RD2304

7/26/94

STATE OF MINNESOTA
MINNESOTA DEPARTMENT OF HEALTH

In the Matter of Proposed Permanent Rules of the Minnesota Department of Health Relating to Public Pools, Minnesota Rules parts 4625.2100 and 4717.0150 to 4717.3975.

STATEMENT OF NEED AND REASONABLENESS

The Minnesota Department of Health (MDH) is proposing a revision of the existing state standards governing the construction, operation and maintenance of public pools. The proposed rules update the existing rules found in Minnesota Rules, parts 4717.0100 to 4717.3900.

The revision addresses specific types of public pools such as spas, zero depth pools and wave pools, and new features such as drop slides, and flume slides. Technologies such as erosion chemical feeders and cartridge filters and documented safety concerns in the areas of diving and starting blocks are addressed.

The existing rule was initially adopted in 1971 prior to the adoption of the state's administrative procedure's act and the establishment of rule format and style standards by the Office of the Revisor. The rule was modified in the 1980s to add "spa pools" to the definition of a public pool and modified in 1991 to revise the fees for plan review. Because of the age of the initial existing rule, the proposed rules under consideration in these proceedings have undergone extensive reformatting and editing to remove jargon, facilitate understanding, and ease future revision and enforcement reference. The MDH has not made substantial changes to most existing requirements. The statement of need and reasonableness indicates where rule provisions have been edited and reformatted and their relationship to existing provisions. New provisions or those with substantial change are identified, addressed and justified.

I. Background.

MDH estimates there are about 5,000 public pools in the state with approximately 20 percent (1,000) operated by municipalities or schools. About 150 to 200 new pools are constructed annually with plan review and approval by MDH, and inspected for

compliance with the approved plans undertaken by the engineering unit of the Environmental Health Division.

Since 1971, MDH has inspected public pools in conjunction with the routine inspection and licensure of hotels, motels, manufactured home parks, recreational camping areas and children's camps. The Environmental Health Division's Environmental Health Services section conducted 671 inspections of existing pools in 1993 in conjunction with the MDH inspection of hotels, motels, manufactured home parks, and recreational camping areas directly licensed by MDH.

Because MDH delegates much of the licensing and inspection activity of hotels, motels, manufactured home parks, recreational camping areas and children's camps to local boards of health under Minnesota Statutes, chapter 145A, local boards of health also perform public pool inspections in conjunction with the inspection and licensure of the aforementioned facilities. The delegation agreement process specifies that the local board of health must conduct inspections of public pools in accordance with the laws and rules of the commissioner of health. Local jurisdictions may adopt stricter rules with respect to public pools pursuant to local ordinance. The rules adopted by the commissioner serve as the minimum standard by which public pools are constructed, inspected, maintained and operated.

According to 1992 figures reported by the MDH Community Health Services Division, local boards of health inspected 1,653 pools in 1992, of which 1,487 were in conjunction with an inspection of a hotel, motel, manufactured home park, or camping area. Counting follow up inspections, local boards of health reported 4,024 trips to pool sites for initial and follow up inspections in 1992 relating to a public pool.

Public pools may be located at sites that are not facilities licensed or routinely inspected by the Minnesota Department of Health or a local board of health. Public pools are found at apartment complexes, schools and health clubs, in municipal parks and many other settings. About fifteen percent of the inspections of existing public pools involve these sites and are made on the basis of complaint only.

II. Statutory Authority

Minnesota Statutes, section 144.05, paragraph (c) provides general authority for the commissioner of health to:

> establish and enforce health standards for the protection and the promotion of the public's health such as the quality of health services, reporting of disease, regulation of health facilities, environmental health hazards and personnel.

Minnesota Statutes, section 144.12, subdivision 1 contains the following general authority applicable to the regulation of public pool construction, operation,

maintenance.

(6) The construction and equipment, in respect to sanitary conditions, of schools, hospitals, almshouses, prisons, and other public institutions, and of lodging houses and other public sleeping places kept for gain;

(10) The accumulation of filthy and unwholesome matter to the injury of the public health and its removal;

(13) The general sanitation of tourist camps, summer hotels, and resorts in respect to water supplies, disposal of sewage, garbage, and other wastes and the prevention and control of communicable diseases; and to that end, may prescribe the respective duties of agents of a board of health as authorized under section 145A.04; and all boards of health shall make such investigations and reports and obey such directions as the commissioner may require or give and, under the supervision of the commissioner, enforce the rules;

In 1987 MDH was given an appropriation to undertake "plan review and pool monitoring and surveillance" **(Laws of Minnesota 1987, chapter 403, article 1, section 8, subdivision 2)**. Fees for pool plan review and surveillance and monitoring of construction were adopted in rule in 1987 and amended in 1992.

Minnesota Statutes, section 157.01, subdivision 2 establishes the commissioner's authority to charge fees to inspect lodging houses, hotels and resorts. Clause (4) specifically mentions, in connection with the inspection fees, facilities that have a public swimming pool, and places those facilities in a high risk category for inspection. Rules adopted by the commissioner require inspection of public pools in conjunction with the inspection of other facilities licensed by the commissioner. Minnesota Rules, part 4625.2100 PLUMBING AND SWIMMING POOLS, applies to the sanitary conditions of lodging establishments. It requires that:

All swimming pools and other artificial recreational bathing facilities must be designed, constructed and operated in conformity with parts 4717.0100 to 4717.3900.

Tourist camps and mobile home parks regulated under Minnesota Rules, part 4630.1900 are rated as high risk category A facilities if they have a public pool. Rules regulating children's camps, part 4630.3900, require that "swimming pools be constructed and operated in accordance with the standards acceptable to the commissioner of health."

Minnesota Statutes, section 145A.02 defines "environmental health" as a component of services that may be delegated by the commissioner of health to local public health boards to administer. Included within the defined services are "swimming pool

sanitation and safety." MDH delegates the inspection of the ongoing operation and maintenance of public pools to those local boards of health that have an agreement with the commissioner. The review of new pool construction plans is not a delegated activity.

III. General need for rule revision.

The revision of these rules directly addresses the Environmental Health Division's focus of "minimizing foodborne and waterborne disease". (*Policy Directions in Environmental Health*, June 1992.) The revision addresses the division's policy direction 5 which calls for the regular review of rules to ensure consistency with MDH policy. Rules should be amended if variances are regularly given, and should respond to emerging issues or documented health and safety concerns.

