

Minnesota Attorney General: Administrative Rules Proceedings

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Version 3
August 20, 2018

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing and the Need to Amend Certain Licensing Provisions	* * * * * * * *	REVISIONS TO RULES AS PROPOSED AND JUSTIFICATION FOR REVISIONS

MHD 224, which has been proposed for adoption, is revised as follows: *

1. "footnote 2. Caution should be used when handling solvent cement to avoid skin contact or inhalation of vapors. ~~"fumes."~~

   In this footnote we are concerned with the use of materials which readily evaporate. It has been brought to our attention that the definition of the term "fumes" would not include such evaporated materials. For this reason, the term "fumes" is inappropriate. We have therefore chosen to substitute for it the term "vapors," the definition of which does include evaporated organic solvents. This change is reasonable because it more accurately reflects the meaning which was intended in the warning.

2. MHD 224 G.6 shall read as follows:

   "All plastic-cased wells must terminate above grade as prescribed in MHD 217 and MHD 220(a)(11). The installer may equip a plastic-cased well with a steel casing or steel pitless unit (adapter) which is satisfactory for use in plastic-cased wells, to a depth equal to or greater than the frost line. ~~The installer must use an adapter which is satisfactory for use in plastic cased wells.~~ Where a steel casing or steel pitless unit is not used, the plastic casing shall be extended above grade to a distance prescribed in MHD 217 and MHD 220(a)(11), and must be protected with any one of the following:

   a. an oversize steel casing which extends from the top of the plastic casing down to a depth below the frost line, or

   b. at least 3 posts (Schedule 40 steel pipe) of at least 4 inch diameter at equal distances from each other and which are placed 2 feet from the center of the plastic casing. Such posts shall be installed to a depth of 4 feet into solid ground, or to a depth of 2 feet if each

*Material to be added is underlined, material to be deleted has a line drawn through it.

post is surrounded with 1 foot of concrete to a depth of 2 feet, or

c. a well house which is constructed so as to provide a degree of protection which is equivalent to that provided in either a. or b. above."

These additions have been made in order to allow an installer to extend the plastic casing above ground level. The primary purpose for which plastic well casing is used is to overcome the corrosive and encrustive properties of certain waters and soils. These destructive properties are not confined to deeper levels but may be equally prevalent at or near the surface. Therefore the use of plastic at or near the surface is as desireable as it is at lower levels. Since the statute permits the use of plastic well casing in those counties which have highly corrosive waters and soils, it is reasonable that plastic well casing should be permitted for both above-ground and other types of service. Plastic well casing is very brittle and therefore highly susceptible to fractures at lower temperatures. Above-ground well heads are frequently run into and damaged by cars, trucks or snowmobiles. Since plastic well casing is so susceptible to breakage, any such collision by a heavy moving vehicle or certain acts of vandalism could surely damage the casing. Because of these possibilities it is necessary that any plastic casing which extends above-ground be protected from predictable causes of damage. The three modes of protection which are prescribed in this revision are all in current use and have demonstrated their utility in providing the type of protection which is sought here. Since these changes serve to maximize the positive characteristics of plastic well casing, they are reasonable. Further these changes are necessary since they help to assure that the well water will not be contaminated and the public's health will be protected even if a well casing made of a fragile material is extended above the ground.

3. D.4. ". . .The pipe shall enter the socket to between 1/2 or 2/3 of the socket depth when inserted and turned ~~by hand~~."

The phrase "by hand" is being deleted at the recommendation of the Advisory Council. It was their feeling that it is nearly impossible to turn oversize pipe (eg. 8 inch diameter or larger) by hand, and that a strap wrench must be used for such large pipe sizes. The real purpose to be achieved by this provision is to assure proper seating of the pipe in the socket and this can best be accomplished by turning the pipe slightly. However, the means by which the pipe is held while being turned is relatively unimportant. Since the installer would not always be able to comply with the requirement that the pipe be turned by hand, it seems unreasonable to impose it in the rule. Therefore we propose to delete the phrase "by hand," the net result of which is that the installer can turn the pipe by any means available to him.

4. G.7. shall be stricken.

Based upon information obtained by the department staff and from the Water Well Contractors Advisory Council after the hearing of December 1, 1977, we propose to strike this section for the following reasons:

a. There is a widely shared sentiment among well drillers that they ought not have to bear any responsibility with regard to the satisfactory grounding of an electrical supply, nor should they have to suffer the consequences

resulting from the adoption of a rule imposing such a task because of the undesireability of using a particular type of well as an electrical ground. These sentiments are further reinforced by the fact that it is sometimes impossible to convey the information regarding well casing type to the person who might ultimately use the well as a ground, thereby making the imposition of such a task even more unreasonable.

b. There is a new provision in the 1978 Minnesota Electrical Code which requires that an electrical supply be grounded to a separate grounding rod rather than to a plumbing system because of the increasing use of PVC pipe for household plumbing. By working through the state board of electricity, we will attempt to inform electricians of the new state law and of the fact that more plastic-cased wells are likely to be installed in certain Minnesota counties than was permitted in the past. Communicating this information to those who are directly responsible for the safe grounding of an electrical supply seems to be a more reasonable way to approach this problem than is imposing a duty upon drillers who will have little control over the ultimate (mis)use of a well. For these reasons, we withdraw section 224 G.7. altogether.

Dated:

December 7, 1977

STATE OF MINNESOTA

Warren R. Lawson, M.D.
Commissioner of Health

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing and the Need to Amend Certain Licensing Provisions

*

NOTICE OF HEARING

Notice is hereby given that a public hearing in the above-entitled matters will be held pursuant to Minn. Stat. § 15.0412 subd. 4(1976), in the William Mitchell College of Law Auditorium, 875 Summit Avenue, St. Paul, Minnesota, on Thursday, December 1, 1977, commencing at 9:30 a.m.

All interested or affected persons will have an opportunity to participate concerning the adoption of the proposed amendment captioned above. In addition, interested or affected persons are also invited to submit statements or material regarding the need to amend the provisions of the water well contractors rules regarding the licensing of drillers. Statements may be made orally and written material may be submitted. Whether or not an appearance is made at the hearing, written statements or material may be submitted by mail to Steve Mihalchik, Hearing Examiner, at Room 300, 1745 University Avenue, Saint Paul, Minnesota, 55104, telephone (612) 296-8112, either before the hearing or within five (5) days after the close of the hearing. All such statements will be entered into and become part of the record. Testimony or other evidence to be submitted for consideration should be pertinent to the matter at hand. For those wishing to submit written statements or exhibits, it is requested that at least three (3) copies be furnished. In addition, it is suggested, to save time and avoid duplication, that those persons, organizations, or associations having a common viewpoint or interest in these proceedings join together where possible and present a single statement in behalf of such interests. The conduct of the hearing shall be governed by the rules of the Office of Hearing Examiners.

If adopted, the amendment would permit the use of plastic water well casing under the Minnesota Water Well Construction Code and would require the use of certain procedures for the installation of plastic water well casing.

Copies of the proposed amendments are now available and at least one free copy may be obtained by writing to Mr. Edwin Ross, Division of Environmental Health, 717 Delaware Street S.E., Minneapolis, Minnesota, 55440. Additional copies will be available at the door on the date of the hearing.

A Statement of Need explaining the commissioner's position relative to the necessity for the proposed amendments and a Statement of Evidence outlining the testimony and evidence which will be introduced by the Department of Health in support of the proposed amendments will be filed with the Hearing Examiner's Office at least twenty-five (25) days prior to the hearing and will be available there for public inspection. The statutory authority of the commissioner to promulgate and adopt these amendments is contained in Laws, 1977, Chap. § 378 as amended by Chap. 305 §45.

The testimony regarding possible changes to the licensing provisions of the rules will be received separately and will be given to the Minnesota Department of Health for consideration. Under the existing licensing rule it is difficult to enforce the construction code provisions against individual drillers who violate the rules. It is hoped that the licensing provisions could be amended to increase individual driller accountability.

In addition, please be advised that Minn. Stat. ch. 10A requires each lobbyist to register with the State Ethical Practices Board within five (5) days after he commences lobbying. Lobbying includes attempting to influence rule making by communicating or urging others to communicate with public officials. A lobbyist is generally any individual who spends more than $250 per year for lobbying or any individual who is engaged for pay or authorized to spend money by another individual or association and who spends more than $250 a year or five (5) hours per month for lobbying. The statute provides certain exceptions. Questions should be directed to the Ethical Practices Board, 41 State Office Building, Saint Paul, Minnesota, 55155, telephone 612-296-5615.

Dated: 10/14/77

STATE OF MINNESOTA

WARREN R. LAWSON, M.D.
Commissioner of Health

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed	*	
Amendment to the Water	*	
Well Construction Code	*	ORDER FOR HEARING
Relating to the Use of	*	
Plastic Well Casing	*	

In order to carry out the duty imposed by Laws, 1977, Chap. 398 §1 (as amended by Chap. 305 §45) the commissioner of health hereby proposes to amend the above-captioned Water Well Construction Code, pursuant to the authority vested in him by Laws, 1977, Chap. 398.

NOW, THEREFORE, IT IS ORDERED this 14th day of October, 1977, that a public hearing on the proposed amendment captioned above be held in the William Mitchell College of Law Auditorium, 875 Summit Avenue, St. Paul, Minnesota, on Thursday, December 1, 1977, commencing at 9:30 a.m., and continuing until all persons or representatives of associations or other interested groups have had an opportunity to be heard.

IT IS FURTHER ORDERED, that notice of said hearing be published in the State Register and be given to all persons or representatives of associations or other interested groups who have registered their names with the Secretary of State for that purpose and to all persons who are presently members of the Minnesota Legislature.

STATE OF MINNESOTA

WARREN R. LAWSON, M.D.
Commissioner of Health

RECEIVED
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EXAMINERS

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing

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STATEMENT OF

NUMBER OF PERSONS

The number of persons expected to attend the hearing in the above captioned matter is 100.

It is estimated that the hearing will be 8 hours.

