



WATER THAT'S TOO HOT CAN SCALD. WATER NOT HOT ENOUGH MAY ALLOW BACTERIA GROWTH. VISIT [WWW.YOURHOME.HONEYWELL.COM](http://WWW.YOURHOME.HONEYWELL.COM) TO SEE HOW YOU CAN INCREASE WATER SAFETY IN YOUR HOME.

## Invisible Childproofing

# The Scalding Danger

*An 18-month-old girl stands on a stool in front of the bathroom sink, playing with water. Her parents are both home, and each assumes the toddler is with the other parent. Hearing her daughter suddenly cry out, the mother runs to her and finds her holding out her hands, which have been burned by scalding-hot running water. An ambulance speeds the little girl to a medical center, where she is treated for severe burns. Later, an investigation determines that the home's tap water was in excess of 150 degrees.*

Tragically, similar real-life scalding incidents involving tap water injure four to five thousand children and adults across the nation each year. Tap water that's too hot can inflict a serious or even fatal scald burn almost instantly. In fact, *Pediatrics* magazine lists scalds as the leading cause of pediatric burn admissions.



Anyone who can turn on a faucet or shower can be accidentally scalded or may scald someone else, though children under 5 and the elderly are the most vulnerable. Young children are curious, fascinated by water, unaware of the hazard and incapable of protecting themselves. The elderly may be unable to react quickly and, as with the very young, may be more susceptible to slipping and falling into scalding water.

Many people don't know that hot tap water poses such a risk or what their water heater setting is. A Safe Kids Canada survey revealed that 70 percent did not know that scalds from hot liquids — rather than fire — cause the most burn injuries to children. A survey of parents found that just 14 percent knew the setting of their water heater thermostat. Home water heaters frequently are set at 140 degrees Fahrenheit and higher. According to the Safe Kids campaign, a child's delicate skin burns in just one second when exposed to 140-degree water. A child's skin, thinner and more sensitive than an adult's, burns four times more quickly and deeply than an adult's. Put another way, an adult's skin may withstand exposure to hot liquids that would inflict serious harm on the skin of a child.

## Turning Down The Water Heater Isn't The Answer

Why not simply turn down the water heater setting to a more useable temperature, say 120 degrees? After all, that's what the U.S. Consumer Product Safety Commission urged consumers to do more than two decades ago.

The reason is that legionella bacteria can exist in domestic water heaters set at 120 degrees. Legionellosis, an infection caused by legionella bacteria, comes in two distinct forms. Pontiac fever is a mild, flu-like illness. Legionnaires' disease is a severe, and sometimes fatal, form of pneumonia. The Center for Disease Control in Atlanta estimates that legionellosis infects 8,000 to 18,000 people annually in the United States, and the Occupational Safety and Health Administration estimates that there are more than 25,000 cases of Legionnaires' disease in the nation annually, resulting in 4,000 deaths.

Legionella grows in stored water and can exist in water as high as 122 degrees. In contrast, water at 140 degrees kills Legionella in 30 minutes.

Any water heater set too low can harbor legionella, but electric water heaters may present an even higher risk. According to a 2003 report, 30 percent of electric water heaters in Quebec are contaminated by Legionella, even when the units are set to 140 degrees. This is due to a limitation in the design of the electric water heaters — the units simply cannot heat the water in the lower part of the tank high enough to stop legionella proliferation.

In light of these statistics and other factors, it is not advisable to set water heater temperatures below 140 degrees. Indeed, the National Institute of Public Health in Quebec ranks preventing legionellosis as important as preventing tap water scalds.

# The Solution: Mix Hot And Cold

Tap water at 140 degrees scalds. Yet home water heaters set to 120 degrees can harbor bacteria. What then should homeowners do?

Fortunately, there's a solution: Install a thermostatic mixing valve on your water heater. A mixing valve ensures a safe, consistent hot-water temperature at all the faucets and taps throughout the house. Your water heater can be safely set to 140 degrees, high enough to prevent bacterial contamination. The mixing valve blends hot water leaving the water heater with cold water to achieve the desired preset temperature for hot tap water, typically between 115 and 120 degrees. The mixing valve adjusts automatically to accommodate any temperature variations in cold and heated water.

Mixing valves, like those from Honeywell, deliver tap water that is a safe temperature, yet still plenty hot enough to please hot-shower lovers. They can save energy because water heaters operate more efficiently at higher temperatures. Mixing valves can also provide your home with up to 40 percent more hot water without increasing the size of your hot water tank. In fact, mixing valves offer so many benefits that some cities are incorporating them into building codes.

Help protect your loved ones from accidental scalds and bacteria. Talk to your heating-and-cooling contractor or plumbing contractor about how a mixing valve can help improve your home's water safety. You'll enjoy greater peace of mind knowing that your tap water is a safe temperature and that your water heater setting prevents bacterial growth.



*Honeywell designs several types of mixing valves to help prevent against scalding and the growth of bacteria.*

**For more information** or to find a contractor near you, go to [www.yourhome.honeywell.com](http://www.yourhome.honeywell.com)

**Note:** Installing a thermostatic mixing valve does not guarantee the prevention of scalding or Legionella in your home; however, Honeywell's thermostatic mixing valves are designed to prevent scalding and Legionella.