The revised rules address changing pool uses, construction and design practices, documented safety concerns and technological advances. Most of the existing rule is based on the American Public Health Association's *Standards for Public Pools* developed three decades ago (1964.) Revision of existing state rules are necessary to address:

- current filtration and treatment technologies;
- the overbuilding of toilet and shower facilities; and
- the emergence of water slides, spas, flumes, wave pools and zero depth pools.

The proposed revisions are needed to address documented safety concerns which have been observed by or brought to the attention of the commissioner in the last two decades. These include:

- the hazards of ledges or projections within the pool basin;
- inadequate or nonexistent depth and diving markings;
- the design of suction fittings on drains and outlets;
- the hazards related to starting block use;
- the use of pool covers; and
- the adequacy of existing access barrier standards.

The revision more clearly distinguishes the application of the rules with respect to public pool use and private pool use (Definitions in existing rule part 4717.0200, subparts 4 and 5 of "Private residential swimming pool" and "public swimming pool.") The proposed rules clearly distinguish between those pools regulated ("public pools" as defined) and those not regulated ("private pools" as defined.)

Because the existing rule was adopted in 1971 before procedures implementing the Administrative Procedures Act and Revisor's rule styles and format were in place, the existing format often lacks subparts and items. The existing format makes subsequent

amendment and reference to specific standards for enforcement difficult. The existing rules contain legalistic terms that need conversion to plain English, gender specific language which should be neutral, and nonregulatory language.

IV. Rule revision process

MDH began to develop internal guidelines as early as 1980 to address new issues relating to pool construction plan review. Memorandum and information relating to whirlpools, spas, hot tubs, recreational water slides with plunge pools and wading pools were developed from 1980 to 1993. These memoranda and information sheets are the basis for many of the proposed revisions and now reflect current accepted practice by the regulated industry.

A Notice of Solicitation for Comment on this matter was published in the State Register on April 2, 1990. Comment received in response to the Notice of Solicitation for Comment is included in the record on this matter.

MDH staff met with interested persons to review and discuss potential rule changes at several meetings starting in 1989 (to determine whether the rule should be open for revision) through 1993 (to review and provide comment on draft revisions). Persons consulted included representatives from city and county health departments; school officials who operate pools; representatives of the pool construction, materials and supplies industries; the architects and engineers; and the American Red Cross in Minneapolis and St. Paul. The Red Cross operates training programs for pool operators and lifeguards. A list of interested persons consulted, who submitted comment, or attended various meetings to review drafts is attached to this Statement of Need and Reasonableness. This interested party list is the basis for the additional discretionary mailing list on the proposed rules.

V. Small business considerations.

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

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

Small business is defined in section 14.115 as "...a business entity, including its affiliates that (a) is independently owned and operated; (b) is not dominant in its field;

and (c) employees fewer than 50 full time employees or has gross annual sales of less than four million dollars...."

The small businesses affected by the proposed rules include pool contractors who generally have fewer than 50 employees. Also impacted are the licensed facilities which own and operate existing pools - resorts, hotels, motels, camps, and manufactured home parks. The owners of apartments, private schools, and recreation facilities such as health clubs and spas are also impacted.

Because the danger to a person's health while using a pool operated by a public entity, a private entity, a big corporation or a small business is the same, MDH has not provided for special regulatory distinction based on the number of employees or gross annual sales of the operating entity. No exemption is provided in either general or specific public health law. A distinction is made in some pool statutes on the issue of risk, but in the case of public pools, the risk falls into the high risk category.

MDH approaches its regulatory controls as minimum standards and sets those standards at the level needed to protect public health. The compliance and reporting requirements, any schedules for compliance and reporting, any consolidation of compliance or reporting standards, any design or operating standards, and any express exemptions contained within these proposed rules are directly related to health and safety issues.

VI. Fiscal impact on public bodies

Municipalities, townships, cities and school districts are local public entities that may own and operate public pools. These entities are impacted by these rules. Most of the requirements applicable to existing facilities are not changing or would require minimal update at the time of pool repair or routine maintenance. An example of this would be the repair or update of markings on the side of an existing pool at the time the pool is drained and cleaned. Adding or replacing markings is often done in conjunction with routine maintenance and repair. Any alternation of an existing pool or attendant facilities which would require construction, would mandate compliance with the proposed standards. The decision to construct a new pool or attendant facilities is discretionary on the part of the local jurisdiction. Any major repairs required would be prompted by failure to meet adopted water condition and lifesafety equipment standards, or conditions that are harmful to public health and safety.

The provision in part 4717.0650 to require operator training and certification will impact other public entities. The MDH estimates that 20 percent of the public pools are operated by a municipality or school. The MDH estimates that 50 percent or more of the public facilities already have trained and certified operators. The revised pool rules are proposed to be effective by January 1, 1995 with part 4717.0650 mandating a certified operator for a pool proposed to be effective by January 1, 1997. The MDH

proposes to give local public bodies two years to come into compliance. During this two year period, those public facilities that do not have a certified operator would have to have that operator trained and certified. The estimated cost of classes is $175. If the estimate of 50 percent of all facilities currently have a certified operator is valid, then 50 percent of the public facilities or 500 facilities will have to undertake training and certification of their operator. The MDH estimates that the net fiscal cost to public facilities in the next two years would be about $87,500.

VII. Impact on agricultural land.

Minnesota Statutes, section 14.11, subdivision 2 requires that agencies proposing rules that have a "direct and substantial adverse impact on agricultural land in the state" comply with the requirements set forth in Minnesota Statutes, sections 17.80 to 17.84. Under those statutory provisions, adverse impact is described as including acquisition of farmland for a nonagricultural purpose, granting a permit for the nonagricultural use of farmland, the lease of state-owned land for nonagricultural purposes, or granting or loaning state funds for uses incompatible with agriculture (Minnesota Statutes, section 17.81, subdivision 2). The proposed rules will not have a direct and substantial adverse impact on agricultural land, thus Minnesota Statutes, section 14.11, subdivision 2 does not apply.

VIII. Need for and reasonableness of the proposed rules.

4725.2100 PLUMBING AND SWIMMING POOLS.

This rule part is within the range of rule parts applicable to licensed lodging establishments. The proposed amendment is necessary to change the cross reference from the existing standards for pool construction, operation and maintenance to the proposed new range of rule parts relating to public pool construction, operation and maintenance. The reference is reasonable because new pools designed and constructed need to meet the new proposed standards. Existing pools must also comply with the standards for operation and maintenance to ensure that they are safely operated.