STATE OF MINNESOTA

Date: 10/14/77

WARREN R. LAWSON, M.D.
Commissioner of Health

Dept's Exhibit No. C
File No.
Date

STATE OF MINNESOTA

COUNTY OF HENNEPIN

In the Matter of the Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing and the Need to Amend Certain Licensing Provisions	* * * * * * *	AFFIDAVIT OF RECEIPT OF THE SECRETARY OF STATE'S LIST

Mark Saporito, being duly sworn upon oath, deposes and says:

1. That he is an employee of the Minnesota Department of Health.

2. That on the 25th day of October, 1977, he called the Minnesota Secretary of State's office and requested a current list of all representatives of associations or other interested groups or persons who had registered their names with the Secretary of State for the purpose of obtaining notices of public hearing relating to the promulgation of rules or amendments thereto pursuant to Minn. Stat, § 15.0412 subd. 4 (1976).

3. That on the 27th day of October, 1977, in response to the above request, the Secretary of State provided him with such a list, a photocopy of which is attached hereto and incorporated by reference.

Further affiant sayeth not.

Mark Saporito

Subscribed and sworn to before me
this 27 day of October, 1977.

Louise K Kaniuk

LOUISE K. KANIUK
NOTARY PUBLIC-MINNESOTA
HENNEPIN COUNTY
My Comm. Expires Feb. 23, 1984

STATE OF MINNESOTA

COUNTY OF RAMSEY

In the Matter of the Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing and the Need to Amend Certain Licensing Provisions	* * * * * * *	CERTIFICATE

I hereby certify that the 490 general labels and 5 page list for the Minnesota State Department of Health, all of which are attached and made a part hereof, constitute the complete lists of persons, associations, and other interested groups who as of 8:30 o'clock A.m., this 27th day of OCTOBER, 1977, have requested pursuant to Minn. Stat. § 15.0412 subd. 4 (1976), that their names be placed on file with the Secretary of State for the purpose of receiving notice of public hearing on proposed rules and amendments thereto on the subject captioned above.

SECRETARY OF STATE

JOAN ANDERSON GROWE

Joan Anderson Growe

By Cheri L. Mattson

STATE OF MINNESOTA

COUNTY OF HENNEPIN

In the Matter of the Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing and the Need to Amend Certain Licensing Provisions	* * * * * *	AFFIDAVIT OF MAILING

Linda Runquist, being first duly sworn, deposes and says:

That on the 28th day of October, 1977, at the City of Minneapolis, County of Hennepin, State of Minnesota, she served the attached Notice of Hearing by depositing in the United States mail at said City of Minneapolis, a true and correct copy thereof, properly enveloped, with postage prepaid, to all persons and associations at the addresses listed on the Certificate of the Secretary of State attached and made a part hereof as Exhibit A, to all persons and associations at the addresses listed on Exhibit B, attached and made a part hereof, as well as to all members of the Minnesota Legislature as of the date of mailing.

Linda Runquist

Subscribed and sworn to before me
this 27 day of October, 1977.
Louise K. Kaniuk

LOUISE K. KANIUK
NOTARY PUBLIC-MINNESOTA
HENNEPIN COUNTY
My Comm. Expires Feb. 23, 1984

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing and the Need to Amend Certain Licensing Provisions	* * * * * * *	STATEMENT OF EVIDENCE AND PERSONS TESTIFYING

Testimony regarding the adoption of the above-captioned rule amending the Minnesota Water Well Construction Code shall be given at the public hearing to be held on December 1, 1977. All of the testimony to be presented by the agency shall be based upon the matter contained in the Statement of Need and Justification which is attached hereto and made a part hereof. On behalf of the Minnesota Department of Health, the presentation of evidence will be made by Paul B. Johnson, P.E., Senior Engineer, Section of Public Water Supplies, Division of Environmental Health.

It is not anticipated at this time that any outside experts will be called as witnesses at this hearing.

Dated:
10/31/77

STATE OF MINNESOTA

Duane A. Johnson

for WARREN R. LAWSON, M.D.
Commissioner of Health

Dept's Exhibit No. K
File No.
Date

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed Amendment to the Water Well Construction Code Relating to the Use of Plastic Well Casing and the Need to Amend Certain Licensing Provisions	* * * * * * *	STATEMENT OF NEED AND JUSTIFICATION

These amendments to the Water Well Construction Code are proposed for adoption pursuant to Laws, 1977, Chap. 398 §1 (156A.031) which provides that, "the use of plastic casing in water wells is expressly permitted. . ." and that the "state board of health may supplement the provisions of this section with rules relating to the installation of plastic water well casing. . . ". The new law further provides that "Prior to January 31, 1978, the state board of health shall adopt rules pursuant to Chapter 15 concerning the installation and use of plastic water well casing pipe and couplings." A copy of the legislation is attached as Appendix 1.

The term "water well casing" means a protective pipe inserted into the ground and through which water flows or is pumped to the surface or through which ground water levels are measured. If a well is not properly cased, or if the casing material is not sufficiently strong to withstand a certain amount of lateral and vertical pressure, the casing may crack and leak. If the casing material cannot withstand routine pump and well screen installation or replacement, or cleaning out of the well, without becoming deformed, such a well casing may crack or leak. Leakage of surface liquids through the casing could result in contamination of the individual well and possibly of the entire water bearing formation. This contamination could in turn create a public health risk for all persons who drink water drawn from that contaminated formation.

Heretofore, the Minnesota Water Well Construction Code has only permitted the use of steel or cast iron pipe of a certain thickness for casing of water wells because only ferrous pipe was known to possess the physical characteristics which made it safe for use as well casing material. Since adoption of the Minnesota Water Well Construction Code in 1974, the use of non-ferrous well casing material outside of Minnesota has become more widespread and reports of its use in various states are gradually being collected and evaluated.

The advocates of the use of plastic pipe for well casing list the following properties as being advantages which make its use preferable to that of ferrous pipe: cheaper, lighter weight, easy to install. Probably its single greatest advantage is that it is non-corrosive. In areas where water and/or soil conditions are corrosive, a non-corrosive casing is highly desirable. However, three of the characteristics of plastic pipe, its brittleness, its thermal properties, and its lack of strength when compared to steel, create the potential for serious problems. Plastic pipe is much more subject to failure by deformation or fracture than is steel or cast iron pipe. In addition, because brittleness increases as the ambient termperature drops, the use of plastic pipe in subzero winter temperatures in Minnesota must be carefully controlled.

The rule proposed for adoption here reflects the need to use extreme caution in handling and installing plastic well casings, in order to assure the realization of the Department's ultimate goal of continued protection of the public health.

Authority

The enabling legislation provides that a rule governing the installation of plastic well casing shall be promulgated by the State Board of Health, yet the proposed rule is being promulgated by the Commissioner of Health. When the enabling legislation was drafted, the Board of Health was still in existence, and the Board was endowed with the authority to adopt rules for the Minnesota Department of Health. Prior to passage of the enabling legislation (Laws, 1977, Chap. 398), the legislature enacted Laws, 1977, Chap. 305 §9, which abolished the Board of Health and which gave all the rule-making power formerly held by the Board to the Commissioner, effective on the date following enactment. In §45, the reviser of statutes was authorized to change the name from Board of Health to Commissioner in all future versions of Minnesota Statutes. In order to reflect the legislative intent, we have taken the legislative directive to mean that a state agency should make similar changes in its rules. Therefore, the proposed rules are being promulgated by and refer to the Commissioner of Health.

Need and Justification:

Amending MHD 220(a): The proposed language would be added after the existing title "Casing for Permanent Wells" and before subdivision "(1)". The three sentences together make clear that either ferrous or plastic pipe (in specified counties) may be used for casing water wells in Minnesota. The proposed language also notifies the reader that the procedure for installing plastic pipe is to be found elsewhere in the well drilling code.

MHD 224. "Plastic Well Casing:" This title alerts the reader that the new rule concerns itself with the use of plastic for well casings. The opening paragraph further states that one who drills a water well which will be cased in plastic must conform not only with the provisions of the proposed MHD 224, but must also conform to all the remaining provisions of the Water Well Construction Code except those which apply specifically to the use of steel or cast iron pipe, such as MHD 220(a)(1) through (9). The rule incorporates in footnote 1 a list of the counties in which the use of plastic pipe is specifically permitted by statute, (Minnesota Laws, 1977, Chap. 398 §2). Persons drilling wells in counties which are not named in footnote 1 may use plastic casing only after having obtained a waiver as provided in MHD 210(d)(3).

MHD 224 A. Two terms are defined in this section, rather than having been defined in amendments to MHD 210, the rule which contains most of the code's definitions. "Installer" and "plastic" are defined in MHD 224A because the terms are particularly applicable in this proposed rule. MHD 224A.1. defines "installer." This definition was thought to be necessary so as to notify the reader that the code applies to anyone authorized to to construct a well in accordance with Minn. Stats. §156A.03(1976).

MHD 224 A.2. The term "plastic" is defined to mean only the two types of plastic specified in the rule, so as to exclude the possibility that an installer might use other types of plastic, which are unacceptable for use as well casing in Minnesota. Enforcement of the A.S.T.M. standard referred to below in the discussion related to MHD 224B. cites specifications for three types of plastic, PVC, ABS, and styrene rubber. Proposed rule MHD 224 allows the use of only the first two plastics, PVC and ABS, because they are the only

plastics which are made to withstand 200 p.s.i. Since the law requires that only plastic pipe which can withstand 200 p.s.i. may be used, styrene rubber pipe may not be used for well casing in Minnesota and is therefore not included in the definition of "plastic".

MHD 224 B.1. restates the statutory authority to adopt the A.S.T.M. standard for the types of plastic which may be used for water well casing in Minnesota. A copy of the A.S.T.M. standard is attached as Appendix 2. Table 1 contains information taken from the standard. Since the statute specifies that only pipe which can withstand pressures greater than 200 pounds per square inch (p.s.i.) is permitted, Table 1 lists the sizes of pipe which meet this requirement. It is included as part of the rule so that an installer who may not have a copy of the A.S.T.M. standard will have all the information necessary to help in deciding which pipe is acceptable for use.

MHD 224 B.2. The requirement that the particular pipe material shall have been approved for potable water use by an independent testing laboratory is part of the A.S.T.M. standard. There are many plastics which, while they might be suitable as piping material for other applications, are not suitable to be used for potable water. The requirement that the material being considered for use in a water well be tested and approved as prescribed helps assure that the water coming from a well encased with such material will indeed be safe for human consumption. In order to avoid an impermissible delegation of authority, the rule specifies that the Commissioner of Health is the ultimate authority to determine who may test the safety of the pipe. The requirement that the testing laboratory approval be stamped on the pipe helps assure that only approved pipe will be used.