## Sources

Ackroyd R. 25 years and 125,000 scalds. PM Engineer, Sept. 2001. Available at: [http://www.pmengineer.com/CDA/ArticleInformation/features/BNP\\_\\_Features\\_\\_Item/0,2732,62060,00.html](http://www.pmengineer.com/CDA/ArticleInformation/features/BNP__Features__Item/0,2732,62060,00.html). Accessed June 23, 2005

Titus MO, Baxter AL, Starling SP. Accidental burns in sinks. Pediatrics. 2003; 111:191-194

Bynum Jr D, Petri VL, Meyers JT. Domestic hot water scald burn lawsuits. Presented at ASPE Meeting; Oct. 25-28, 1998; Indianapolis, IN

U.S. Consumer Product Safety Commission. Commission acts on hot tap water scald hazard. News release, March 21, 1979 (#79-012)

Safe Kids Canada. Majority of Canadian parents don't know biggest burn hazard: Scalds, not fire, are the most common cause of burns to children. News release, May 19, 2001. Available at: [http://www.safekidscanada.ca/ENGLISH/Media/mediarelease\\_skweek2001.html](http://www.safekidscanada.ca/ENGLISH/Media/mediarelease_skweek2001.html). Accessed June 21, 2005

Pruitt CW, Keriwala RD, Isaacman DJ, Doobinin KA. Injury prevention knowledge of parents in a pediatric emergency department. Abstract presented at the Pediatric Academic Societies Meeting; May 4-7, 2002; Baltimore, MD

Consumer Product Safety Commission. Consumer product safety alert: Tap water scalds. March 21, 1979. Available at: <http://www.cpsc.gov/cpsc/pub/pubs/5098.html>. Accessed June 23, 2005

Hydro-Quebec. Residential customers: The water temperature has a degree of importance. Available at: [http://www.hydroquebec.com/advice\\_hot\\_water/](http://www.hydroquebec.com/advice_hot_water/). Accessed June 23, 2005

Centers for Disease Control and Prevention. Disease Information: General information: Legionellosis: Legionnaires' Disease (LD) and Pontiac Fever. Available at: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis\\_g.htm#How%20common%20is%20legionellosis%20in%20the%20United%20States](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis_g.htm#How%20common%20is%20legionellosis%20in%20the%20United%20States). Accessed June 21, 2005

Association of Water Technologies. Legionella 2003: An update and statement by the AWT. Available at: <http://www.awt.org/Legionella03.pdf>. Accessed June 23, 2005

Centers for Disease Control. Disease Information: Legionellosis: Legionnaires' disease (LD) and Pontiac fever. Available at: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis\\_t.htm](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis_t.htm). Accessed June 21, 2005

Occupational Safety and Health Administration. OSHA Technical Manual; Section I: What is Legionnaire's disease? Available at: [http://www.osha.gov/dts/osta/otm/legionnaires/disease\\_rec.html#Causative](http://www.osha.gov/dts/osta/otm/legionnaires/disease_rec.html#Causative). Accessed June 22, 2005

Centers for Disease Control and Prevention. Disease Information: General information: Legionellosis:

Legionnaires' Disease (LD) and Pontiac Fever. Available at: [http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis\\_g.htm#How%20common%20is%20legionellosis%20in%20the%20United%20States](http://www.cdc.gov/ncidod/dbmd/diseaseinfo/legionellosis_g.htm#How%20common%20is%20legionellosis%20in%20the%20United%20States). Accessed June 21, 2005

MayoClinic.com. Ask a specialist: Legionnaires' disease. Available at: <http://www.mayoclinic.com/invoker.cfm?objectId=5F708F1E-6B0D-4DE2-A53041BE119CD8B1>. Accessed June 21, 2005

Pfund Ryan. Avoiding the hidden handwashing hazard. Plumbing Engineer, May 2004; 40,42

Lévesque B, Lavoie M, Joly J. Residential water heater temperature: 49 or 60 degrees Celsius? Canadian Journal of Infectious Diseases and Medical Microbiology; 2004;15:1. Available at: [http://www.pulsus.com/Infdis/15\\_01/leve\\_ed.htm](http://www.pulsus.com/Infdis/15_01/leve_ed.htm). Accessed June 23, 2005

National Institute of Public Health. Prevention of scalding and legionellosis associated with tap water in private homes: summary with recommendations. 2003. Available in French at: [www.inspq.qc.ca](http://www.inspq.qc.ca)

World Health Organization. Legionellosis fact sheet, February 2005. Available at: <http://www.who.int/mediacentre/factsheets/fs285/en/>. Accessed June 23, 2005

National Institute of Public Health. Prevention of scalding and legionellosis associated with tap water in private homes: summary with recommendations. 2003. Available in French at: [www.inspq.qc.ca](http://www.inspq.qc.ca)

## Automation and Control Solutions

In the U.S.:

Honeywell

1985 Douglas Drive North

Golden Valley, MN 55422-3992

In Canada:

Honeywell Limited

35 Dynamic Drive

Toronto, Ontario M1V 4Z9

1-800-328-5110

[www.honeywell.com](http://www.honeywell.com)

63-9474 PR

February 2010

© 2010 Honeywell International Inc.

The Honeywell logo is displayed in a bold, red, sans-serif font.