

# North Dakota State Fire and Tornado Fund

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Policyholder hydronics (boiler)  
heating system maintenance



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# Check the condition of the hydronic system fluid.

## BOILER ROOM

Most hydronic heating systems use plain water as the working fluid. The water chemistry testing involved in these systems could be quite simple.

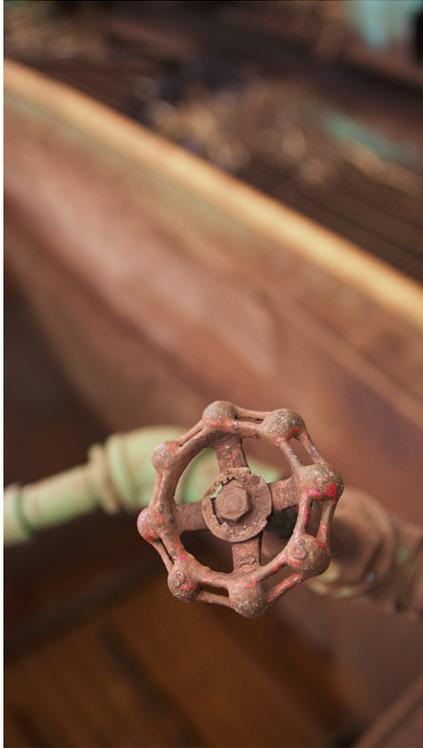
Some heating systems use specially formulated fluids, which may require more extensive chemical testing.

Some heating fluids may not be compatible with other brands of heating fluids, system conditioner or inhibitor chemicals that are added later or automotive type antifreeze.

Automotive type antifreeze is not suitable for hydronic heating systems. Special hydronic antifreeze is available for system freeze protection.

If there is any question as to the suitability of mixing chemicals, a reputable water treatment company should be consulted before any new type of chemical is introduced into the system. It is recommended that the hydronic fluid be tested at least once a year.

# Check the heating system for leakage.



All leaks should be repaired on a timely basis. The constant addition of raw water into a hydronic heating system to replace system fluid lost due to leakage is detrimental to the system.

Constant raw water make-up will introduce scale deposits, iron deposits, add dissolved gases and will dilute system antifreeze. It is recommended that large systems with piping in service tunnels or underground piping install a water meter to monitor the amount of raw water added to the heating system.

Caution: Hydronic fluid with improper additives has caused severe damage to painted surfaces, flooring and room contents when system leakage occurred. Every effort should be made to assure system integrity.

Galvanized piping is not suitable for hydronic heating systems and its use is prohibited by North Dakota boiler regulations.

# Check air handlers with outside air make-up for proper operation.

Air handlers that ingest cold make-up air are especially prone to coil rupture from freezing. The proper operation of face and bypass dampers should be checked.

Many air handlers have safety temperature sensors that will shut down the air handler when the coil temperature approaches freezing. These freeze-states should be checked for proper operation.

Some coils may experience a localized blockage that will prevent circulation in one or more areas of the coil.

These no-flow areas are highly susceptible to freezing. Any cold areas of an operating coil should be investigated.

Blocked coil passages should be chemically or mechanically cleaned. Check that loss of air pressure in the building will cause all pneumatic controls to move to the full heat position and outside air dampers move to their minimum or closed position.

# Check the general condition of the heating system.



Does the boiler burner light off smoothly and operate correctly? If not, a reputable burner technician should be contacted for help.

Safety devices such as low water cut offs, pressure safety relief valves, high temperature limit controls and burner train controls should be tested on a regular schedule and the results recorded in the boiler operation log book. Dual fuel burners should be exercised on the back-up fuel at least once a month.

Circulating pumps should operate quietly and have a minimum of vibration. Back-up circulating pumps should

be exercised on a regular basis. Critical and difficult to obtain spare parts should be kept on hand for burners and pumps. Pneumatic control compressors and air dryers should be checked for proper operation and serviced at regular intervals. Air compressor storage tanks should be drained at least once a week and more often in humid weather.

# Check on an emergency source of electrical power.

Could your facility survive an extended power outage?

An emergency back-up generator sized to carry your critical loads would be an excellent investment for your facility. Emergency generators should be exercised under load on a regular basis.

Check with your local electrical supplier or a reputable electrical contractor for help.

# Check on an emergency phone dialer system.



Systems are available that will monitor critical areas in your facility and automatically call off-duty operators to report the problem. Major facility damage could be prevented by the timely response to a minor problem. Some of the areas a phone dialer could monitor are heating system temperature, building temperature, air handler discharge temperature, pneumatic control system pressure or sump pump pit levels.

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A handwritten signature in blue ink, appearing to read 'Adam Hamm', written over a white background.

Adam Hamm  
Insurance Commissioner

The Special Funds Division of the North Dakota Insurance Department endeavors to handle the needs of our customers the right way the first time—accurately, fairly and timely—and always with the benefit of prevention, safety and education.

Let's all do our part to keep  
the cost of insurance affordable.