MHD 224 B.3. This section prescribes the manner in which the plastic pipe to be used for water wells in Minnesota must be marked. The marking provisions are taken from §9 of the A.S.T.M. standard. Since the marking system is one of the specifications which make up the standard and since the statute requires that only plastic pipe which conforms to the specifications of the standard may be used, the provisions regarding required markings are incorporated here.

MHD 224 C. This section provides that five inches is the minimum size of plastic pipe that can be used to case a well when a submersible pump is to be installed at the bottom of the well. Imposition of a minimum five-inch pipe size means that there will be sufficient clearance between the pump and the casing to prevent scratching of the casing when the pump is lowered to the bottom of the well. This clearance is also necessary to prevent softening and deformation of the casing if the pump should overheat.

The ultimate purpose for adopting this rule is to assure that however a well hole is drilled and however a plastic casing is to be joined and installed, the resulting casing will remain intact for its entire length, and it will be free of any bulges, scratches, dents, etchings or cracks, any of which could weaken and break, thereby allowing the entry of contaminating substances into the well. This need to protect the integrity of the casing underlies and is the primary justification for all of the provisions which follow.

MHD 224 D.1. prohibits the storing of plastic pipe in direct sunlight because sunlight is known to react photochemically with the piping material and this reaction may result in a weakening of the plastic. Plastic pipe is satisfactory for use as well casing only as long as it retains its roundness. Once the roundness is lost, through sagging or mishandling, the plastic loses much of its strength because isostatic compressive resistance to collapse is lost. Since both exposure to sunlight and certain storing methods result in in a weakening of the plastic pipe which might render it unfit for use as well casing, these two storage conditions are prohibited.

MHD 224 D.2. requires that the installer examine the pipe he is about to use to be certain that the pipe has the structural integrity necessary to assure that the water well casing will be safe. Because of its physical properties plastic pipe is very susceptible to cracks and gouges. Therefore, its use requires closer inspection than the use of ferrous pipe would under similar circumstances. The rule prohibits the installer from using plastic pipe which may have been damaged because such damage might result in a leaky and therefore unsafe casing.

MHD 224 D.3. requires the use of solvent cement. This means a cement which both dissolves the surface of the pipe material it comes in contact with, and also acts as a joining or cementing material. The application and use of these cements must be carefully timed and controlled if their binding properties are to be maximized. This subsection requires that only solvent cement which is suitable for the particular plastic be used. The use of an inappropriate solvent might result in a weak or incomplete joint which could leak or separate. The rule requires that the installer choose a cement whose setting properties allow some brief time in which to join the pieces together. However, the rule also requires that the joint be made immediately upon application of the cement so that the cement has not dried enough to reduce its ability to bind.

This subsection attempts to strike a balance between the need to take time to apply the cement with care on all the surfaces to be joined, and the need to assemble the joint while the cement is still moist enough to bind the two surfaces completely.

MHD 224 D.4. requires that the installer choose pipe and coupling combinations which fit together tightly so that when cement is applied the surfaces will mate readily to assure a chemical fusion equal in strength to the pipe itself. This subsection also states that the pipe must enter the socket to a certain depth. This is required to assure that the amount of surface to be bonded will provide sufficient strength to prevent breakage of the joint when the pipe is handled.

MHD 224 E. This section prescribes particular techniques for joining together lengths of plastic pipe to assure that the resulting casing will not leak once it has been installed.

MHD 224 E.1. requires that the pipe be cut only with tools which will result in a square cut. The use of standard pipe or tubing cutters is prohibited because their use can result in pipe deformation or cracked and irregular pipe ends. Such deformed or irregular ends would interfere with good joint formation which might result in weak or leaky joints.

MHD 224 E.2. requires that all dirt and burrs be removed in order to eliminate any interference with the joining process.

MHD 224 E.3. Different formulations of solvent cement or of plastic pipe material may require the use of a primer before the cement is applied. If the installer uses one of these plastics or cements, this subsection requires that he use a primer to assure that the joint will be as strong and leakproof as the available materials permit.

MHD 224 E.4. Solvent cements for use with plastic pipe material volatilize quickly upon exposure to air. The order of steps imposed here with regard to which parts should be cemented first helps assure that enough solvent cement will remain to produce a satisfactory softening and cementing of the surfaces to which the cement has been applied. An even coat of cement must be applied to assure equal softening of the surface and to prevent uneven flow of excess cement out beyond the cut end. Such excess flow might soften and weaken that part of the pipe lying beyond the joint where the pipe is of single thickness. The excess flow may harden into lumps which could later interfere with placement of the casing or with placement of a submersible pump.

MHD 224 E.5. Much of the rationale underlying the need for subparts a through e has been presented earlier and will not be repeated here. Subpart d requires the use of pipe joiners because of the need to maintain proper alignment and the need to exert pressure sufficient to bring the pipe and coupling together tightly. In subpart f and g the installer must leave the newly joined pipe undisturbed for at least the time prescribed in Table 2. Disturbing the pipe prior to the prescribed setting time may result in misalignment of the joint which, combined with the stresses caused by the installation, might result in leakage of the joint. Table 2 reflects the fact that the time required for setting is inversely proportional to the ambient temperature but is directly proportional to the pipe size. Subpart E5.h refers to Table 3 which specifies the amount of time for which the joint should be allowed to attain maximum joint strength. The subsection refers to time "before the joined pipe can be dropped into the drilled hole." The cure times imposed in subpart h, in addition to being dependent on temperature and pipe size, are also dependent on relative humidity. The joining process is the result of a chemical reaction which proceeds rapidly at the outset. Strength sufficient to withstand careful handling develops

reasonably soon after joining and humidity is not an important factor. However, after this initial rapid rate of reaction, the rate slows considerably. This slower rate is greatly affected by humidity and this fact is reflected in the amount of curing time which must elapse in order for the joint to reach the strength necessary to withstand the pressure (either external or internal) once the casing has been lowered into the ground.

MHD 224 F.1. This subpart permits the use of threaded couplings but requires that the installer use only the lubricant which is appropriate for use with the particular type of plastic. The use of an inappropriate lubricant could cause a weakening of the threaded portion of the pipe and a resulting loss of integrity of the casing. Limiting the number of turns required to tighten the joint helps assure that the joint will not be subjected to excessive pressure which might crack the pipe or the coupling. In subpart F.2, the installer is required to use only that type of coupling which is appropriate in joining a non-plastic well screen to plastic casing. Use of an inappropriate coupling might result in inadequate bonding and leakage at that joint.

MHD 224 G.1. requires that a hole which is to accommodate plastic well casing be drilled four inches larger than the nominal casing size. Nominal casing size is a term of art in the pipe industry and is a measure referred to in Table 1 of the A.S.T.M. standards. The requirement that the hole be drilled four inches wider than the nominal casing size will assure that there will still be sufficient free space between the wall of the hole and the casing for insertion of the casing and for grouting with a tremie pipe. This free space is necessary to avoid the exertion of any pressure on the casing when it is placed in the hole. This four-inch clearance also helps avoid the need to exert pressure when installing the casing if one of the joints were even slightly missaligned. Missalignment by only one degree can result in considerable deflection at the end of a 200 foot length of pipe. Requiring a free space of approximately two inches on each side of the casing should compensate sufficiently for such missalignment.

Subpart G.2. The first sentence is a repetition of the content of an earlier provision and will be eliminated in a revision of the rule to be presented at the hearing. The second sentence in this subpart more

properly belongs in the next subpart which deals with grouting and will be discussed below.

Subpart G.3. imposes a requirement that the annular space (space between the drilled hole and the outer wall of the casing) be filled with grout and further explains why such grouting is necessary. The provision in subpart G.2. requiring that a well drilled into bedrock be sealed off with neat cement (a material impervious to seepage of liquids) is imposed to assure that the bedrock layer which is naturally impervious to the seepage of liquids will remain so even after a well has been drilled into or through it.

Subpart G.3. allows the use of native sand for grouting around the casing of a well drilled into outwash material (a type of sand formation which is very porous, through which liquids can readily seep). The water source which is being tapped by such a well is essentially unprotected anyway, and requiring the use of an impervious cement grout would serve little useful purpose. The use of sand as the grouting material can provide all the lateral support which is required for such a casing. This subpart does require that the upper 30 feet of any type of well be sealed off with neat cement grout using a tremie pipe. Because the upper part of any well casing is the portion most subject to abuse and is therefore most likely to leak, the requirement that the upper 30 feet be cemented helps reduce the possibility that a plastic casing which is fractured by some accidental blow or other cause will result in the entry of contaminating materials. The use of a tremie pipe and filling with grout from the bottom up helps assure that the entire space will be filled, that no air will be trapped in the cement layer, and that the casing will be well sealed. The use of hi-early cement grout is prohibited because grout made from such cement gives off so much heat as it hardens, that pipe composed of PVC could soften and lose its roundness if the lateral pressure is uneven. The plastic casing could lose much of its strength as a result of all these factors. The table showing the sensitivity of PVC pipe to elevated temperatures illustrates the reason why it is necessary to avoid excessive temperatures during installation.

MHD 224 G.4. prohibits the insertion of the drilling equipment inside the casing as a well is being drilled into rock. This prohibition should apply to all types of wells and the revised proposed rule will include such a change. This subpart prohibits such a practice because of the fragility of the pipe and the likelihood that the equipment may scratch, fracture or otherwise damage the pipe.

MHD 224 G.5. An installer is required to plug and abandon a bore hole whenever any of the conditions described in a., b., or c. occur because in each of these conditions, it is highly likely that the casing will be, or will have been, damaged. To permit such a well to remain open, or to be abandoned by procedures other than those prescribed in MHD 218(c)(2) would allow for surface infiltration to enter the well and contaminate the aquifer, whether or not the well is ultimately put into use.

MHD 224 G.6. The requirement for a steel casing or steel pitless adapter to the depth of the frostline is imposed so as to avoid possible thermal shock which might damage an unsupported or exposed plastic casing.

