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DEPARTMENT : Health

STATE OF MINNESOTA

Office Memorandum



DATE : February 24, 1992

TO : Legislative Commission to Review Administrative Rules
Room 55 State Office Building
100 Constitution Avenue, St. Paul, Minnesota

FROM : Jane A. Nelson, Rules Coordinator
Environmental Health Division
Minnesota Department of Health

PHONE : 627-5038

SUBJECT : Submission of Statement of Need and Reasonableness pursuant
to Minnesota Statutes, sections 14.131 and 14.23

In accordance with the above matter, the Minnesota Department of Health is submitting to you the Statement of Need and Reasonableness on proposed rules governing Flush Threaded Polyvinyl Chloride (PVC) Casing and Screens Used for Monitoring Wells at Petroleum Storage Tank Sites, Minnesota Rules, part 4725.7605.

JAN:lk

Enclosure

The Legislative Commission to
Review Administrative Rules

FEB 28 1992



2/20/92(rev)

STATE OF MINNESOTA
MINNESOTA DEPARTMENT OF HEALTH

In the Matter of Proposed Permanent
Rules of the Minnesota Department
of Health Governing Flush Threaded
Polyvinyl Chloride (PVC) Casing and
Screens Used for Monitoring Wells at
Petroleum Storage Tank Sites, Minnesota
Rules, part 4725.7605

Statement of Need
and Reasonableness

The proposed permanent rules govern the use of flush threaded polyvinyl chloride (PVC) casing and screens in monitoring wells at petroleum storage tank sites. PVC casing and screens are plastic casing and screens. This material is allowed for use at monitoring wells and leak detection at petroleum storage tank sites as an alternative to cast iron and steel casings and screens. The use of flush threading as a connection mechanism is expressly permitted in this instance.

The rules proposed establish permanent rules on this matter. Emergency rules on the use of flush threaded PVC casing and screens for monitoring and leak detection at petroleum storage tank sites were adopted by the department November 25, 1991.

Authority to Adopt Rules

Authority to adopt the proposed rules is found in Minnesota Statutes, section 103I.221, subdivision 2 which states that "the commissioner may adopt rules relating to the installation of plastic well casing." Section 103I.222 adopted in Laws of Minnesota 1991, mandates that:

The department shall adopt emergency rules within six months, and permanent rules within one year, of May 25, 1991, designed to allow the use of flush threaded polyvinyl chloride casing and screens used for leak detection and monitoring wells at underground or aboveground petroleum storage tank sites.

Minnesota Statutes, section 103I.501 stipulates that:

- (a) The commissioner shall regulate and license:
 - (1) drilling, constructing, and repair of wells;
 - (2) sealing of wells;
 - (3) installing of well pumps and pumping equipment;
 - (4) excavating, drilling, and sealing of holes for the installation of elevator shafts and hydraulic

- cylinders; and
(5) construction and sealing of environmental boreholes.

Rulemaking procedures; discretionary notice.

Minnesota Statutes, chapter 14 specifies certain procedures which must be followed when an agency proposes to adopt a rule. Section 14.10 requires an agency to seek information or opinions from persons outside the agency for adoption of a rule to publish notice of such action in the State Register. This notice was published on February 24, 1992.

A notice and copy of this Statement of Need and Reasonableness was sent to the Legislative Commission to Review Administrative Rules as required by Minnesota Statutes, section 14.131.

The department provided notice of intent to adopt the permanent rules and a copy of the proposed rule to the Minnesota Petroleum Marketer's Association and to over 125 parties in addition to those persons and associations on the department certified mailing list. The additional discretionary mailing by the department included monitoring well drillers and engineering firms, testing firms and laboratories, the Minnesota Department of Transportation, Minnesota Geological Society, county health departments, the Minnesota Water Well Association, Minnesota Office of Waste Management, Minnesota Department of Agriculture, Minnesota Pollution Control Agency and United States Army Corps of Engineers. This discretionary notice was also made when the emergency rule was proposed and adopted. A number of these parties fall within the definition of a small business as provided in Minnesota Statutes, section 14.115.

Fiscal impact.

The department has estimated the fiscal impact of the proposed rules on state and local public bodies in the two years following adoption of the rules and finds that the permanent rules will not result in an additional expenditure of public funds.

Small business considerations

Minnesota Statutes, section 14.115, requires that an agency consider five factors for reducing the impact of proposed rules on small businesses, these being:

1. less stringent compliance or reporting requirements;
2. less stringent schedules or deadlines for compliance or reporting;
3. consolidation or simplification of compliance or reporting requirements;
4. the establishment of performance standards for small businesses to replace design or operational standards required in the rules; and
5. exemption of small businesses from the proposed rule.

Small business is defined as "...a business entity, including its affiliates that (a) is independently owned and operated; (b) is not dominant in its field; and (c) employs fewer than 50 full time employees or has gross annual sales of less than four million dollars...." The small businesses most affected by the proposed rules are firms which install or use monitoring wells, and the owners of sites which contain a petroleum storage tank.