4717.0150 APPLICABILITY.

This provision replaces existing part 4717.0100 SCOPE AND PURPOSE. The intent of the provision is to indicate to whom the rules apply. The provision has been rewritten to clarify that the rules establish standards for the "operation, maintenance, design, installation and construction" of public pools. The proposed provision also clarifies the applicability of the standards to all "public pools" not just those used for swimming or wading. This clarification is a logical interpretation of the existing definition in existing rule part 4717.0200, public swimming pool, which uses the

terminology "swimming or bathing" or a "body of water used collectively by a number of persons." The applicability is limited to "public" pools as defined, not "private residential pools." Finally, the proposed provision clarifies that the rules apply not only to the body of water itself commonly perceived to be the "pool", but also to "facilities related" to pools which include the deck, filtration system, water supply, showers, locker room sanitation and persons present. The attendant facilities must operate correctly and be maintained in a safe and clean condition.

4717.0250 DEFINITIONS.

Subpart 1. **Scope**. Subpart 1 is necessary to establish that the definitions in this part have a meaning specific to the proposed rules. These definitions are necessary for the consistent and intended interpretation of the proposed rules.

Subp. 2. **Commissioner**. "Commissioner" is defined in existing rule in part 4717.0200, subpart 2. The definition is proposed for amendment to include those authorized representatives of the commissioner. Under Minnesota Statutes, chapter 145A the commissioner delegates responsibility for the operational inspection of public pools in MDH-licensed facilities to local boards of health. In the case where there is a delegation agreement, the local board inspects for and is responsible for the enforcement of pool operation and maintenance standards within the proposed rules. The local board is not delegated the responsibility for the review and approval of plans and the monitoring of pool construction.

Subp. 3. **Operator**. This is a new definition proposed to delineate the individual who physically oversees the operation and maintenance of the pool. This is an individual who may clean the pool, may take daily water samples, and may supervise pool users. It is necessary to define operator to establish who is responsible for the operation of the pool and to clearly specify that the operator is the individual who is designated by the owner to have responsibility for the operation and maintenance of the pool and compliance with the adopted rules. The operator may also be the owner, particularly in the case of smaller facilities.

Subp. 4. **Owner**. This is a new definition proposed to clarify who has ownership for the pool and related facilities. The owner may be an individual, or as the definition of "person" provides, a corporation or firm that then employs an operator. The owner of the pool is responsible for compliance with the adopted laws and rules relating to the operation and maintenance of a public pool.

Subp. 5. **Person**. A definition of "person" is contained in existing part 4717.0200, subpart 3. The definition has been amended to add reference to an individual and a limited liability company. The amendments are necessary to bring the definition into line with the general term as used in other division and MDH rules and laws.

Subp. 6. **Private residential pool**. There is a definition of "private residential swimming pool" in existing part 4717.0200, subpart 4. The existing definition has been amended for a number of reasons. 1) It was necessary to use the general term "pool" rather than "swimming" pool because such facilities are not used exclusively for swimming. 2) It was necessary to further clarify what was meant by "residential" and "homeowner" within the context of the existing and proposed standards. The MDH has and continues to interpret the application of the rules to those situations other than a pool connected to a single-family residence or owner-occupied duplex. The MDH has consistently interpreted the existing rules to apply to communal use except the single residence and duplex situation limited to the family and invited guests. The pool is not let for use by the general public, as in the situation with a bed and breakfast residence. In the latter setting, the pool is a public pool.

Subp. 7. **Public pool**. This definition is similar to the term "public swimming pool" as defined in existing part 4717.0200, subpart 5. The existing definition has been modified to use the general term "pool" and eliminate "swimming" because the intent of the rules is to regulate the shared water and basin collectively used, not just those facilities used for the activity of "swimming." The definition has been amended to provide examples of public pools. These examples include parks, schools, child care facilities, lodging establishments, camps and resorts, clubs, condominiums, manufactured home parks and political subdivisions. The listing is not exclusive.

Subp. 8. **Spa pool**. This definition is in existing rule having been added in 1991 by the MDH in conjunction with revised plan review fee provisions. The definition remains necessary and reasonable as specified in existing rule. No change is proposed at this time.

Subp. 9. **Special purpose pool**. A special purpose pool is defined in existing part 4717.0200, subpart 6. The definition has been changed to provide for its application to pools not routinely used for swimming, diving or wading. These pools require additional conditions for health and safety.

Subp. 10. **Pool**. This definition has been modified to reflect pool uses in addition to swimming. This is a reasonable amendment because pools are used for other things like diving, wading, water therapy and slide play. The term "bathing" has been deleted from this definition and throughout the proposed rules to discourage the public perception that bathing (washing of the body) is a proper activity in a public pool. The pool water must be maintained in as clean a manner as possible. Washing or bathing, the use of soaps or shampoos is not appropriate in a shared basin of water.

Subp. 11. **Trained operator.** The proposed definition is necessary to distinguish between an individual designated by the owner to operate a public pool and the individual who specifically meet the requirements for training specified in part 4717.0650, subpart 5. The operator is responsible for ensuring that the pool is

properly operated and maintained. The operator and trained operator may be the same individual.

Subp. 12. **Wading pool**. This definition is the same as the term as defined in existing part 4717.0200, subpart 8 with some editing changes. No substantial change was made to this term.

4717.0275 INCORPORATIONS BY REFERENCE.

Part 4717.0275 consolidates those documents, specifications, methods and standards referenced throughout the rule into one part and incorporates them by reference as part of the rule. The consolidation is necessary to ease reference, avoid duplication of language, and facilitate future amendment.

Item A. The existing rule references the "Standard Methods for the Examination of Water and Wastewater" in existing part 4717.3400, subpart 3. The existing rule references the 1971 standard and 13th edition. The proposed rules in part 4717.1750, subpart 9 relating to "bacteriological samples," reference to the updated 1992, 18th edition of "Standards Methods for the Examination of Water and Wastewater." It is reasonable that the proposed rules use the most current standard for sampling so samples are taken and examined by a method that is consistent with current practice. A copy of these methods is available in the MDH laboratory.

Item B. The incorporated standard for pool covers in item B is used in proposed part 4717.1575 POOL COVERS to address the use of these devices. The justification, need for and use of the standard is addressed in part 4717.1575.

Item C. The 1992 NSF International, *Standard 50 Circulation System Components for Swimming Pools, Spas or Hot Tubs"* is used in proposed part 4717.2570, subpart 1 as the standard for equipment which is part of the installation or alternation of a pool recirculation system. The existing rule refers to several NSF standards for pool equipment; these former standards have been combined by NSF into Standard 50. Reference to Standard 50 provides a nationally-recognized standard for the design and operation of pool equipment. It allows regulated parties and the manufacturing industry to meet one standard.