MHD 224 G.7. It is a common practice among electricians, because of its convenience, to ground a household electrical supply to a water well. However, this practice is safe only as long as the well casing is ferrous and conductive. Because plastic is non-conductive, grounding to a plastic well would be dangerous because it would provide no grounding at all and because it might cause a melting of the casing. Because an electrician might not know or be able to tell whether a well is cased with a conductive (ferrous) or non-conductive (plastic) material, it seems appropriate to require that the installer should notify the homeowner of the fact that the plastic cased well is not a suitable ground. Requiring that the information be conveyed in writing helps increase the likelihood that the homeowner will obtain this important information.

The Commissioner of Health is charged with adopting rules which will result in the ultimate protection and preservation of the public health.* The state legislature has authorized the Commissioner of Health to adopt rules governing the use and installation of plastic pipe for water well casing in Minnesota. The rule proposed for adoption here imposes certain requirements

*Minn. Stats. §156A.01(A76)

upon a person who would use plastic well casing to assure that the ground waters of the state will be protected from contamination and that the health of persons who drink this water will thereby be protected. Because the installation of plastic well casing creates the potential for contamination of the state's ground water supplies, this rule, which imposes a procedure to help prevent such contamination, is reasonable. Further, the rule is reasonable because it only prescribes that which is necessary to assure integrity of the plastic casing during installation.

The rule is necessary because its adoption was mandated by the state legislature. The rule is also necessary because its adoption will help assure that the water being provided to Minnesotans is safe for drinking.

* * * * * *

Appendix F

WATER WELLS—PLASTIC CASINGS

CHAPTER 398

H.F.No.823

[Coded]

An Act relating to public health; permitting plastic well casings in certain counties; amending Minnesota Statutes 1976, Chapter 156A, by adding a section.

Be it enacted by the Legislature of the State of Minnesota:

Section 1. Minnesota Statutes 1976, Chapter 156A, is amended by adding a section to read:

156A.031 Plastic casings

Subdivision 1. The use of plastic casings in water wells is expressly permitted within the state of Minnesota. Any plastic casing used for water wells must meet the current standard specifications of the American Society for Testing and Materials (ASTM) for thermoplastic water well casing pipe and couplings. All plastic water well casing shall be capable of withstanding pressures equal to or greater than 200 pounds per square inch (p.s.i.).

The state board of health may supplement the provisions of this section with rules relating to the installation of plastic water well casing, providing, however, that such rules shall not delay the use of plastic water well casing meeting the requirements of this section.

Prior to January 31, 1978, the state board of health shall adopt rules pursuant to chapter 15 concerning the installation and use of plastic water well casing pipes and couplings.

Sec. 2.

156A.031

Subd. 2. This section applies only to the counties of Traverse, Grant, Douglas, Stevens, Pope, Big Stone, Swift, Lac qui Parle, Chippewa, Kandiyohi, Yellow Medicine, Renville, Lincoln, Lyon, Pipestone, Murray, Rock, and Nobles.

Sec. 3. This act is effective the day following final enactment.

Approved June 2, 1977.

Stat. § 15.052. In the particular case of a rate-setting contested case involving the State Public Service Commission, one or more Commissioners may or may not be in attendance and thus, obviously, be subject to attempts to influence by the parties to the proceeding. Consistent with the rationale of distinguishing between formal and informal proceedings would be the inherent fact that all expenses involved in a contested rate case proceeding under the Minnesota Public Utilities Act are reported by the utility as part of the utilities business expense in the rate case and, therefore, are a matter of formal public record while those involving any informal unilateral attempt to influence would not be.

My specific question for which I have extrapolated what I believe to be the intended interpretations and rationale is whether an attorney of record and witnesses providing testimony for a party to a contested case rate proceeding before a hearing examiner assigned by the State Office of Hearing Examiners wherein the State Public Service Commission will make the final determination, are subject to the lobbyist registration and reporting requirements.

Very truly yours,
James R. Habicht

Department of Health
State Board of Health
Proposed Revision of Rules Relating to Various Subjects

Notice of Intent to Solicit Outside Opinion

Notice is hereby given, pursuant to the provisions of Minn. Stat. § 15.0412, subd. 6 (Supp. 1975) that the Minnesota State Board of Health will propose the adoption of new rules and the amendment and revision of existing rules.

All interested parties desiring to submit data or views relating to the proposed adoption, amendment or revision of the rules noted below should address their comments (either written or oral) to the Minnesota Department of Health, Division of Environmental Health, 717 Delaware Street S.E., Minneapolis, Minnesota 55440, by writing or calling the persons designated. Evidence submitted for consideration should be pertinent to the matter at hand. Any material received by the Department of Health will become part of the hearing record.

1. Proposed amendments to Minnesota Water Well Contractors Code relating to the use of plastic pipe by water well contractors in the construction of water wells:

Contact: Edwin Ross
Phone: (612) 296-5339

2. Rules relating to the licensing of water conditioner installers and contractors and the installation of water conditioning equipment.

Contact: Charles Settle
Phone: (612) 296-5325

3. Rule relating to the regulation with respect to sanitary conditions of mass gatherings.

Contact: Charles Schneider
Phone: (612) 296-5335

4. Amendment to MHD 151-160, Lodging Establishment, and MHD 161-170, Food and Beverage Establishments, will update standards.

Contact: Charles Schneider
Phone: (612) 296-5335

5. Proposed rules relating to all public drinking water supplies, pursuant to the Safe Drinking Water Act of 1974, P.L. 93-523, and rules amending MHD 136 relating to water supplies and MHD 217 relating to water well construction.

Contact: Gary Englund
Phone: (612) 296-5330

6. Proposed repeal of the following rules:

MHD 246 dealing with annual sanitary inspections,

MHD 247 dealing with notice of inspection,

MHD 248 dealing with cesspools and privies,

MHD 249 dealing with disposal of dead animals,

MHD 250 dealing with feeding of garbage to hogs,

MHD 251 dealing with rendering establishments,

MHD 252 dealing with slaughterhouses,

MHD 253 dealing with keeping hogs at slaughterhouses,

MHD 254 dealing with hatters' fur,

MHD 198 dealing with industrial camps,

MHD 195 dealing with tourist camps,

MHD 204 dealing with migrant labor camps.

Contact: David Giese
Phone: (612) 296-5362

7. Amendment of MHD 139, Plumbing, will include standards and qualifications for examination and licensing of journeyman and master plumbers.

Contact: Charles Settle
Phone: (612) 296-5325

Any materials submitted shall be reviewed and considered by the Department of Health during the preparation of the proposed rules. Notice of the public hearing on the proposed rules shall be published in the State Register and given to all interested parties who have registered with the Secretary of State's Office in accordance with the provisions of the Administrative Procedure Act.

Under the provisions of Minn. Stat. § 10A.01, subd. 11 (1974), any individual representing persons or associations attempting to influence administrative action, such as the promulgation of these proposed rules, must register with the State Ethics Commission as a lobbyist within five days of the commencement of such activity by the individual. The State Ethics Commission is located at Room 401, State Office Building, Saint Paul, Minnesota 55155.

Warren R. Lawson, M.D.
Secretary and Executive Officer

ADOPTED

COMMISSIONER OF HEALTH

MINNESOTA DEPARTMENT OF HEALTH

WATER WELL CONSTRUCTION CODE AMENDMENTS

MHD 220(a) Casing for Permanent Wells.

Casing for permanent wells shall be of [[either]] ferrous material or, where permitted by statute, plastic material. For ferrous pipe, the specifications and installation procedures are prescribed below. For plastic pipe, the specifications and installation procedures are prescribed in MHD 224.

MHD 224. Plastic Well Casing:

In addition to complying with MHD 210-223, an installer who uses plastic well casing* must comply with the provisions of this rule with regard to construction and installation.

A. Definitions: The following terms shall have the meanings given them.

1. Installer means any person who constructs a well using plastic casing, whether or not such person is a driller or contractor who is licensed pursuant to Minn. Stat. Chap. 156A. (1976).

2. Plastic, when used in MHD 210 through 224, means a thermoplastic pipe or casing material composed of either polyvinyl chloride (PVC) or acrylonitrile-butadiene-styrene (ABS).

*Laws, 1977, Chap. 398, permits the use of plastic well casing only in the following counties: Traverse, Grant, Douglas, Stevens, Pope, Big Stone, Swift, Lac qui Parle, Chippewa, Kandiyohi, Yellow Medicine, Renville, Lincoln, Lyon, Pipestone, Murray, Rock and Nobles.

MHD 10/77

B. Standards:

1. Any plastic pipe used for water well casing shall meet the standards of the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania, 19103, which are referenced as Standard Specification for Thermoplastic Water Well Casing Pipe and Couplings Made in Standard Dimension Ratios (SDR), ASTM F-480. Such pipe shall be capable of withstanding pressures equal to or greater than 200 pounds per square inch (p.s.i.). Table 1 lists the pipe included in ASTM F-480 which meets the 200 p.s.i. rating.

Table 1

Standard Thermoplastic Dimension Ratios (SDR) and Water Pressure Ratings (PR) at 23°C (73°F) for Non-Threaded PVC and ABS Plastic Pipe Equal to or Greater Than 200 p.s.i.

Pressure Rating of PVC Pipe Materials			
	PVC 1120 PVC 1220 PVC 2120	PVC 2116	PVC 2112
SDR	p.s.i.	p.s.i.	p.s.i.
13.5	315	250	200
17	250	200	
21	200		

Pressure Rating of PVC Pipe Materials		
	ABS 1316	ABS 2112
SDR	p.s.i.	p.s.i.
13.5	250	200
17	200	

2. Any plastic pipe, couplings, or components used in water well casing construction shall have the approval of a testing laboratory which has demonstrated the use of unbiased, reliable and appropriate testing methods, as determined by the Commissioner of Health. Such laboratory must approve the material as being

intended for use in the transport of potable water. This approval shall be stamped on the pipe as prescribed below.

