DEPARTMENT OF HEALTH

Draft Minnesota Rules, chapter 4725

SUBMERGED CLOSED LOOP HEAT EXCHANGERS

This is a DRAFT document. None of the proposed language changes are adopted or reflect current rule. Proposed language revisions are marked from the previously posted rule draft document. Language additions are underlined. Existing language proposed for removal is stricken with a ~~strike-out~~. Changes are accepted between document versions.

4725.#### [SUBMERGED CLOSED LOOP HEAT EXCHANGERS – INSTALLATION REQUIREMENTS].

Subpart 1. **Installation**. A submerged closed loop heat exchanger system must be installed according to standards in this part.

A. A water-supply well used for a submerged closed loop heat exchanger must meet the requirements of this chapter and Minnesota Statutes, chapter 103I.

B. A well contractor must install a submerged closed loop heat exchanger device and submerged closed loop heat exchanger piping in a well.

C. A well contractor must notify the commissioner:

(1) at least 24 hours prior to the initial installation of the submerged closed loop heat exchanger system;

(2) by telephone, facsimile, email, or in person; and

(3) between 8:00 a.m. and 4:30 p.m., Monday through Friday, excluding holidays.

D. Submerged closed loop heat exchanger system piping connections to a water-supply well or a water-supply system must be protected with a backflow prevention device as specified in Uniform Plumbing Code (UPC) sections 603.0 to 603.5.23.4, as incorporated by Minnesota Rules, part 4714.0050.

E. A heat transfer fluid sampling port must be installed on the submerged closed loop heat exchanger system.

F. Submerged closed loop heat exchanger piping from the well to the building must be marked by:

(1) tracer wire; or

(2) marking tape detectable from the ground surface.

Subp. 2. **Submerged closed loop heat exchanger device.**

A. Piping and tubing materials in the portions of the submerged closed loop heat exchanger device containing heat transfer fluid must be:

(1) stainless steel meeting:

(a) ASTM Standard A240;

(b) ASTM Standard A249;

(c) ASTM Standard A269;

(d) ASTM Standard A312; or

(e) ASTM Standard A778; or

(2) copper or copper alloy meeting:

(a) ASTM Standard B42;

(b) ASTM Standard B43;

(c) ASTM Standard B302;

(d) ASTM Standard B75;

(e) ASTM Standard B88;

(f) ASTM Standard B135; or

(g) ASTM Standard B251;

B. Joints and connections in the portions of the submerged closed loop heat exchanger device containing heat transfer fluid must be welded or soldered.

C. The submerged closed loop heat exchanger device must have a minimum pressure rating of 160 psi or 1.5 times the maximum observed pressure for the heat exchanger in the well;

Subp. 3. **Submerged closed loop heat exchanger piping.**

A. Submerged closed loop heat exchanger piping and fitting materials must be:

(1) provided in the Mechanical code sections 1210.4 and 1210.5, as incorporated by Minnesota Rules, part 1346.0050; or

(2) stainless steel material meeting:

(a) ASTM Standard A269;

(b) ASTM Standard A312; or

(c) ASTM Standard A778.

B. Joints and connections must meet:

(1) requirements of Mechanical Code section 1210.6; or

(2) for stainless steel pipe, joints and connections must be watertight threaded or welded joints that meet the following:

(a) threaded joints and connections must have recessed couplings, reamed and drifted couplings, or other couplings that match the design, taper,

and thread type of the pipe. Thread must not be exposed on the pipe when the pipe is joined.

(b) for welded joints and connections the pipe ends must be beveled, except where an approved welding coupling is used. The weld must extend the full circumference of the pipe and must completely fill the bevel.

(c) welding couplings must be made of material equivalent to the pipe. The upper and lower welds must extend the full circumference of the pipe, and completely fill the gap between the coupling and pipe. Welding the pipe to the inside of the coupling is prohibited.

C. Submerged closed loop heat exchanger piping and fittings between the well and the building must have a minimum pressure rating of:

(1) 100 psi; or

(2) 1.5 times the maximum operating pressure of the system.

D. Submerged closed loop heat exchanger piping and fittings in the well must have a minimum pressure rating of:

(1) 160 psi; or

(2) 1.5 times the maximum observed pressure for that portion of the system in the well;

Subp. 4. **Pressure test.**

A. A system owner must ensure a submerged closed loop heat exchanger system is successfully pressure tested after it is installed and prior to circulation of heat transfer additives, treatment chemicals, or any other fluid in the submerged closed loop heat exchanger system.

B. All portions of the submerged closed loop heat exchanger system used to convey heat transfer fluid must be pressure tested and includes:

(1) submerged closed loop heat exchanger piping;

(2) submerged closed loop heat exchanger device; and

(3) pitless unit.

C. The submerged closed loop heat exchanger system must be pressure tested:

(1) in one continuous loop from the building to all the water-supply wells; or

(2) in individual continuous loops from the building to each water-supply well.

D. A system owner must notify the commissioner:

(1) at least 24 hours prior to the pressure test;

(2) by telephone, email, or in person; and

(3) between 8:00 a.m. and 4:30 p.m., Monday through Friday, excluding holidays.

E. A system owner is exempt from Item D, subitems 1 and 3, in the event of an imminent threat to public health or safety. The system owner must notify the commissioner within 12 hours of completing the pressure test.

F. A pressure test must:

(1) be conducted by a well contractor, bonded mechanical contractor, or licensed plumber;

(2) use potable water;

(3) be tested at 1.5 times the maximum submerged closed loop heat exchanger system operating pressure or 100 psi, whichever is greater, as measured at or above the ground surface; and

(4) be conducted for 30 minutes.

G. For purposes of this part, a successful pressure test maintains a constant pressure without adding fluid during the duration of the test.

H. A system owner must submit a pressure test record to the commissioner within 60 days of a successful pressure test according to subpart #.

I. A submerged closed loop heat exchanger system must be pressure tested according to items A-E when a submerged closed loop heat exchanger device or submerged closed loop heat exchanger piping is removed from the water-supply well and reinstalled.

Subp. 5. **Heat transfer fluid.**

A. Heat transfer fluid must be sourced from a potable water supply.

B. Heat transfer fluid additives must be certified to meet the requirements of ANSI/NSF-60 Standard as determined by a person accredited by ANSI.

C. The system owner must ensure a permanent indelible sign:

(1) is attached to all fill locations in the building; and

(2) includes language specifying:

(a) heat transfer fluid must be only potable water;

(b) any heat transfer fluid additives must be approved; and

(c) notify MDH at 651-201-4600 at least 24 hours before adding or replacing fluids.

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To obtain this information in a different format, call: 651-201-4600 or 800-393-9808.