4717.0310 PLAN REVIEW FEES.

Part 4717.0310 is the same as existing part 4717.0310 except for the clarification in the title that the fees relate only to plan review, and the change in the cross reference from part 4717.0300 (which is the existing provision for the submission of plans and specifications) to proposed part 4717.0450 (which is the new provision that sets the standard for submission of plans and specifications). There is no substantial change to this part other than the cross reference amendment. The fees for plan review were

last revised in 1991, effective July 1, 1992 and remain current.

4717.0375 INSPECTIONS; WATER SAMPLING.

Existing part 4717.0700 specifies that the commissioner of health is authorized to conduct inspections for compliance with the public pool regulations, and speaks to the right of entry at reasonable hours. This provision is also authorized by Minnesota Statutes, section 144.99, subdivision 2 which allows the commissioner or an employee or agency authorized by the commissioner to enter upon any property of a person subject to regulation by the commissioner and take any action authorized by rule or law including conducting surveys or investigations. Taking water samples or testing may be necessary to determine the condition of the pool water, and is reasonable to allow so the commissioner can determine if the condition of the pool is in compliance with adopted standards.

4717.0450 SUBMISSION OF PLANS AND SPECIFICATIONS.

The requirements in proposed part 4717.0450 redraft provisions in existing part 4717.0300. The existing limitation to "swimming" pools has been deleted. The MDH has further delineated what is meant by "further information as the commissioner of health may require." As stated in existing part 4717.0300, a pool may not be constructed or materially altered until plans and specifications are submitted to the commissioner and approved with respect to sanitation and safety. Any physical change to the size, shape, equipment, recirculation system, or health and safety features, related to the pool and attendant facilities require submission of plans to the commissioner. Routine maintenance and housekeeping repairs such as repainting, replacement of damaged tiles or shower curtains do not require plan submission.

Subpart 1. **Plan submission and review**. The requirements for plan submission relating to construction, installation or material alteration; that the plans be submitted in duplicate; the conditions of review, restrictions on plan modification and requirement that the pool be built in accordance with the approved plan (items A to D) are required in existing part 4717.0300. Item E is added to require projects with innovative design features not specifically addressed in parts 4717.0150 to 4717.3975 to be reviewed in the design development stage. This allows the owner to demonstrate that safety and water quality can be maintained with the innovative design features at a stage where alterations can be easily implemented. Continuous supervision may be required as a condition for approval of an innovative design feature. Supervision is a means to maintain pool patron safety that may be needed in conjunction with new innovation, recreational or design features. Supervision may be required as a safety condition or water quality requirement in conjunction with a variance request related to the existing rule or may be considered in conjunction with a plan review because there may be no existing rule provision addressing that new or innovative feature.

Subp. 2. **Plan contents**. This subpart has been added to the rule to clarify the required plan content for MDH review. It is necessary that the plan specify the name and address of the facility where the pool is located so subsequent monitoring of construction may occur. The location of the pool and the name of both the owner and operator is necessary because they may not be the same and the MDH may have to contact both. Item C is necessary to discuss potential plan problems or modifications with the person with knowledge of pool design. The information in items D to I is necessary on the plan or in specifications to allow the MDH to determine, prior to actual construction, whether the facility as designed is likely to comply with the pool construction, design, equipment and operation standards specified in parts 4717.0150 to 4717.3975.

Subp. 3. **Inspection of completed project**. According to Laws of Minnesota 1987, chapter 403, article 1, section 8, subdivision 2, the commissioner has responsibility for the monitoring and surveillance of public pools. This responsibility entails determining whether the pool has been constructed in accordance with approved plans. As specified in existing part 4717.0300, the owner has the responsibility to notify the commissioner at the time of completion to permit inspection for compliance with approved plans. Item B has been added in the proposed rules to address the situation where a plan is approved by the commissioner, but construction is delayed. However, construction must commence within some reasonable period of time to assure that the conditions which were present at the time of plan review have not substantially changed. One year between the time of plan review and the commencement of construction is consistent with agency practice in the plumbing program.

4717.0650 POOL OPERATION AND MAINTENANCE; OPERATOR TRAINING.

Subpart 1. **Pool maintenance**. This provision is taken from existing part 4717.3000 - MAINTENANCE REQUIREMENTS. The provision has been modified to remove the term "satisfactory" and to substitute the term "properly."

Subp. 2. **Responsibility for operation**. Existing part 4717.0400 OPERATOR OF THE POOL currently requires that a pool be under the "supervision of a trained operator or person who shall assume the responsibility for compliance" with all provisions of the rules relating to pool operation, maintenance, and user safety. This provision has been reworded to place it in the active voice and relate operation and maintenance to public health threat as well as user safety. The provision has been revised to distinguish between responsibility for pool ownership, operation, and the requirement in subpart 3 that there be a trained operator who is responsible for the direct operation of the pool. The owner, party designated as the operator by the owner, and the trained operator are all responsible for the operation of the public pool.

Subp. 3. **Designation of a trained operator**. This provision requires that a

pool open for use have a trained individual responsible for its operation present daily to inspect the facility's operation. The trained operator must be knowledgeable about chemical monitoring and equipment operation and ensure that other individuals are also trained to perform the maintenance, chemical monitoring and testing functions they undertake. The trained operator is the party who must be available for response in the even of a pool emergency, or an unsafe or unsanitary condition emerges. This is reasonable because it is the party with knowledge about the operator of the specific pool and safe and sanitary pool operation practices who must implement corrective measures.

MDH staff and local inspection staff have found pool personnel making incorrect responses to problems present at a pool and failing to prevent problems from occurring in the first place.

* In Mankato, a health department staff person cited the instance where several hockey teams were staying at a hotel when 11 of 22 players that used the pool and spa came down with diarrhea, fever and headaches. The pools used had no measurable disinfectant residual.

* The Olmsted County health department recently had a pool with consistent chemical problems and bacteria counts above the allowable level.

* A Minneapolis city health inspector reported to MDH that three or four nurses came down with a rash after using a pool at a Minneapolis hotel. The cause was a pseudomonas outbreak. There was no measurable disinfectant in the pool. The operator had no training.

* A state inspector found a pool operator adding chlorine pellets directly into a pool and getting no immediate reading (bleached out). Eventually there were seven pellets floating in the pool. At the time of the inspection three pellets were still present and not dissolved. When the inspector put his hand and forearm into the water the chlorine level was so high he received chemical burns.