3. Pipe Markings:

a. Well Casing Pipe - The plastic well casing pipe shall be marked at least every 1.5 m (5 ft.), in letters not less than 5mm (3/16 in.) high in a contrasting color with the following information:

(1) Nominal well casing pipe size (for example, 5 in.), as specified in ASTM-F-480 ,

(2) Well casing pipe standard dimension ratio, in accordance with designation code given in Table 1 (for example, SDR 17, 1316),

(3) Type of plastic casing pipe material (for example, ABS or PVC),

(4) The wording -"well casing"- followed by the impact classification (for example, IC-3),

(5) Designation "ASTM F-480" including the year of issue of the standard with which the well casing pipe complies,

(6) Manufacturer's name or trademark,

(7) Manufacturer's code for resin manufacture, lot number, and date of manufacture,

(8) The seal or mark of the laboratory making the evaluation of the plastic for potable water use spaced at intervals specified by the laboratory, and

(9) Pressure rating (must be 200 p.s.i. or more).

b. Well Casing Pipe Coupling - Plastic well casing pipe couplings shall be marked in letters not less than 5 mm (3/16 in.) high, with the following information:

(1) Nominal well casing pipe coupling size (for example, 5 in.), as specified in ASTM-F-480,

(2) Type of plastic well casing pipe coupling material (for example, ABS or PVC),

(3) Designation "ASTM F-480," including year of issue of the standard with which the well casing pipe coupling complies,

(4) Manufacturer's name or trademark, and

(5) The seal or mark of the laboratory making the evaluation of the plastic for potable water use spaced at intervals specified by the laboratory.

C. Plastic Well Casing Pipe Size:

Where a submersible pump is to be installed inside a plastic casing, the casing diameter shall be no less than five-inch nominal pipe size, as specified in ASTM-F-480.

D. Storage, handling and ~~assembly procedures for plastic well casing~~ components.

The installer shall:

1. Not use pipe and couplings that have been stored in direct sunlight. Pipe must be stored in such a manner so as to prevent sagging or bending.

2. Inspect pipe and couplings carefully for cuts, gouges, deep scratches, damaged ends and other major imperfections and shall not use any plastic pipe or coupling which has such defects or imperfections.

3. Use solvent cement meeting the requirements of the specifications for the particular plastic used. The cement used shall provide sufficient open time for making good joints but the installer shall complete joints immediately upon applying the solvent cement.

4. Use only pipe and coupling combinations that give close and satisfactory interference fits which will readily mate when the solvent cement is applied and the pieces are joined. The pipe shall enter the socket to between 1/2 or 2/3 of the socket depth when inserted and turned ~~by hand~~.

5. An installer may use plastic pipe couplings with molded or formed threads but he must use only the thread lubricant which is suitable for the particular type of plastic being used.

was F.1 in proposed version

6. When the installer connects plastic pipe to a non-plastic well screen, he shall use a coupling appropriate for the specific transition intended.

was F.2 in proposed version

E. Technique for joining plastic well casing.

1. Cutting. The installer shall use fine tooth blades with little or no set for cutting the pipe. Pipe ends shall be cut square using a miter box. A plastic pipe cutter equipped with extra-wide rollers and thin cutting wheels may be used. Standard steel pipe or tubing cutters shall not be used for cutting plastic pipe.

2. Cleaning. The installer shall clean all dirt, dust, moisture and burrs from pipe ends and couplings. The installer may use only chemical or mechanical cleaners which are suitable for the particular plastic material being used. All burrs shall be removed.

3. Primer. The installer shall use a primer:

a. when, because of the type of plastic material being used, the pipe and coupling surfaces must be softened and dissolved in order to form a continuous bond between the mating surfaces, and/or

b. when the particular type of solvent cement being used requires one.

4. Cement application. The installer shall apply a moderate and even coat of cement[2] to the inside of the coupling to cover the distance of the joining surface only. The installer shall then quickly apply an even coat of cement to the outside of the pipe being joined to a distance which is equal to the depth of the pipe coupling socket.

[2]Caution should be used when handling solvent cement to avoid skin contact or inhalation of ~~fumes~~ vapors.

5. Assembly. The installer shall:

a. make the joint as quickly as possible after

b. reapply cement before assembling if the cement dries partially;

c. insert the pipe into the coupling socket, turning the pipe to insure even distribution of cement;

d. make sure that the pipe is inserted to the full depth of the coupling socket, and assemble pipe by using pipe joiners;

e. remove excess solvent cement from the exterior of the joint with a clean, dry cloth;

f. tighten a threaded joint by no more than one full turn using a strap wrench; was F.1 in proposed version

~~f~~ g. not disturb the coupling joint until after the cement has set, in order to avoid damage to the joint and loss of fit;

~~g~~ h. allow sufficient time for the joint to develop good handling strength based on the setting times given in Table 2.

Table 2. Initial Set Time

Temperature Range During Initial Set Time °C (°F)	Set Time for Pipe Sizes 2 to 3 in.	Set Time for Pipe Sizes 3½ to 12 in.
15 to 40 (60 to 100)	30 min.	1 hrs.
5 to 15 (40 to 60)	2 hrs.	4 hrs.
-20 to +5 (0 to 40)	6 hrs.	12 hrs.

~~h~~ i. allow sufficient time for the joint to cure before the joined pipe can be dropped into the drilled hole. This additional cure time is specified in Table 3.

Table 3. Joint Cure Schedule

Ambient Temperature, °C	Nominal Pipe Sizes			
	2 to 3 in.		3½ to 12 in.	
	SDR 26 and above	SDR 21, 17, 13.5	SDR 26 and above	SDR 21, 17, 13.5
15 to 40	2 h*	12 h	6 h	24 h
5 to 15	4 h	24 h	12 h	48 h
-20 to +5	16 h	96 h	48 h	8 days

*When the relative humidity is above 60%, increase all of the above times by 50%.

~~F. Plastic well casing pipe couplings.~~

~~1.--Threaded couplings.--An installer may use plastic pipe couplings with molded or formed threads but he must use only the thread lubricant which is suitable for the particular type of plastic being used.--When a threaded joint is made, the installer shall tighten the joint by no more than one full turn with a strap wrench.~~ is 224 D.5 in revised version; is 224 E.5.f. in revised version

~~2.--When the installer connects plastic pipe to a non-plastic well screen, he shall use a coupling appropriate for the specific transition intended.~~ is 224 D.6 in revised version

~~G.~~ Installation of plastic well casing

1. The installer shall drill an open hole which is 4 inches larger than the nominal casing size. was 224 G.1 in proposed version

2. ~~The installer shall wipe clean and prime, as prescribed in E.3., the pipe spigot and coupling socket.--The installer shall then apply cement to the spigot end only, as prescribed in D.3.--When drilling a rock well, the installer shall seal the casing pipe into the bedrock using neat cement grout (defined in MHD 220(c)(3)).~~ is incorporated in Part E in revised version; is F.3.b. in revised version

An installer may not insert the drill stem or drilling equipment inside the plastic well casing when drilling any kind of well. was G.4 in proposed version

3. Grouting:

a. The installer shall fill the annular space between the drill hole wall and the casing pipe with grout (defined in MHD 210(c)(3) to assure equal loading around the casing in order to prevent collapse or deformation of the casing and to prevent any contamination from entering the well. Native sand may be used in non-artesian wells drilled in outwash material having

no clay lense or lenses (a geological stratum composed of clay). The upper 30 feet in any type of well shall be grouted with neat cement grout (defined in MHD 220(c)(3)) using a tremie pipe. A tremie pipe is one which is small enough to fit in the annular space and which carries the grout to the bottom of a hole. The grout shall be fed under pressure from the bottom to the top in one continuous operation. ~~Because of its high heat of hydration, grout made of rapid setting cement is not permitted for use in wells which are cased with PVC pipe.~~[3]

is F.3.c. in revised version

b. When drilling a rock well, the installer shall seal the casing pipe into the bedrock using neat cement grout (defined in MHD 220(c)(3)).

was G.2 in proposed version

c. Because of its high heat of hydration, grout made of rapid-setting cement is not permitted for use in wells which are cased with PVC pipe.[3]

was G. 3 in proposed version

4. ~~An installer may not insert the drill stem or drilling equipment inside the plastic well casing when a drilling a rock well (defined in MHD 220(g)).~~

is F. 2 in revised version

"All plastic-cased wells must terminate above grade as prescribed in MHD 217 and MHD 220(a)(11). The installer may equip a plastic-cased well with a steel casing or steel pitless unit (adapter) which is satisfactory for use in plastic-cased wells, to a depth equal to or greater than the frost line. ~~The installer must use an adapter which is satisfactory for use in plastic cased wells.~~ Where a steel casing or steel pitless unit is not used, the plastic casing shall be extended above grade to a distance prescribed in MHD 217 and MHD 220(a)(11), and must be protected with any one of the following:

new

from 3 lines below

new

a. an oversize steel casing which extends from the top of the plastic casing down to a depth below the frost line, or

[3]This table shows the strength of PVC at various temperatures based on 73.4°F being 100% of its tested strength.

50°F	60°F	70°F	80°F	90°F	100°F	110°F	120°F	130°F	140°F	150°F
114%	107%	101%	95%	88%	83%	77%	72%	65%	40%	10%

b. at least 3 posts (schedule 40 steel pipe) of at least 4 inch diameter at equal distances from each other and which are placed 2 feet from the center of the plastic casing. Such posts shall be installed to a depth of 4 feet into solid ground, or to a depth of 2 feet if each post is surrounded with 1 foot of concrete to a depth of 2 feet, or — new

c. a well house which is constructed so as to provide a degree of protection which is equivalent to that provided in either a. or b. above." — new

5. The installer shall plug and abandon a bore hole as prescribed in Minn. Rule MHD 218(c)(2):

a. whenever the plastic casing cannot be installed without exerting pressure, or

b. whenever a screen or pump cannot be installed without force, or

c. whenever the casing fails during the construction or pumping stages.

~~6. The installer shall equip a plastic cased well with a steel casing or steel pitless unit to a depth equal to or greater than the frost line, in accordance with MHD 221. The installer must use an adapter which is satisfastory for use in plastic cased wells.~~ — is F. 4 in revised version

~~7. The installer shall notify the well owner in writing of the fact that the well casing is plastic and therefore must be not used for electrical grounding.~~ — deleted altogether

* * * * * * * * *

APPROVED AS TO FORM AND EXECUTION

MAR 6 1978 19

WARREN R. SPANNAUS, Attorney General

BY /s/ Michael B. Miller

SPECIAL ASSISTANT ATTORNEY GENERAL

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED
MAR 6 - 1978
Joan Anderson Growe
Secretary of State
1:15 pm

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE MINNESOTA

COMMISSIONER OF HEALTH

In the Matter of Proposed *
Amendments to the Water *
Well Construction Code *
Relating to the Use of *
Plastic Well Casing *

STATEMENT OF COMPLIANCE
WITH MANUAL OF
RULE MAKING PROCEDURES

I, Special Assistant Attorney General William G. Miller, do hereby declare that I have examined the above-referenced rules and all related documents thereto, and that, based upon them and my personal familiarity with the applicable procedures, the Manual of Rule Making Procedures and the provisions of the Administrative Procedure Act related thereto have been followed.

