Department periodically updates this list, which can be downloaded from the Internet site:

<http://www.health.nsw.gov.au/public-health/ehb/general/microbial/microbial.html>

or from the Intranet site of NSW Health:

<http://internal.health.nsw.gov.au/public-health/ehb/general/microbial/microbial.html>

Equipment already installed, and which is not on the current approval list **is permitted** to remain, provided the equipment has had a prior approval. However, the installation of any new warm water supply system or TMV shall be of a type that is approved by the Director-General under clause 7(1)(b) of the *Public Health (Microbial Control) Regulation 2000*.

7. DISINFECTION REQUIREMENTS FOR WARM WATER SYSTEMS

All new and existing health care facilities shall ensure that water sampled from outlet fixtures used for personal ablution purposes meets the following performance based microbiological standard:

The sample when tested shall contain

- **less than 10 *legionellae* colony forming units (cfu) per millilitre.**

Where the water as sampled at the outlet does not meet the above microbiological standard the premises shall install a process of disinfection. The onus for the correct operation and maintenance/service, and thus compliance with the above performance-based standard, rests with the Chief Executive Officer, General Manager or person in charge of the premises.

During the planning and development stage, provision shall be made for the possible installation of a process of disinfection. During construction, and prior to occupation, owners of new premises shall develop a clear understanding of the water quality being supplied to the site. This should allow the necessary decision to be made as to whether disinfection of the water for ablution purposes is required.

Microbial sampling shall be carried out in accordance with the NSW Health Circular – Water Cooling and Warm Water Systems – Microbial Control

8. PROVISION AND MAINTENANCE OF WARM WATER SYSTEMS OF BOTH TYPES

8.1 General

It should be particularly noted that neglect, or any inadequate system design, installation, commissioning, operation, maintenance/service and site management of any warm water supply system and hot water supply system could lead to unsafe conditions being created for any patients during an ablutionary procedure, possibly resulting in scalding and death.

The *Public Health Act 1991*, the *Public Health (Microbial Control) Regulation 2000* and the *NSW Code of Practice for Thermostatic Mixing Valves in Health Care Facilities* (available from Grant Lavender of Capital and Asset Management Branch (9391 9146), AS/NZS 3500, AS/NZS 3666, and AS/NZS 4032, as well as any manufacturers/suppliers published instructions (latest publication), shall be followed in regard to the system design, installation, commissioning, operation, maintenance / service and site management of all warm water and hot water supply systems.

The *NSW Code of Practice for Thermostatic Mixing Valves in Health Care Facilities* includes a certification by designer form, a commissioning report and a servicing report form that shall be completed for each TMV as appropriate.

Commissioning and maintenance report forms produced by the Committee for the Uniformity of Plumbing and Drainage Regulations in NSW (CUPDR) may be used when commissioning a new TMV or when maintenance work is conducted on an existing TMV. These forms are available from the Department of Energy Utilities and Sustainability (DEUS), by telephone on (02) 8281 7338. Other report forms can be used as long as the minimum requirements of the CUPDR are met.

Notice shall be taken of supplier's instructions regarding periodic calibration of thermometers and the design service life for thermostats.

8.2 Safety Issues Concerning Warm Water Supplied Through the Use of Thermostatic Mixing Valves or Warm Water Supply Systems

Maintenance staff **shall** ensure that:

- A regular safety temperature check of warm water supply from at least one ablution outlet fixture (preferably a handbasin) running at 6 to 10 litres per minute, served by each TMV/warm water supply system, shall be instituted by site management in order to monitor the temperature control performance of the TMV/warm water supply system. (Note that a flow rate of 6 to 10 litres per minute is equivalent to a time of between 12 to 20 seconds to fill a 2L water jug),
- Any departures of 2°C or more above the specified operating temperature range for warm water for the particular patient classification, shall require the

TMV/warm water supply system to be immediately isolated and not used until the performance of the TMV/warm water supply system can be checked by maintenance/service personnel,

- Details of any repairs, parts, replacement or any other work carried out on the TMV/warm water supply system must be detailed in a service report (refer to the *NSW Code of Practice for Thermostatic Mixing Valves in Health Care Facilities*) which is to be supplied by maintenance/service personnel to site management. The report must explain the reasons for the temperature variation,
- Before the TMV/warm water supply system is returned to service, the maintenance / service report shall be receipted by site management to acknowledge that the TMV/warm water supply system is reported by the maintenance/service personnel to be operating satisfactorily and performing within the required temperature range,
- In order to maintain a stable and acceptable temperature for mixed warm water from any TMV, the flow rate of water from the TMV should not fall below the supplier's recommended minimum flow rate for that TMV,
- The use of flow restrictions or outlet fixtures which are rated at flows below the minimum flow rate of the TMV should be avoided in preference to outlet fixtures which operate comfortably at flow rates in excess of the TMV minimum flow rate,
- The flow rate from the outlet fixture is confirmed as being adequate before checking the warm water temperature and before the addition of any cold water from a separate source, and
- Where the warm water from the outlet fixture equals the TMV's minimum flow rate, any addition of cold water from a separate source to help achieve a lower temperature from the mixed warm water, should be allowed to increase the total flow rate. (ie. the flow rate from the TMV does not decrease below its minimum)

8.3 Competency of Installation, Commissioning and Servicing/Maintenance Personnel

Persons installing, commissioning and servicing warm water systems shall be licensed as a plumber by the NSW Office of Fair Trading, shall be TAFE technically trained and also well experienced in TMV maintenance. Unless personnel have these qualifications and attributes, they shall **NOT** be engaged, unless under the supervision of a qualified and experienced plumber, in the important duty of installing, commissioning and servicing or maintaining warm water systems as their actions could endanger the lives of the end user (the patient). There is a need to be familiar with the manufacturer's/supplier's **latest (current) published** installation, commissioning, operation, service and site maintenance instructions relevant to the particular model of equipment installed.