* The City of Minnetonka requires training of pool supervisors but has problems at hotels with pool operator turnover. The local health department reported that operators do not know how to take proper disinfection readings or how to read those they take. They also routinely leave access gates and doors to the pool blocked open, creating a safety hazard for children and nonswimmers.

* Washington County public health related how an operator needed to raise the alkalinity of a pool and bought 20 pounds of baking soda and added it all at once. The pool was closed for two weeks because of turbidity (water so murky the bottom can not be seen, thus presenting a safety hazard to users and lifeguards). In another instance a pool was maintained with a chlorine level of 10 parts per million.

(Maintaining a chlorine level greater than five parts per million bleaches clothing and irritates skin. Levels at the 8-10 range are used to shock or superchlorinate a pool, removing contaminants and unwanted chlorine which has combined with contaminants. Chlorine levels are maintained between 1 and 5 parts per million based on water chemistry and user load to maintain properly disinfected water.)

* The Winona Health Department noted several cases of over chlorinating and bleaching out reactants. In one case a pool operator assumed that "shocking the pool" was done by hooking electrical current up to the pool.

* St. Louis Park public health has required operator training for the last 17 years. A local public health sanitarian there noted that those pools with trained operators have considerably better water chemistry and fewer problems. Those who start operating a pool half way through the outdoor pool season with no training have considerably more problems.

* In St. Louis County, a sanitarian reported one pool that consistently had chemical problems. To address them, the operator maintained the chlorine residue at 20 to 30 parts per million - four to ten times greater than the amount needed to safely disinfect the pool and well above the level that bleaches clothing and irritates skin.

* In February of this year the MDH received a report on a hotel. The pool was closed by order of the local health inspector because the cyanuric acid level in the pool was over 100 parts per million. (Cyanuric acid is used to stabilize the disinfecting chlorine in a pool and to keep it from being decomposed by ultraviolet light. Cyanuric acid bonds with the chlorine and does not allow it to dissipate rapidly. At levels of over 100 parts per million, cyanuric acid reduces the disinfecting efficiency of the chlorine.)

* The MDH received a complaint about a pool operator at an apartment complex. When queried by the MDH about the complaint the MDH found that the operator did not know what combined chlorine was; used "as little chlorine as possible" because he didn't like it; and maintained none of the required records.

* In Bloomington a hotel replaced a one horsepower recirculation pump with a two horsepower agitation pump and created a vortex through the bottom drain that almost drowned a young girl. In another incident a pool pump stopped working and the pump failure wasn't notice for four days. Water quality dropped and turbidity became an problem.

Ten local health agencies and at least nine other states, including Iowa, require certified pool operators.

There are over 32,500 certified pool operators in the United States, with about 2,100 certified in Minnesota according to the National Swimming Pool Foundation. The MDH

estimates 25 percent of all existing facilities have certified trained operators.

Daily presence by a trained operator is necessary to ensure that the chemical balance within the pool, which may change within a 24 hour period, is correctly maintained. A facility may contract with a trained person to check pool records and chemical balance daily. A daily record of pool operation has been required since 1971 in part 4717.0400. With respect to resorts or small operations, cooperative arrangements or contract services may be used. It is necessary that a trained operator be readily available to respond to emergency, unsafe or unsanitary condition. Situations involving death or injury such as users being knock against the bottom of a pool by wave action or sucked toward a bottom drain must be dealt with correctly and promptly to ensure the health and safety of other pool users.

Subp. 4. **Operations manual**. Provision for the on-site availability of an operations manual providing information relating to the operation of pool equipment is provided by the equipment manufacturer is needed to ensure that documentation on proper operation of the pool equipment is available to the operator.

Subpart 5. **Operator training**. This subpart is proposed to clarify the training requirements for a trained pool operator and to clarify that it is the owner or operator of the pool who designates and is responsible for ensuring that a trained operator is present daily when the pool is in use. Existing part 4717.3600 provides that "the commissioner of health may require a certificate of competency obtained through attendance at and successful completion of a swimming pool operator's training course." The existing requirement has been discretionary on the part of the MDH. Some counties have provided training or required training via local ordinance. The proposed standard requires training and specifies what training is required.

Item A specifies that any training address chemical handling and the use of protective equipment. This provision is necessary because the operation of a pool includes the use of chemicals which can be dangerous if not used correctly.

Item B provides that the existing provisions for operator training in part 4717.3600 remain in effect until January 1, 1997. Local jurisdictions who require periodic attendance at locally-offered courses may continue to do so until January 1, 1997.

Item C mandates a deadline to complete a nationally-recognized training course as specified in item E. January 1, 1997 gives pool operators time to complete training which is offered several times a year. The courses specified may be completed in two to three days, including the examination. The cost of the courses is around $175. Requiring a trained operator better protects the public who use pools. The proposed provision is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.11 which states:

> Effective June 1, 1992, each swimming pool/spa operator shall biennially participate in a continuing education course of at least six hours which has been approved by the department.
>
> Prior to June 1, 1993 all swimming pool/spa operators shall have successfully completed a certified pool/spa operator course sanctioned by the National Swimming Pool Foundation, 10803 Bulfdale, suite 300, San Antonio, Texas 878216, or a course of instruction approved by the department.

Frequent turnover of pool operators is very common. Without a mandatory training requirement, the new operator often has little or no knowledge of pool operation. Requirements for plan approval and compliance with rules relating to the design and construction of a public pool are of little benefit unless the ongoing operation of the pool is done by a knowledgeable person.

The American National Standards Institute in ANSI/NSP1-1 1991 has published *American National Standard for Public Swimming Pools*. Article XX requires that:

> Public pools shall be maintained under the supervision and direction of a properly trained operator who shall be responsible for the sanitation, safety, and proper maintenance of the pool, and all physical and mechanical equipment and records....

Item D requires a certified operator to complete a training course at least once every five years. This requirement is necessary to ensure that persons operating public pools, using chemicals and complex pumping and filtration equipment are knowledgeable and maintain their skill in carrying out correct sampling and testing requirements. Requiring initial training and continuing education protects the public using pools.

Joseph Hibberd, Registered Sanitarian Supervisor with the Community Sanitation Program of Ramsey in June 18, 1993 written comment to the MDH indicated:

> this division strongly supports the requirement for pool operator training and certification. Ramsey County has provided pool operator training and required certification for over 10 years. However, such training should be provided and required on a continual basis. Recertification should be required every two years....

William R. Ayshford, Jr., aquatics supervisor for the City of Robbinsdale, in August 10, 1993 comment to the MDH recommended that training reoccur "once each five years."

