

HOT WATER TEMPERATURE AND SCALD BURNS

The Public Health Association of Australia notes that:

1. Each year in Australia, an average of 1800 children suffer scald burns requiring admission to hospital. Of these approximately one in five are due to exposure to hot tap water. The key risk group is children aged under three years. NSW data indicate that a child has one chance in two hundred of being hospitalised for a scald before the age of five years¹.
2. Older people and people with disabilities are also at increased risk of burns from hot tap-water. For instance, Victorian data indicate that over 60 Victorians over 65 years of age are hospitalised for scalds each year².
3. Scald burns can be severe, and sometimes life-threatening; skin grafting is required in about 20% of all scald cases³. Most full thickness burns requiring grafting will result in scarring. Scalds (wet thermal injuries) from hot tap water tend to be more severe than scalds from other causes. On average they result in a higher percentage body surface area (BSA) burned, a higher percentage of full thickness burns and a longer length of stay in hospital than other scald injuries. International studies indicate that 40% BSA burns are not uncommon in children scalded by tap water.
4. Over 90% of hot tap-water burns requiring admission to hospital occur in the bathroom, primarily from immersion in baths containing water heated to unsafe temperatures or as a result of young children turning on hot taps whilst bathing¹.
5. At higher water temperatures, there is minimal exposure time required to produce a full thickness scald burn. Water at 65°C produces a full thickness burn in less than a second of exposure, at 60°C in around five seconds, and at 55°C, in around thirty seconds. With water at 50°C, five minutes exposure would be required to produce full thickness burns⁴. Most domestic storage hot water heaters in Australia are installed to store water at or above temperatures of 65°C.

The Public Health Association of Australia supports the view that:

6. Decreasing the temperature of hot water delivered to bathing areas is an effective preventive mechanism and that lowering temperatures to 50°C will significantly reduce the risk of scald burns to young children, older people and people with disabilities alike.
7. International evidence has demonstrated the technical feasibility of controlling hot water temperatures and that such changes can reduce the frequency and severity of tap-water scalds.

8. The interventions available to achieve maximum temperatures of 50°C in key risk areas include: lowering the temperature of stored water by altering the thermostat setting, while insuring that the temperature does not contribute to the growth of harmful bacteria in the water; installing tempering valves; installing thermostatic mixing valves; and using end-of-line devices that shut off water flow above a set temperature. The appropriateness of these options vary according to whether the hot water systems to be controlled are new or existing systems, and according to the nature of the heating mechanism (electric, gas, solar, off-peak, fixed element, wood-fired etc).

9. The relevant Australian and New Zealand Standards (AS 3500.4 -1994 & AS/NZS 3500.4.2:1997) have been amended to require temperature control on newly installed hot water systems.

10. The control of existing systems continues to be a major concern, particularly as many systems are not adjustable by consumers, they may lack specific temperature calibrations, hot water run-out may cause consumer resistance, and temperatures below 50°C may encourage the growth of legionella bacteria.

11. Recommended temperature-limiting devices which can be applied retrospectively include installation of adjustable thermostats, tempering valves, and shut-off devices fitted to taps and bath spouts.

The Public Health Association of Australia resolves that:

10. The Executive and Branches, advised by the Injury Prevention Special Interest Group, will advocate policy and legislative changes to control domestic hot water system temperatures in public housing, and that the current regulations that cover the control of hot water delivery in aged and child care facilities and where major renovations are occurring, are implemented.

11. The Executive and Branches, advised by the Injury Prevention Special Interest Group, will encourage state/territory legislatures to legislate to ensure that all hot water gets delivered at 50 degrees and insure that those with least resources are assisted to upgrade their hot water facilities.

12 The Executive and branches, advised by the Injury Prevention Special Interest Group, will advocate for collaborative efforts between health authorities, local governments, and trade and industry groups, to deliver local information/awareness raising campaigns on the dangers of hot water, and the important role of supervision of both children and the frail aged in the bath/shower environment.

References

1. NSW Health, Hot water burns like fire, The NSW scalds prevention campaign, Phases one and two 1992-1994. Final report - December 1998.

2. Stathakis,V, Hospitalised injuries, Victoria, July 1992-June 1998, October 1999, Report No. 160, Monash University Accident Research Centre.
3. Penny,M, Burns Prevention, Hazard edition 12, September 1992, Victorian Injury Surveillance System, Monash University Accident Research Centre.
4. Moritz,A,R; Henriques,F.C Jnr, Studies of thermal injury:2. The relative importance of time and surface temperature in the causation of cutaneous burns; Am. J. Path, 1947, pages 695-720.

Adopted at the 1994 Annual General Meeting of the Public Health Association of Australia, revised in 2002 and revised at the PHAA Annual General Meeting 2005 in Perth.