

Minutes: Submerged Closed Loop Heat Exchangers Advisory Subcommittee

Date October 22, 2025, 9:15 – 10:00 a.m.

Location Virtual Teams Meeting

Attendees **Virtual:** Danny Nubbe (Certified Representative), Dave Traut (Certified Representative), David Henrich (Advisory Council on Wells and Borings), Jay Egg (Geothermal Professional), Jeff Luehrs (Delegated Well Program), Jim Lubratt (Geothermal Professional), Keith Larson (Geothermal Professional), Willy Miley (Geothermal Professional)

MDH: Jon Olson (WMS Technical Unit Supervisor), Jennifer Weier (WMS Hydrologist Supervisor), Mark Malmanger (WMS Hydrologist Supervisor) Avery Guertin (WMS Regulatory Coordinator), Jen Jevnisek (WMS Hydrologist)

Acronyms and Terms

ASTM – American Society for Testing and Materials

DLI – Department of Labor and Industry

IMC – International Mechanical Code

MDH – Minnesota Department of Health

MMC – Minnesota Mechanical Code

NSF – National Sanitation Foundation

PE – Licensed Professional Engineer

SCLHE – Submerged Closed Loop Heat Exchangers

WMS – Well Management Section

Welcome and updates

Guertin thanked members for their interest in participating in the subcommittee. She reviewed the meeting agenda and noted that the discussion would specifically focus on material requirements and identifying a path for alternative materials.

Conceptual path for approved alternative materials

Guertin provided an overview of a conceptual approach for the approval of alternative materials used in Submerged Closed Loop Heat Exchanger (SCLHE) systems. She explained that this approach would create an additional pathway for approving alternatives, in addition to the existing referenced International Mechanical Code (IMC) tables and requirements in rule. The proposed approach includes:

- Material, joint, fitting, or connection testing for pressure and tensile strength conducted by a third-party testing agency,
- Review and evaluation of testing results by a licensed Professional Engineer (PE), and
- Submission of a recommendation to the Minnesota Department of Health (MDH) demonstrating that the alternative is suitable for its intended use and meets or exceeds the IMC standards or requirements.

Guertin shared that this pathway is intended to promote innovation and flexibility while maintaining performance standards and protecting public health and groundwater. She requested committee feedback on the proposed approach and invited members to help brainstorm a process for re-evaluating approved alternatives that may no longer meet expectations in the field.

She also acknowledged the importance of controlled testing while recognizing that real-world applications can reveal challenges not captured in laboratory settings. Guertin asked the committee to consider establishing a clear and effective procedure for responding to patterns of failure or underperformance observed in these real-world scenarios.

Committee review of proposed path for approving alternative materials

Traut and Henrich asked if the requirements applied specifically to the SCLHE in-well piping, and not other components of a water-supply well such as casing or screen. MDH confirmed that the requirements relate only to the SCLHE in-well piping, as defined by Minnesota Rules, part 4725.0100, subp. 47d, which refers to the piping between the heat exchanger and the pitless unit.

Henrich shared concerns about the difficulty in finding a third-party testing agency to conduct the testing and asked if manufacturer testing could be considered an acceptable alternative. Weier clarified that the scope of the approval would be limited to the SCLHE in-well piping, as defined in rule, including materials, fittings, and connections. She added that third-party testing agencies already perform tests on these materials, so this should not pose an issue. The committee discussed how MDH has engaged with the Department of Labor and Industry (DLI) to better understand the process of third-party testing and material approval.

Traut commented about piping and making sure it does not have toxics and is stamped with American Society of Testing and Materials (ASTM)/National Sanitation Foundations (NSF) standards. For fittings, if one does not meet marked standards, the permit holders or MDH could look for the standards used. For joints and connections, it may be harder to determine that they meet the requirements. Obstacles with finding an appropriate standard will likely come up with joints/connections more often than the

pipng materials. Weier agreed, yet noted MDH has already been presented with an alternative for the piping that has no ASTM or other standard associated with it. If there is a third-party certification, but the standard is not listed in rule requirements, MDH would be unlikely to require the product to be third-party tested again.

Miley asked whether DLI indicated that PE sign-off was required for evaluations or if third-party testing was necessary, suggesting that third-party testing may be unnecessary and redundant. Weier responded that MDH understands the Minnesota State Building Codes, including the Minnesota Mechanical Code (MMC), provides broad authority to building officials and other authorities with jurisdiction to approval alternative materials. DLI may require third-party testing or third-party certification in its approval process for materials. Larson agreed the MMC gives local jurisdictions the authority to approve materials, but noted that they do not deviate from the materials already approved in the Code. Miley commented that if a third-party PE would determine the testing results are sufficient, the third-party testing agency might not be needed, provided the PE does not find that further testing is warranted. Weier clarified that MDH's proposed approach would require third-party testing in place of third-party certification, as it reduces the potential for conflicts of interest.

Egg shared his experience serving on the Technical Committee for the Uniform Mechanical Code, noting that materials meeting ASTM standards or certified by a PE are generally accepted. Miley referenced a section in the MMC stating that local officials may evaluate and approve alternatives without requiring third-party testing. Larson reiterated that, although this option exists in the Code, in his experience local officials rarely deviate from materials already approved. He added that it is unlikely a local official or PE would put their credentials on the line by approving an untested alternative.

Guertin restated the conceptual approach for approving alternative materials and invited members to share their level of agreement. Members expressing concerns were asked to explain their specific issues or perceived barriers.

Nubbe: No comment.

Henrich: Expressed concern about the limited availability of third-party testing agencies, noting that testing may not be adaptable for proprietary materials.

Traut: Echoed Henrich's concerns and voiced his support for establishing a pathway for approving alternative materials.

Egg: Shared support for the alternative approach using third-party testing. He added that testing should include long-duration, cyclical testing for pressure and tensile strength that simulates long time use. Egg also recommended that the third-party testing agency be ANSI-accredited to ensure credibility.

Lubratt: No comment.

Larson: Asked whether both the third-party testing and PE evaluation and recommendation would be required under MDH's proposed approach. Guertin confirmed that both would be required. Larson expressed support for MDH's proposed approach.

Luehrs: No comment.

Miley: Expressed general support for the proposed approach, but suggested that a PE review alone could be accepted in place of the third-party testing requirement.

Approach for addressing failed alternative materials

Guertin asked members to provide input on establishing a structured mechanism for MDH to respond when a consistent pattern of material failure is identified for a material that has already received approval.

Larson commented that from an economic standpoint, it is not in a company's best interest to continue using materials that fail in the field. He suggested that adding a specific rule requirement may not be necessary, as such issues typically resolve themselves.

Miley agreed with Larson's comment and asked whether MDH has used a similar approach elsewhere in the rule for approving alternative materials. Weier responded that this would be new territory for MDH, as the rule does not reference materials that do not meet a standard or certification. Miley further asked if MDH has previously experienced a situation where a material underperformed and required a rule change for its removal. Weier explained that historically certain materials referenced in rule have been removed, but MDH has not typically approved alternative materials that lack a standard or certification. Traut added there are many well fittings with appropriate certification and fail over time. When failures become apparent, the issue tends to be self-correcting as the material is no longer used. Nubbe agreed, noting that well contractors stand behind their work and the materials used. When a material proves unreliable, then the contractor stops using it.

Adjournment

Guertin thanked members for their participation in the discussion and informed them that draft rule language should be available for review by the end of October or early November.

Olson noted that this is a new approach for MDH in approving alternative materials within this framework, and cautioned that when the rule is reviewed by an Administrative Law Judge, it may not be accepted in its current form.

10/22/2025

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