The MDH has received some comment from Upper Midwest Hospitality, Inc. which represents resorts, restaurants and hotels. Some members questioned the need for

trained operators in pools open for only three months of the year. In comment to the MDH on August 25, 1993, David Siegel, communications director for Upper Midwest Hospitality, Inc, submitted the comments of that organization's joint health and safety committee. In the 8/17/93 comment committee members requested clarification of how extensive the training will need to be and how expensive it will be. The comment stated: "The wisdom of requiring training was acknowledged, however, resorters in particular are concerned about the cost and depth of training required."

A pool open only for the outdoor swimming or the resort season presents the same hazard and public health threat, albeit for a shorter period of time. The threat of harm and safety hazard to the public is there on a daily basis for a seasonally-operated facility as for one in continuous year round operation. Trained pool operators can be shared among facilities, thus reducing costs.

The specification of nationally-recognized training courses is intended to provide a consistent level of training statewide and to make the state training standards level with the national training field. The MDH does not have the internal resources to provide its own training program and believe adequate opportunities are available to obtain the training from the courses specified within the private sector. Local jurisdictions have the option of becoming approved to provide the nationally recognized training. It is important that local training be consistent with and equivalent to the specified national courses to ensure that the safety level is the same throughout the state. Citizens do not consciously assess what jurisdiction they are in when using a pool. If the safety and health responsibility is a state program, the standard must be consistent statewide.

Part 4717.0750 POOL RECORD.

This rule part modifies and clarifies the regulatory standard for recordkeeping in existing part 4717.3600. The MDH proposes that the pool operation and maintenance record be maintained for six years. A six year retention period is needed because the statute of limitations for bringing suit tort claims for negligence is six years. It is for the owner's own protection to have the record when a claim is made. Retaining records for a six year period allows maintenance personnel to review past equipment maintenance schedules, chemistry problems and solve them accordingly. A record of operation and maintenance is helpful given the high turnover rate for pool maintenance personnel.

Items A, B, D, E, F, and G relating to the content of the pool record are consistent with part 4717.3600. Item C is a modification of part 4717.3600, item E to allow the use of automatic systems without recording the amount of chemicals used. Automatic systems feed bulk chemicals as needed making it difficult to record. Item H has been added to require a record of any accidents or injuries requiring assistance from a lifeguard, attendant, or emergency medical personnel. This will allow for evaluation of

the reporting provisions in part 4717.0775 and help prevent future accidents.

This requirement is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.4(7)"g"(3) which states:

> The operator of a swimming pool shall maintain operational records for the previous 12 months and make these records available on request by a swimming pool inspector. These records shall contain a day-by-day account of swimming pool operation -- particularly the following information.
>
> (1) Results of Ph, free available chlorine or bromine residual, cyanuric acid level (if used), total alkalinity, and any other test results.
>
> (2) Results of microbiological analyses.
>
> (3) Reports or complaints or accidents, injuries and illness.
>
> (4) A description of maintenance or repairs, and correction in operation or design made.
>
> (5) Filter backwashing, cleaning or changing of filters.

Part 4717.0775 REPORTING.

This rule part specifies that all pool incidents resulting in death or serious injury that require assistance from medical personnel to be reported to the commissioner by the end of the next working day. This provision will allow unsafe equipment, pool layouts, procedures or any unsafe situation to be evaluated and eliminated or changed to prevent further incidents. This requirement is similar to the provision in Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.4(8) which states:

> swimming pool and spa operators shall report all deaths, head, neck, spinal cord injuries and any injury which renders a person unconscious or requires immediate medical attention to the department within one business day of occurrence.

The Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.310 (d) requires that "all drownings and injuries requiring hospitalization shall be reported to the department." The Michigan Administrative Code, R 325.2199 requires that daily reporting to the department of "rescues, submersions, and accidents given medical attention."

Part 4717.0950 LIFEGUARD REQUIREMENT.

Rule part 4717.0950 amends the requirements for a "qualified attendant" contained in existing part 4717.3700. The proposed provision eliminates the use of the term "qualified" and instead states what the requirements are for the use of a lifeguard and what the individual must have in the way of certification training. The requirement for a cardiopulmonary resuscitation requirement for adults, children, and infants has been added. The use of an attendant so trained (unless a "no lifeguard on duty" sign is posted) is consistent with the Michigan Administrative Code, R 325.2198 (3)(b) which require completion of CPR. Proposed part 4717.0950 also clarifies the lifeguard certification requirements. The rule requires a Red Cross certification or equivalent. A similar requirement for Red Cross certification or equivalent is found in the Iowa Swimming Pool Regulations, part 641-15.4(5) "d" (4); Illinois Administrative Code 1987,

Title 77, Chapter 1, Subchapter n, Section 820.300 (b)(3)(A); and the Michigan Administrative Code, R 325.2198 (3)(b). Well trained lifeguards will better protect the public using public pools.

Part 4717.1050 NO LIFEGUARD WARNING SIGN.

Part 4717.1050 amends the existing requirements in part 4717.3300, subpart 4 to clarify the size of sign lettering. Item A stating "Warning - no lifeguard on duty" has not been changed. Item B has been modified to require lettering at least one inch high on the sign stating "Children must not use the pool without an adult in attendance." The existing rule was not clear about the size requirement for this item.

Part 4717.1250 EMERGENCY TELEPHONE LOCATION.

Part 4717.1250 is proposed to clarify the telephone requirements and emergency number posting requirements contained in existing part 4717.0350. The Michigan Administrative Code, R 325.2165(4) requires that a telephone be "readily available" and the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (u)(5) requires a telephone to be "within the pool enclosure or within 500 feet of the pool enclosure." The Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.310 (c) also requires "posting of emergency numbers in a conspicuous location."

A telephone is required at pools with a lifeguard present to accommodate the larger user loads generally associated with pools using lifeguards. Posting emergency numbers when a telephone is present allows quick contact with emergency personnel.

The location of the nearest telephone and emergency numbers must be posted to allow pool patrons to contact emergency personnel if needed. The MDH has received comment about the distance that may be allowed to the "nearest" telephone when a lifeguard is not present. The situation frequently encountered is the location of a public access phone where a pool is in an apartment complex or motel. Concern has been raised by some local health agency representatives that the nearest designated public phone not be blocks away and that a minimum distance be mandated. The MDH has chosen not to mandate a minimum distance requirement at this time. The MDH proposes to allow for flexibility in meeting this requirement.