Dated: January 23, 1978

WILLIAM G. MILLER
Special Assistant
Attorney General

HLTH-78-011-SM

STATE OF MINNESOTA
OFFICE OF HEARING EXAMINERS

FOR THE DEPARTMENT OF HEALTH

IN THE MATTER OF THE PROPOSED)
AMENDMENT OF THE WATER WELL)
CONSTRUCTION CODE RELATING TO)
THE USE OF PLASTIC WELL CASING)

REPORT OF THE
CHIEF HEARING EXAMINER

WHEREAS, a hearing was held on December 1, 1977, before Steve M. Mihalchick, a Hearing Examiner of the State Office of Hearing Examiners, on the above-entitled matter in compliance with Minn. Stat. § 15.0412, Subd. 4; and

WHEREAS, the Report of Hearing Examiner made pursuant to Minn. Stat. § 15.052, Subd. 3, was issued to the Department of Health on December 15, 1977; and

WHEREAS, the Department of Health has now determined to adopt rules pursuant to Minn. Stat. § 15.0412, Subd. 4; and

WHEREAS, the Department of Health has submitted said rules to the Chief Hearing Examiner for review pursuant to Minn. Stat. § 15.052, Subd. 4, and Rule HE 107; and

WHEREAS, the Chief Hearing Examiner finds that the final proposed rules are not substantially different from those proposed at the public hearing and that the Department of Health has met all requirements of Minn. Stat. § 15.0412, Subd. 4.

NOW, THEREFORE, upon receipt of this Report, the Department of Health has the responsibility of submitting the complete hearing record and the rules as adopted by the Department to the Attorney General and to publish in the State Register, all pursuant to Minn. Stat. § 15.0412, Subd. 4.

Dated this 27th day
of January, 1978.

DUANE R. HARVES
Chief Hearing Examiner

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE MINNESOTA

COMMISSIONER OF HEALTH

In the Matter of Proposed *
Amendments to the Water *
Well Construction Code *
Relating to the Use of *
Plastic Well Casing *

STATEMENT OF COMPLIANCE
WITH MANUAL OF
RULE MAKING PROCEDURES

I, Special Assistant Attorney General William G. Miller, do hereby declare that I have examined the above-referenced rules and all related documents thereto, and that, based upon them and my personal familiarity with the applicable procedures, the Manual of Rule Making Procedures and the provisions of the Administrative Procedure Act related thereto have been followed.

Dated: January 23, 1978

WILLIAM G. MILLER
Special Assistant
Attorney General

MDH

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed	*	
Amendment to the Water	*	ORDER ADOPTING AND
Well Construction Code	*	AMENDING RULES
Relating to the Use of	*	
Plastic Well Casing	*	

The above-entitled matter came on for hearing before me on the 1st of December, 1977, at 9:30 a.m., in the William Mitchell College of Law Auditorium, after proper notice as required by Minn. Stat. §15.0412 (1976) had been served upon all persons, associations and other interested groups registered with the Secretary of State for that purpose.

After affording interested persons an opportunity to present written and oral data, statements and arguments, having heard all of the testimony, having considered all of the evidence adduced and upon the records, files and proceedings herein, and applicable statutory standards and criteria, and having confirmed the need for the above-captioned rules,

NOW, THEREFORE, IT IS ORDERED, that Minn. Rule MHD 220(a), a copy of which is attached hereto and made a part hereof, is adopted as amended, and that MHD 224, a copy of which is attached hereto and made a part hereof, is adopted, this 3rd day of January, 1978, pursuant to the authority vested in me by Minn. Stat. §156A.031 (1977 Supp.).

STATE OF MINNESOTA

WARREN R. LAWSON, M.D.
Commissioner of Health

STATE OF MINNESOTA

COUNTY OF HENNEPIN

BEFORE THE

COMMISSIONER OF HEALTH

In the Matter of Proposed	*	
Amendment to the Water	*	FINDINGS AND
Well Construction Code	*	CONCLUSIONS
Relating to the Use of	*	
Plastic Well Casing	*	

The above-entitled matter came on for hearing before me on the 1st of December, 1977, at 9:30 a.m., in the William Mitchell College of Law Auditorium, after proper notice as required by Minn. Stat. §15.0412 (1976) had been served upon all persons, associations, and other interested groups registered with the Secretary of State for that purpose.

After affording interested persons an opportunity to present written and oral data, statements and arguments, having heard all of the testimony, having considered all of the evidence adduced and upon the records, files and proceedings herein, I hereby adopt as my own the Findings and Conclusions contained in the report submitted by the Hearing Examiner, herein on December 15, 1977, a copy of which is attached hereto and made a part hereof. I further adopt as my own the recommendation made at page 4 of the Hearing Examiner's report.

Date: January 9, 1978

STATE OF MINNESOTA

WARREN R. LAWSON, M.D.
Commissioner of Health

STATE OF MINNESOTA
OFFICE OF HEARING EXAMINERS

FOR THE DEPARTMENT OF HEALTH

In the Matter of the Proposed)
Amendment of the Water Well)
Construction Code Relating to)
the Use of Plastic Well Casing)

REPORT OF HEARING EXAMINER

The above-entitled matter came on for hearing in St. Paul on December 1 , 1977 before Steve M. Mihalchick, Hearing Examiner assigned by the Chief Hearing Examiner.

This is a rules hearing pursuant to Minnesota Statutes Chapter 15 to determine whether the proposed rules should be adopted.

Appearing for the Department of Health (Department) were Paul B. Johnson, Senior Engineer; Edwin H. Ross, Senior Hydrologist; and William G. Miller, Special Assistant Attorney General. Thirteen other persons attending the hearing signed the Hearing Register. The hearing continued until all interested persons had had an opportunity to participate. Following the hearing, a public information meeting was held to allow persons to comment on portions of the Water Well Construction Code not currently being amended.

Pursuant to Minn. Stat. § 15.0412, subd. 4, this Report shall be available for review to all affected individuals upon request for at least five days.

The Department shall, if it proposes to adopt the rules as originally proposed or amended, submit the complete hearing record, including its Findings and Order, to the Chief Hearing Examiner no earlier than five days subsequent to the receipt of this Report. This submission shall also clearly indicate any changes made to the rules as originally proposed, preferably in the format that will be submitted to the State Register for publication. The Chief Hearing Examiner shall complete his review and submit his report to the Department on the issues of substantial changes in the rule and compliance with Minn. Stat. § 15.0412 within ten calendar days. Thereafter, the Department shall be responsible for filing the rules with the Attorney General.

Based upon all the records and proceedings herein, the Examiner makes the following:

FINDINGS OF FACT

PROCEDURAL REQUIREMENTS

1. On November 4, 1977 the Department filed the following documents with the Chief Hearing Examiner:

(a) A copy of the proposed rules;
(b) A proposed Order for Hearing;
(c) A proposed Notice of Hearing; and
(d) A Statement of the estimated length and number of people attending the hearing.

2. On October 31, 1977 a Notice of Hearing and a copy of the proposed rules were published at 2 State Register 926.

3. On October 27, 1977 the Department mailed the Notice of Hearing to all persons and associations who had registered their names with the Secretary of State for the purpose of receiving such notice.

4. On November 3, 1977 the Department filed the following documents:

(a) The Order for Hearing;
(b) The Notice of Hearing as mailed;
(c) The Affidavit of Receipt of the Secretary of State's list;
(d) The Affidavit of Mailing;
(e) The Secretary of State's Certificate;
(f) The Statement of Need and Justification; and
(g) The Statement of Evidence, including the names of Department to be called;

The documents were available for inspection at the Office of Hearing Examiners from the date of filing to the date of the hearing.

5. The record remained open through December 8, 1977 for the receipt of written comments and statements. One comment was received after the close of the record.

STATUTORY AUTHORITY

6. Minn. Stat. § 156A.03, subd. 1, provides in pertinent part:

> "The state board of health shall after consultation with the commissioner of natural resources and the pollution control agency establish standards for the design, location and construction of water wells within this state."

Minn. Stat. § 156A.05, subd. 2, provides in pertinent part:

> "The board of health shall by December 31, 1971, in the manner prescribed by chapter 15, hold a public hearing and promulgate rules and regula-

tions necessary to carry out the purposes of sections 156A.01 to 156A.08 including, but not limited to:

(d) Establishment of minimum standards for design, location and construction of wells to effectuate the purpose and intent of sections 156A.01 to 156A.08."

Under these authorities, the Board of Health adopted Minn. Rules MHD 217-230, the Water Well Construction Code. Laws 1977, ch. 305, § 39, abolished the Board of Health and transferred all of its powers and duties to the Commissioner of Health.

7. Laws 1977, ch. 398, coded Minn. Stat. § 156A.031, provides:

"Subdivision 1. The use of plastic casings in water wells is expressly permitted within the state of Minnesota. Any plastic casing used for water wells must meet the current standard specifications of the American Society for Testing and Materials (ASTM) for thermoplastic water well casing pipe and couplings. All plastic water well casing shall be capable of withstanding pressures equal to or greater than 200 pounds per square inch (p.s.i.).

"The state board of health may supplement the provisions of this section with rules relating to the installation of plastic water well casing, providing, however, that such rules shall not delay the use of plastic water well casing meeting the requirements of this section.

"Prior to January 31, 1978, the state board of health shall adopt rules pursuant to chapter 15 concerning the installation and use of plastic water well casing pipes and couplings.

"Subd. 2. This section applies only to the counties of Traverse, Grant, Douglas, Stevens, Pope, Big Stone, Swift, Lac qui Parle, Chippewa, Kandiyohi, Yellow Medicine, Renville, Lincoln, Lyon, Pipestone, Murray, Rock, and Nobles."

Minn. Rule MHD 220(a)-Casing for Permanent Wells

8. As it now exists, this rule sets standards for ferrous casing. The Department proposes to add the following introductory paragraph to the rule:

Amending MHD 220(a): Casing for Permanent Wells.