The proposed permanent rule complies with the legislative mandate to adopt permanent rules that allow for the use of PVC flush threaded casing for monitoring or leak detection at a petroleum storage tank site. Plastic casing and screens have been allowed for use at monitoring well sites (4725.7000 to 4725.7600). However, the use of plastic casing with flush threads was not expressly permitted. Laws of Minnesota 1991, mandated that the department adopt permanent rules to allow for the use of flush threaded plastic casing and screens.

1. The proposed rules do not mandate reporting requirements. The proposed rules do not require use of PVC flush treaded casing, but provide it as an option to other already recognized casing materials.

2. Schedules, deadlines or reporting requirements are not mandated within the scope of the proposed rules.

3. The purpose of the proposed rules is not to consolidate compliance or reporting requirements. The purpose is to allow for the permanent use of a product beyond May 22, 1992.

4. The department has considered the adoption of performance standards for well construction. The department views the intent of Minnesota Statutes, section 103I.222, in light of adopted rules, to specifically address the permitted use of a product in the construction of a well. With respect to groundwater protection, the department understands the intent of the legislation to be to encourage the use of monitoring wells on and around petroleum storage tank sites as a cost effective way to detect contamination leaks. Less stringent compliance standards for small businesses as defined may not ensure groundwater or public health protection. There has been concern among some hydrologists and soil scientists about the integrity of flush threaded casing. This concern remains. The department will continue to monitor the use of flush threaded pipe. The use of materials that do not endanger groundwater or public health are necessary regardless of the size of the employer or its dominance in the regulated field.

5. The major purpose of the proposed rule is to protect public health by ensuring protection of the groundwater which provides almost two thirds of all drinking water supplies in the state. Small businesses and the customers of small businesses should be afforded the same public health protection as other

individuals. It is not appropriate to exempt a business or affected party from the requirements of the proposed rules on the basis of size nor did the legislature make provision for such an exemption within chapter 103I.

Impact on agricultural land

In accordance with Minnesota Statutes, section 14.11, the department has determined that the proposed rules do not have a direct and substantial adverse impact on agricultural land in the state within the context of the state agricultural land preservation and conservation policy.

Need for and reasonableness of proposed part 4725.7605.

Minnesota Statutes (1991 Supplement), section 103I.222 mandates that:

The department shall adopt emergency rules within six months, and permanent rules within one year, of May 25, 1991, designed to allow use of flush threaded polyvinyl chloride casing and screens used for leak detection and monitoring wells at underground or aboveground petroleum storage tank sites.

The department must adopt proposed part 4625.7605 to comply with statute.

Item A. The screen must intersect the water table at the time of installation to prevent the submersion of casing joints below the water table. The concern of the department is that flush threaded joints may not be water tight. Casing joints for schedule 40 PVC casing are typically laboratory tested to withstand 25 pounds per square inch of pressure. Plastic casing for water supply wells is required to withstand 200 pounds per square inch of pressure. The reduction in the capacity to withstand pressure in flush threaded casing is due to the decrease in the casing wall thickness where the threads are cut or molded into the plastic. The threaded area of the joints are thin and may fracture if stressed by cold temperatures or tightening. To prevent leakage through casing joints, the joints should not be submerged below the water table. This requirement is reasonable because monitoring wells are commonly designed with the screen just intersecting the water table. Allowing the water table to rise to the first casing joint is reasonable because it is common practice to attach a 10 to 20 foot casing length to the screen. This practice allows for an 8 to 20 foot water table fluctuation. A water table rise of more than eight feet would be a rare occurrence.

Item B. It is necessary to limit the total depth of the well to 50 feet because PVC casing is not strong enough to consistently withstand the increased stress associated with greater depth installations. This requirement is reasonable because the water

table in Minnesota is generally less than 50 feet from the surface.

Item C. It is necessary to limit flush and threaded casing to use only in unconsolidated materials because installation in rock would require that the casing then be cement grouted. Although cement grout is considered to be the best material available to achieve a good well seal, the amount of cement grout required in rock may be significantly greater due to large cavities resulting from drilling. The heat of cement hydration is great for large quantities of cement and may cause plastic casing to collapse.

Item D. Requiring neat cement grout is reasonable because this is the requirement for other types of plastic casing. Cement grout provides a good seal. Placing grout from within 10 feet of the top of the screen allows a longer than commonly used space for extension of a sand pack or a bentonite seal above the screen. This requirement is necessary to prevent intervals around the screen that may vertically interconnect confining layers with permeable layers.

Item E. The proposed rule provides discretion in the type of pipe used for flush and threaded PVC casing. A casing standard of schedule 40 PVC was chosen to establish a minimum measure for structural strength to prevent borehole collapse. The specification of schedule 40 PVC pipe is consistent with adopted part 4725.7100 which requires plastic water wells to meet American Society for Testing and Materials standard, ASTM F480 Standard Specification for Thermoplastic Water Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR). Casing meeting ASTM F480 must be at least schedule 40.

Although the department would like to adopt a more specific casing standard consistent with the requirement for iron and steel casing, the department does not find the ASTM F480-90 casing standard for flush and threaded PVC to be adequate because it does not include thread tolerances. The ASTM F480-90 standard also requires the use of Acme screws which generally are not used by the industry. The department will continue to monitor the development of ASTM F480 standards and may consider adoption of a future revision.