The American Public Health Association's *Public Swimming Pools: Recommended Regulations for Design and Construction, Operation and Maintenance* in section M-9.10 specify "every swimming pool shall have in the immediate vicinity a telephone or some other approved device for summoning aid in emergencies." Some owners have installed phones within or immediately adjacent to the pool enclosure. A phone may be available within a nearby manager's office and that office may be open at the same time the pool is in operation.

Part 4717.1350 POOL FACILITY CAPACITY.

Subpart 1. **Posting pool facility capacity.** Subpart 1 is the same as the requirement in existing part 4717.0350.

Subp. 2. **Pool user capacity.** Subpart 2, item A amends existing part 4717.2200 to change the allowable user load for pool areas five feet or less in water depth from one person per 10 square feet of pool surface to one person per 15 square feet of pool surface. The proposed amendment is consistent the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (b)(2) which specifies "fifteen square feet of pool water surface ...for each bather." The MDH notes that many small pools have depths of five feet or less for the entire pool.

Under existing regulations, a small 20 by 40 foot pool could have 80 people standing in it. This is an unrealistically high number. The American Public Health Association's *Public Swimming Pools: Recommended Regulations for the Design and Construction, Operation and Maintenance* in section D-23.03 specifies one person per 15 square feet of water surface area in nonswimming areas of five feet or less; plus one person per 25 square feet of water surface area in areas over five feet in depth; plus 10 persons per diving board.

Item B amends existing part 4717.2200, item B to change the allowable user load for pool areas over five feet in depth from one person per 24 square feet of pool surface to one person per 25 square feet of pool surface. This ratio is the same as the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (b)(3) which states:

> Three hundred square feet of pool water surface area shall be reserved around each diving board or diving platform. This area shall be deducted from the total deep area. Twenty-five square feet of pool water surface shall then be required for each bather.

The Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 3.2.2 states:

> Deep area - twenty-five (25) square feet of pool water surface area shall be provided for each patron.

The Great Lakes-Upper Mississippi River Board of State Sanitary Engineers is made up of professionals from the states of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, New York, Ohio, Pennsylvania and Wisconsin. The proposed one person per 25 square feet ratio is also the same as that recommended by the American Public Health Association as stated in item A above.

Item C requires the water surface around a diving board or diving platform to be excluded when computing the user capacity in item B. This standard is proposed for extension to slides as well. This is a reasonable extension because the concept of plunging into a pool area from a slide is similar to the use of a pool area with a diving board or platform. Space must be available around the slide, board or platform for unobstructed entrance into the pool so that injury from collision does not occur to the diver or slider and other persons in the water. An additional standard relating to user capacity is proposed to specify an allowable user load for the plunge area of 10 persons for each slide, diving board, and diving platform. Inclusion of the persons using the diving board, platform or slide ensures that the pool user capacity accurately reflects all users of the pool surface water area. This specification also ensures that

persons using the diving board, platform and slide are included as "pool users" when the shower and sanitary facility ratios are implemented for pool users.

Thus if you now have a 20 by 40 foot pool with a 20 by 20 foot area with five feet or less, a 20 by 20 foot area with water depth over five feet, and a diving board, the user capacity under the proposed provisions would provide for 26 persons in the shallow portion of the pool. In the deep portion, 300 feet of the 400 feet must be reserved for the diving area, allowing four persons in the remaining 100 square feet and 10 persons for the diving area. The total user capacity for the pool would be 40 persons; 42 if there isn't sufficient room for a diving board.

Item D is a new provision needed to address the capacity of spa pools. A limit of one user for each three feet of seating space has been used by the commissioner since 1984 in conjunction with plan reviews of new spa pool facilities. The ratio was taken from the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 14.2 which states:

> The patron load shall not exceed one person per three (3) lineal feet of inner edge of seat or bench.

Part 4717.1450 LIFEGUARD STATIONS AND LIFESAVING EQUIPMENT.

Subpart 1. **Lifeguard stations.** The requirements in subpart 1 are contained in existing part 4717.3300, subpart 1. No substantial change is proposed.

Subp. 2. **Lifesaving equipment.** The requirements in subpart 2 are contained in existing part 4717.3300, subpart 2. An exclusion for spa pools and wading pools is proposed because access to pool patrons needing assistance while in a spa pool or wading pool is easily achieved without the equipment specified.

Subp. 3. **Lifesaving equipment unit.** The requirements in subpart 3 are contained in existing part 4717.,3300, subpart 2. The existing requirements are proposed for revision to allow for the use of a rescue tube instead of a ring buoy where a lifeguard is present. The subpart deletes the requirement for a separate throw rope, and eliminates the use of telescoping or multiple section poles for the shepherds crook or lifepole. The pole or crook must be full length at all times to serve its emergency use function.

The provision for a ring buoy is found in existing part 4717.3300, subpart 2. Proposed item A is not as prescriptive as the existing standard in that it no longer specifies a size requirement for the ring buoy. The existing code specifies a ring buoy "not more than 15 inches in diameter and equivalent in weight to a cork buoy." The standard ring buoy size is 24 inches.

The requirement for a lifepole or shepherd's crook in item B is found in existing part 4717.3300, subpart 2. The proposed item B requires the pole to have a fixed length. This modification of the existing requirement eliminates the use of a telescoping or multiple section pole, to prevent possible unsuccessful rescues due to inadequate equipment. A telescoping or multiple section pole may not be long enough to perform

a rescue if a user does not realize it can be extended.

Item C is a new provision that allows for the use of a rescue tube instead of a ring buoy where a lifeguard is present. A rescue tube is more compatible with a lifeguard rescue and is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"g"(2)"5" which provides for:

> a rescue tube made of a soft strong foam material 3 inches by 6 inches by 40 inches with a molded strap providing a ring at one end and a hook at the other. Attached to the end with the ring shall be a six foot long towline with a shoulder strap....

The rescue tube provision is also consistent with the Michigan Administrative Code, R 325.2165 (1) which provides for a "small float or rescue tube."

Subp. 4. **Lifesaving equipment; access.** Subpart 4 is based on the existing standard in part 4717.3300, subpart 3. Two minor clarifying modifications were added to this provision. The first specified the nature of the plain markings "For emergency use only." The second qualified the prohibition for equipment removal to add "except for emergency use." These are needed to assure that the equipment is in proper condition when needed.

Subp. 5. **First aid kit; spine board.** This subpart is amended to add a spine board and list first aid kit requirements. Requiring a first aid kit is contained in existing part 4717.3300, subpart 2. The presence of a spine board allows for the rescue of persons injured at a pool. The person can be immobilized on a firm surface, lessening the opportunity for additional injury due to additional or improper movement of the injured person. Many spinal injuries are made more serious when a person is improperly moved. A spine board is required in the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"g"(5).