"Casing for permanent wells shall be of either ferrous or plastic material. For ferrous pipe, the specifications and installation procedures are prescribed below. For plastic pipe, the specifications and installation procedures are prescribed in MHD 224."

This language could be misinterpreted to indicate that plastic casing is permitted throughout the state, contrary to the statute. It is therefore unreasonable. The Examiner suggests that the

first sentence be modified to read: "Casing for permanent wells shall be of ferrous material or, where permitted by statute, plastic material."

Minn. Rule MHD 224-Plastic Well Casing

9. The title alerts the reader that the new rule concerns itself with the use of plastic for well casings. The opening paragraph states that one who drills a water well which will be cased in plastic must conform not only with the provisions of the proposed MHD 224, but must also conform to all the remaining provisions of the Water Well Construction Code except those which apply specifically to the use of steel or cast iron pipe, such as MHD 220(a)(1) through (9). The rule incorporates in footnote 1 a list of the counties in which the use of plastic pipe is specifically permitted by the statute. Persons drilling wells in counties which are not named in footnote 1 may use plastic casing only after having obtained a waiver as provided in MHD 210(d)(3).

Minn. Rule MHD 224 A.-Definitions

10. Two terms are defined in this section, rather than being defined in amendments to MHD 210, the rule which contains most of the code's definitions. "Installer" and "plastic" are defined in MHD 224A because the terms are particularly applicable in this proposed rule.

11. MHD 224A.1. defines "installer." This definition was thought to be necessary so as to notify the reader that the code applies to anyone authorized to construct a well in accordance with Minn. Stats. §156A.03(1976).

12. In MHD 224 A.2. The term "plastic" is defined to mean only the two types of plastic specified in the rule, so as to exclude the possibility that an installer might use other types of plastic which are unacceptable for use as well casing in Minnesota. Enforcement of the A.S.T.M. standard referred to below in the discussion related to MHD 224B. cites specifications for three types of plastic, PVC, ABS, and styrene rubber. Proposed rule MHD 224 allows the use of only the first two

plastics, PVC and ABS, because they are the only plastics which are made to withstand 200 P.S.I. Since the law requires that only plastic pipe which can withstand 200 p.s.i. may be used, styrene rubber pipe may not be used for well casing in Minnesota and is therefore not included in the definition of "plastic."

Minn. Rule MHD 224 B. - Standards

13. MHD 224 B.1. enlarges upon the statutory adoption of the A.S.T.M. standard for the types of plastic that may be used for water well casing in Minnesota. Since the statute specifies that only pipe which can withstand pressures greater than 200 pounds per square inch (p.s.i.) is permitted, Table 1 of the rule lists the sizes of pipe that meet this requirement. The table is included so that an installer who does not have a copy of the A.S.T.M. standard will have all the information necessary to help in deciding which pipe is acceptable for use. Two comments suggested that pressure ratings were an inappropriate measure to use because well casing pipe is not used for pressure applications. However, this standard is required by the statute and any change must be made by the Legislature.

14. MHD 224 B.2. requires that the particular pipe material shall have been approved for potable water use by an independent testing laboratory; this is part of the A.S.T.M. standard. There are many plastics which, while they might be suitable as piping material for other applications, are not suitable to be used for potable water. The requirement that the material being considered for use in a water well be tested and approved as prescribed helps assure that the water coming from a well encased with such material will indeed be safe for human consumption. In order to avoid an impermissible delegation of authority, the rule specifies that the Commissioner of Health is the ultimate authority to determine who may test the safety of the pipe. The requirement that the testing laboratory approval be stampted on the pipe helps assure that only approved pipe will be used.

15. MHD 224 B.3. prescribes the manner in which the plastic pipe to be used for water wells in Minnesota must be marked. The

marking provisions are taken from §9 of the A.S.T.M. standard. Since the marking system is one of the specifications which make up the standard and since the statute requires that only plastic pipe which conforms to the specifications of the standard may be used, the provisions regarding required markings are restated here.

Minn. Rule MHD 224 C - Plastic Well Casing Pipe Size

16. This section provides that five inches is the minimum size of plastic pipe that can be used to case a well when a submersible pump is to be installed at the bottom of the well. Imposition of a minimum five-inch pipe size means that there will be sufficient clearance between the pump and the casing to prevent scratching of the casing when the pump is lowered to the bottom of the well. This clearance is also necessary to prevent softening and deformation of the casing if the pump should overheat.

17. Two comments suggested that a fixed figure of five inches should not be specified. Elmer Berg pointed out that some submersibles have a diameter of only 2 3/4 inches, (Pub. Ex. 3). The National Water Well Association (NWWA) recommended that all well casing should be two nominal sizes larger than the pump bowl, (Pub. Ex. 2). The Water Well Contractors Advisory Council, having reviewed these comments, recommended that the proposed rule not be modified for the following reasons:

> "Most wells will be of this smaller diameter for individual home or farm well design. To specify a general category of two pipe sizes larger than the pump size would result in excessive costs in some cases where an almost 3 nominal size larger casing would be required. The Advisory Council is of the opinion that special design must be given to larger diameter wells and that at this time the rule should not be changed."
>
> (Dept. Ex. M)

The proposed rule is a reasonable method to insure sufficient clearance.

Minn. Rule MHD 224 D. - Storage, Handling, and Assembly Procedures for Plastic Well Casing

18. The ultimate purpose of this rule is to assure that

however a well hole is drilled and however a plastic casing is joined and installed, the resulting casing will remain intact for its entire length, and it will be free of any bulges, scratches, dents, etchings or cracks, any of which could weaken and break, thereby allowing the entry of contaminating substances into the well. This need to protect the integrity of the casing underlies and is the primary justification for all of the subsections of MHD 224 D.

19. MHD 224 D.1. prohibits the storing of plastic pipe in direct sunlight because sunlight is known to react photochemically with the piping material and this reaction may result in a weakening of the plastic. Plastic pipe is satisfactory for use as well casing only as long as it retains its roundness. Once the roundness is lost, through sagging or mishandling, the plastic loses much of its strength because isostatic compressive resistance to collapse is lost. Since both exposure to sunlight and certain storing methods result in a weakening of the plastic pipe which might render it unfit for use as well casing, these two storage conditions are prohibited.

20. Bob Hutchinson of the Anoka County Health Department commented that the rule was vague and suggested that a definition of "storage" be given to eliminate doubt concerning the length of time exposure to direct sunlight may be permitted, (Pub. Ex. 5). The rule rather clearly prohibits any storage in direct sunlight, and so is not unreasonably vague or confusing. There are, of course, some cases where the pipe will be exposed to direct sunlight during handling and installation. The Department may wish to specify how much exposure is allowed.

21. MHD 224 D.2. requires that the installer examine the pipe he is about to use to be certain that the pipe has the structural integrity necessary to assure that the water well casing will be safe. Because of its physical properties, plastic pipe is very susceptible to cracks and gouges. Therefore, its use requires closer inspection than the use of ferrous pipe would under similar circumstances. The rule prohibits the installer

from using plastic pipe which may have been damaged because such damage might result in a leaky and therefore unsafe casing.

22. MHD 224 D.3. requires the use of solvent cement. This means a cement which both dissolves the surface of the pipe material it comes in contact with, and also acts as a joining or cementing material. The application and use of these cements must be carefully timed and controlled if their binding properties are to be maximized. This subsection requires that only solvent cement which is suitable for the particular plastic be used. The use of an inappropriate solvent might result in a weak or incomplete joint which could leak or separate. The rule requires that the installer choose a cement whose setting properties allow some brief time in which to join the pieces together. However, the rule also requires that the joint be made immediately upon application of the cement so that the cement has not dried enough to reduce its ability to bind. This subsection attempts to strike a balance between the need to take time to apply the cement with care on all the surfaces to be joined, and the need to assemble the joint while the cement is still moist enough to bind the two surfaces completely.

23. MHD 224 D.4. requires that the installer choose pipe and coupling combinations which fit together tightly so that when cement is applied the surfaces will mate readily to assure a chemical fusion equal in strength to the pipe itself. This subsection also states that the pipe must enter the socket to a certain depth. This is required to assure that the amount of surfact to be bonded will provide sufficient strength to prevent breakage of the joint when the pipe is handled.

24. This subsection also requires that the pipe be turned "by hand," to insure that the solvent is evenly spread and that the pipe is properly seated. NWWA pointed out that it is impossible to turn some of the larger diameter pipes by hand, (Pub. Ex. 2). The Advisory Council agreed, (Dept. Ex. M). Therefore the Department, in its post-hearing comments (Dept. Ex. N.) proposed that the words, "by hand" be deleted. The rule, so modified, is reasonable.

Minn. Rule MHD 224 E. - Techniques for Joining Plastic Well Casing.

25. MHD 224 E. This section prescribes particular techniques for joining together lengths of plastic pipe to assure that the resulting casing will not leak once it has been installed.

26. MHD 224 E.1. requires that the pipe be cut only with tools which will result in a square cut. The use of standard pipe or tubing cutters is prohibited because their use can result in pipe deformation or cracked and irregular pipe ends. Such deformed or irregular ends would interfere with good joint formation which might result in weak or leaky joints.

27. MHD 224 E.2. requires that all dirt and burrs be removed in order to eliminate any interference with the joining process.

28. MHD 224 E.3. Different formulations of solvent cement or of plastic pipe material may require the use of a primer before the cement is applied. If the installer uses one of these plastics or cements, this subsection requires that he use a primer to assure that the joint will be as strong and leakproof as the available materials permit.

29. MHD 224 E.4. Solvent cements for use with plastic pipe material volatilize quickly upon exposure to air. The order of steps imposed here with regard to which parts should be cemented first helps assure that enough solvent cement will remain to produce a satisfactory softening and cementing of the surfaces to which the cement has been applied. An even coat of cement must be applied to assure equal softening of the surface and to prevent uneven flow of excess cement out beyond the cut end. Such excess flow might soften and weaken that part of the pipe lying beyond the joint where the pipe is of single thickness. The excess flow may harden into lumps which could later interfere with placement of the casing or with placement of a submersible pump.