8.4 Systems in isolation/infectious disease wards

Contractors/maintenance staff shall consult with the relevant site management of the health care facility regarding any special personal safety procedures that may be necessary when servicing these systems.

9. ADVICE AND INFORMATION

Information regarding environmental health aspects of warm water supply systems can be obtained from the *Environmental Health Sections* of the local *Public Health Units* listed below.

Public Health Unit	Telephone No:
Central Coast – Ourimbah	4349 4845
Centre for Public Health – Albury, Wagga	6021 4799; 6933 9120
Central Sydney – Camperdown	9515 3180
Far West – Broken Hill	(08) 8088 1499
Hunter – Newcastle	4924 6477
Illawarra – Wollongong	4275 4600
Macquarie – Dubbo	6841 2216
Mid North Coast – Port Macquarie	6588 2750
Mid Western NSW – Bathurst	6339 5500
New England – Tamworth	6766 2288
Northern Rivers – Lismore	6620 7500
Northern Sydney – Hornsby	9477 9400
South Eastern Sydney – Zetland	9382 8333
Southern NSW – Goulburn	4827 3428
South Western Sydney – Liverpool	9828 5944
Wentworth – Penrith	4734 2022
Western Sydney – Parramatta	9840 3603

This circular and its attachments are available on the *NSW Health Department's Intranet* and *Internet*.

Robyn Kruk
Director-General

ATTACHMENT A
December 2004

APPROVED WARM WATER SYSTEMS
Including Thermostatic Mixing Valves

Clause 7(1)(b) Public Health (Microbial Control) Regulation 2000

1 Aquablend

Enware Australia Pty Ltd	Models:	TMV 711
9 Endeavour Rd		TMV 712
Caringbah NSW 2229		TMV 713
Tel: (02) 95259511	Fax (02) 95259536	1500

2 Boilerland

Boilerland	Models:	WW1	WW5
9 Saltash St		WW2	WW6
Virginia Qld 4014		WW3	WW7
Tel: (07) 38651203	Fax (07) 32651924	WW4	WW8

3 Broen

Broen / SGF Laboratories	Models:	Broen Stabitherm
Unit 1 /18 Holden Street		Model 12 140.009
Woolloongabba QLD 4102		
Tel: (07) 38916011	Fax (07) 38917459	

4 Caleffi

All Valve Industries	Models:	5212
2/1 Wood St		
Tempe NSW 2044		
Tel: (02) 95589911	Fax (02) 95589699	

5 Edwards

Edwards Energy Systems	Models:	GX 450	LEX 40	LEX 240
Unit 1, 171 Gibbes St		GX 850	LEX 80	LEX 250
Chatswood NSW 2067		GX 1250	LEX 120	LEX 320
Tel: (02) 94178700	Fax (02) 94174997	GXC 50	LEX 150	LEX 350
		GXC 100	LEX 160	LEX 400
		GXC 150	LEX 200	LEX 500

6 Grohe 2000

Argent Australia **Models:** 34087
18 Wandoo St 34304
(PO Box 2093) 34370
Fortitude Valley Qld 4006 34958
Tel: 1300 364 748 Fax 1300 656 057

7 Hansa

Starion Industries **Models:** 8020100
Level 1, 490 Crown St 8050100
Surry Hills NSW 2010
Tel: (02) 93616700 Fax (02) 93808429

8 Horne

Zip Heaters Pty Ltd **Models:** 15 Model H1502
67 Allingham St
Condell Park NSW 2200
Tel: (02) 97963100 Fax (02) 97963858

9 Mattsson

Classic Australian Building Products **Models:** 5110FT
Masonite Rd 5150FT
Raymond Terrace NSW 2324 5190FT
Tel: 1300 727 289 Fax 1300 727 329 5191LK

10 Moraterm

Ryemetal Pty Ltd **Models:** 700118.00
270 Wickham Rd 700119.00
Moorabin Vic 3189
Tel: (03) 85312200 Fax (03) 95322672

11 Rada

Thornthwaite Technologies **Models:** 215k
79 Victoria Ave 215dk
Chatswood NSW 2067 215zk
Tel: (02) 94174466 Fax (02) 94175231 215bk
20t3 oem
320t3 cx

12 Thermomix

Reliance Manufacturing Company (RMC) **Models:** TMV 702
40-42 Ross St TMV 703
Newstead Qld 4006 160
Tel: (07) 32523646 Fax (07) 32529391