30. MHD 224 E.4 contains a footnote cautioning the use of care when handling solvent cement to avoid skin contact or

inhalation of "fumes." Mr. Hutchinson pointed out that "fumes" was technically incorrect, (Pub. Ex. 5). In its post-hearing comments, the Department stated:

> "In this footnote we are concerned with the use of materials which readily evaporate. It has been brought to our attention that the definition of the term 'fumes' would not include such evaporated materials. For this reason, the term 'fumes' is inappropriate. We have therefore chosen to substitute for it the term 'vapors,' the definition of which does include evaporated organic solvents. This change is reasonable because it more accurately reflects the meaning which was intended in the warning." (Dept. Ex. N)

The modification is reasonable for the reasons stated by the Department.

31. MHD 224 E.5. describes assembly requirements. Much of the rationale underlying the need for subparts a through e has been presented earlier and will not be repeated here. Subpart d requires the use of pipe joiners because of the need to maintain proper alignment and the need to exert pressure sufficient to bring the pipe and coupling together tightly. In subpart f and g the installer must leave the newly joined pipe undisturbed for at least the time prescribed in Table 2. Disturbing the pipe prior to the prescribed setting time may result in misalignment of the joint which, combined with the stresses caused by the installation, might result in leakage of the joint. Table 2 reflects the fact that the time required for setting is inversely proportional to the ambient temperature but is directly proportional to the pipe size. Subpart h refers to Table 3 which specifies the amount of time the joint should be allowed to cure to attain maximum joint strength. The subsection refers to time "before the joined pipe can be dropped into the drilled hole." The cure times imposed in subpart h, in addition to being dependent on temperature and pipe size, are also dependent on relative humidity. The joining process is the result of a chemical reaction which proceeds rapidly at the outset. Strength sufficient to withstand careful handling develops reasonably soon after joining

and humidity is not an important factor. However, after this initial rapid rate of reaction, the rate slows considerably. This slower rate is greatly affected by humidity and this fact is reflected in the amount of curing time which must elapse in order for the joint to reach the strength necessary to withstand the pressure (either external or internal) once the casing has been lowered into the ground.

Minn. Rule MHD 224 F - Plastic Well Casing Pipe Couplings

32. MHD 224 F.1. permits the use of threaded couplings but requires that the installer use only the lubricant which is appropriate for use with the particular type of plastic. The use of an inappropriate lubricant could cause a weakening of the threaded portion of the pipe and a resulting loss of integrity of the casing. Limiting the number of turns required to tighten the joint helps assure that the joint will not be subjected to excessive pressure which might crack the pipe or the coupling.

33. In subpart F.2. the installer is required to use only that type of coupling which is appropriate in joining a non-plastic well screen to plastic casing. Use of an inappropriate coupling might result in inadequate bonding and leakage at that joint.

Minn. Rule MHD 224 G - Installation of Plastic Well Casing

34. MHD 224 G.1. requires that a hole which is to accommodate plastic well casing be drilled four inches larger than the nominal casing size. Nominal casing size is a term of art in the pipe industry and is a measure referred to in Table 1 of the A.S.T.M. standards. The requirement that the hole be drilled four inches wider than the nominal casing size will assure that there will still be sufficient free space between the wall of the hole and the casing for insertion of the casing and for grouting with a tremie pipe. This free space is necessary to avoid the exertion of any pressure on the casing when it is placed in the hole. This four-inch clearance also helps avoid the need to exert pressure when installing the casing if one of

the joints were even slightly missaligned. Missalignment by only one degree can result in considerable deflection at the end of a 200 foot length of pipe. Requiring a free space of approximately two inches on each side of the casing should compensate sufficiently for such missalignment.

35. MHD 224 G.2. requires that a well drilled into bedrock be sealed off with neat cement (a material impervious to seepage of liquids) to assure that the bedrock layer, which is naturally impervious to the seepage of liquids, will remain so even after a well has been drilled into or through it. However, the first sentence of this section repeats another rule and should be deleted.

36. MHD 224 G. 3. imposes a requirement that the annular space (space between the drilled hole and the outer wall of the casing) be filled with grout and explains why such grouting is necessary. It allows the use of native sand for grouting around the casing or a well drilled into outwash material (a type of sand formation which is very porous, through which liquids can readily seep). The water source which is being tapped by such a well is essentially unprotected anyway, and requiring the use of an impervious cement grout would serve little useful purpose. The use of sand as the grouting material can provide all the lateral support which is required for such a casing. This subpart does require that the upper 30 feet of any type of well be sealed off with neat cement grout using a tremie pipe. Because the upper part of any well casing is the portion most subject to abuse and is therefore most likely to leak, the requirement that the upper 30 feet be cemented helps reduce the possibility that a plastic casing which is fractured by some accidental blow or other cause will result in the entry of contaminating materials. The use of a tremie pipe and filling with grout from the bottom up helps assure that the entire space will be filled, that no air will be trapped in the cement layer, and that the casing will be well sealed. The use of hi-early cement grout is prohibited because grout made from such cement gives off so much heat as it hardens, that pipe composed of PVC

could soften and lost its roundness if the lateral pressure is uneven. The plastic casing could lose much of its strength as a result of all these factors. A table in the rule showing the sensitivity of PVC pipe to elevated temperatures illustrates the reason why it is necessary to avoid excessive temperatures during installation.

37. MHD 224 G.4. prohibits the insertion of the drilling equipment inside the casing as a well is being drilled into rock because of the fragility of the pipe and the likelihood that the equipment may scratch, fracture or otherwise damage the pipe.

38. MHD 224 G.5. An installer is required to plug and abandon a bore hole whenever any of the conditions described in the rule occur because in each of these conditions, it is highly likely that the casing will be damaged. To permit such a well to remain open, or to be abandoned by procedures other than those prescribed in MHD 218(c)(2), would allow for surface infiltration to enter the well and contaminate the aquifer, whether or not the well is ultimately put into use.

39. As originally proposed, MHD 224 G.6, required the installer to equip a plastic-cased well with a steel casing or steel pitless adapter unit to a depth equal to or greater than the frostline. Comments at the hearing objected to this rule. In response, the Department offered the following modification and justification (Dept. Ex. N):

> "All plastic-cased wells must terminate above grade as prescribed in MHD 217 and MHD 220(a)(11). The installer may equip a plastic-cased well with a steel casing or steel pitless unit (adapter) which is satisfactory for use in plastic-cased wells, to a depth equal to or greater than the frost line. Where a steel casing or steel pitless unit is not used, the plastic casing shall be extended above grade to a distance prescribed in MHD 217 and MHD 220(a)(11), and must be protected with any one of the following:
> a. an oversize steel casing which extends from the top of the plastic casing down to a depth below the frost line, or
> b. at least 3 posts (Schedule 40 steel pipe) of at least 4 inch diameter at equal distances from each other and

which are placed 2 feet from the center of the plastic casing. Such posts shall be installed to a depth of 4 feet into solid ground, or to a depth of 2 feet if each post is surrounded with 1 foot of concrete to a depth of 2 feet, or

c. a well house which is constructed so as to provide a degree of protection which is equivalent to that provided in either a. or b. above.

"These additions have been made in order to allow an installer to extend the plastic casing above ground level. The primary purpose for which plastic well casing is used is to overcome the corrosive and encrustive properties of certain waters and soils. These destructive properties are not confined to deeper levels but may be equally prevalent at or near the surface. Therefore the use of plastic at or near the surface is as desirable as it is at lower levels. Since the statute permits the use of plastic well casing in those countries which have highly corrosive waters and soils, it is reasonable that plastic well casing should be permitted for both above-ground and other types of service. Plastic well casing is very brittle and therefore highly susceptible to fractures at lower temperatures. Above-ground well heads are frequently run into and damaged by cars, trucks or snowmobiles. Since plastic well casing is so susceptible to breakage, any such collision by a heavy vehicle or certain acts of vandalism could surely damage the casing. Because of these possibilities it is necessary that any plastic casing which extends above-ground be protected from predictable causes of damage. The three modes of protection which are prescribed in this revision are all in current use and have demonstrated their utility in providing the type of protection which is sought here. Since these changes serve to maximize the positive characteristics of plastic well casing, they are reasonable. Further these changes are necessary since they help to assure that the well water will not be contaminated and the public's health will be protected even if a well casing made of a fragile material is extended above the ground."

The modifications are reasonable.

40. MHD 224 G.7., originally required the installer to notify the well owner that the well casing was plastic and should not be used for electrical grounding. It was a common practice among electricians to ground household electrical systems to water wells. In its post hearing comments, the Department stated:

"Based upon information obtained by the department staff and from the Water Well Contractors Advisory Council after the hearing of December 1, 1977, we propose to strike this section for the following reasons:

a. There is a widely shared sentiment among well drillers that they ought not to have to bear any responsibility with regard to the satisfactory grounding of an electrical supply, nor should they have to suffer the consequences resulting from the adoption of a rule imposing such a task because of the undesireability of using a particular type of well as an electrical ground. These sentiments are further reinforced by the fact that it is sometimes impossible to convey the information regarding well casing type to the person who might ultimately use the well as a ground, thereby making the imposition of such a task even more unreasonable.

b. There is a new provision in the 1978 Minnesota Electrical Code which requires that an electrical supply be grounded to a separate grounding rod rather than to a plumbing system because of the increasing use of PVC pipe for household plumbing. By working through the state board of electricity, we will attempt to inform electricians of the new state law and of the fact that more plastic-cased wells are likely to be installed in certain Minnesota counties than was permitted in the past. Communicating this information to those who are directly responsible for the safe grounding of an electrical supply seems to be a more reasonable way to approach this problem than is imposing a duty upon drillers who will have little control over the ultimate (mis)-use of a well. For these reasons, we withdraw section 224 G.7. altogether."

GENERAL COMMENTS

41. There were some comments that opposed the use of plastic casing entirely and some that wondered about allowing it in some places and not others. It can only be said that the Legislature has set the policy and the Department must implement it.

CONCLUSIONS

1. Due, timely and adequate notice of the hearing was properly served and published by the Department. All other substantive and procedural requirements have been fulfilled.

2. The Department has demonstrated its statutory authority

to adopt the proposed rules.

3. The Department has demonstrated the need for an reasonableness of the proposed rules by an affirmative presentation of facts.

RECOMMENDATION

That the proposed rules be modified as suggested by the Department in Department Exhibit N and by the Examiner in the Findings and that, so modified, they be adopted.

Dated this 15th day of December, 1977.

STEVE M. MIHALCHICK
Hearing Examiner