> A standard spine board, cervical collar and straps shall be provided at each swimming pool with an area of 1,500 square feet or more.

The Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 6.4 states that "a spine board should be provided at each pool."

Items A to N list the required items in a first aid kit. These items are the components of the Red Cross 24 Unit First Aid Kit with the addition of the protective items of a mask and gloves to protect the person administering aid to the injured person. Items A to L are specified by the American Public Health Association in *Public Swimming Pools: Recommended Regulations for Design and Construction, Operation and Maintenance* (section M-9.07).

Part 4717.1550 POOL ACCESS RESTRICTION; FENCING.

Subpart 1. **General.** This rule part amends the existing standard for fencing in part 4717.0350. Access barriers to pools of water is a key safety factor and deterrent to accidents. The *Medical Journal of Australia* (Vol 154, May 20, 1991, in a discussion of

isolation fencing and drowning in pools states that:

* There is no doubt that a properly constructed and well maintained isolation fence with the gate closed is an effective barrier to young children, especially those less than three years of age who are most at risk of near drowning.

* Children under five years of age cannot be educated to avoid bodies of water; they must be prevented from reaching them when they are unsupervised.

* The cost of providing barriers is "not just a health cost" but "part of an acceptable social infrastructure which includes traffic lights and pedestrian crossings.

* A physical barrier is a strong psychological barrier to toddlers and young children as well. The presence of a fence provides a datum for parental discipline and training in addition to its efficacy as a physical safety barrier.

Subpart 1 addresses the issue of access when the public pool is located indoor. This is a new requirement proposed at the request of local health department's to clarify what was meant by "other means acceptable to the commissioner." The existing rule did not distinguish between access barriers to public pools outdoors and pools within a building or enclosure.

Within some buildings or enclosures that may be configurations where the pool is in close proximity to other uses such as guest rooms, major traffic hallways, or patio areas in atriums. The proposed provisions for restricting access in indoor areas is designed to restrict small children and toddlers in particular. The building or enclosure itself provides a degree of access restriction from the general public compared to a public pool located outside. However, there still must be provision for security to reduce accidents.

Self-closing, self-latching doors to the building or enclosure provide a barrier whether the public area is outside the building or a public space within the building. The door is a barrier for the small child who would not be able to open the door without assistance. This type of barrier provides the same level of access control to the indoor pool that is provided to the outdoor pool.

Location of the pool in a separate room is another frequently employed means used to restrain access by the general public to the indoor pool. Where this method is used, access to the room through self-closing doors and self-latching doors again provides an effective barrier to small children.

A third alternative provides security and restricts access using a fence or comparable barrier such as a brick wall with plants. This kind of barrier coupled with a self-closing, self-latching gate, allows for the pool to be situated in an open interior setting while maintaining a low barrier that routinely cannot be scaled by the small child. The presumption used with this alternative is that there is not the degree of access to an indoor pool by small children as there is in an outdoor setting because the small child is usually accompanied in a building by a supervising adult. The department proposes to allow a slightly lower fencing or barrier height within the building because the

situation a limiting access to the small child in particular is comparable to limiting access to the wading pool where the four foot fence height is used.

Subp 2. **Fencing.** Item A requires new fencing installed after the effective date of the proposed rules to be at least five feet high. This requirement is needed to restrict access to pools, especially by children. Five foot fencing is a standard size that is readily available. A five foot high fence will exclude more children than a four foot high fence. A recent drowning in Minnesota occurred after a child climbed over a four foot high fence.

The provision in item B for self-closing, self-latching gates is currently in existing part 4717.0350. No substantial change to that requirement is proposed.

Item C requires fencing to have no openings greater than four inches. Four inch openings do not allow entrance by children and many animals yet is large enough to prevent entrapment. The four inch requirement has been used by the commissioner for plan approval for several years and is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (a)(1) which specifies that the "openings in any barrier shall not exceed four inches in width." The Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"h"(4) provide that "no opening in the barrier except for a gate or door shall permit the passage of a four inch sphere."

Item D specifies that the fencing not have an opening greater than two inches below the fence. The two inch requirement has been used by the commissioner for plan approval and reduces the possibility for access to the pool by animals. This provision is the same as that recommended by the American Public Health Association in *Public Swimming Pools: Recommended Regulations for Design and Construction, Operation and Maintenance* (section D-21.01f).

The provision that the fencing should not be readily climbable in item E is contained in existing part 4717.0350.

Subp. 3. **Existing four-foot fencing.** Subpart 2 allows for fencing with a height of less than five feet, if it was in existence prior to January 1, 1995, as long as it complies with the requirements specified in subpart 2.
The criteria specified in items A, B and D are found in existing part 4717.0350. Item C is a new requirement for existing fencing, requiring that it have no openings greater than four inches. Four inch openings do not allow entrance by children and many animals and is large enough to prevent entrapment. The four inch requirement has been used by the commissioner for plan approval and is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (a)(1) and the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"h"(4).

Subp. 4. **Wading pools.** This subpart is a new rule provision added to clarify the fencing requirement around wading pools. Requiring a four foot fence around a wading pool is consistent with the existing fencing requirement in part 4717.0350. A four foot height is required by the State of Illinois [Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.230 (d)]. Existing 42 inch high fences would be

allowed to remain at wading pools. The majority of free standing wading pools are in municipal park systems in residential areas. Many have 42 inch high fences with self closing gates. No evidence of toddlers being able to enter the area have been documented. Wading pools do not usually pose a drowning threat for older children.

Subp. 5. **Chain link fencing.** This subpart is a new provision added to clarify the requirement for new chain link fencing. The goal of this requirement is to reduce the climbability of the fence. A 1-1/2 inch mesh on fencing less than eight feet in height reduces the ability to climb the fence by maintaining a mesh size which cannot be used as a foothold. A two inch mesh on fencing over eight feet in height is easy to use as a foothold, but the fence adds additional height as a deterrent to its ability to be climbed. The chain link fencing specified is readily available from fencing contractors. Existing chain link fences are not effected by this part.

Subp. 6. **Latches.** The provisions in subpart 5 are proposed for addition to the pool rules to require latches on new installations to be located four feet off the ground. This reduces the possibility of small children gaining access to pool areas by manipulating the latch and accidents occurring. The department is aware of and has reviewed accessibility Guidelines for Buildings and Facilities published June 20, 1994, in the *Federal Register* (Vol 59, No 117, p. 31676) to implement the Americans With Disabilities Act (ADA). These interum final rules include accessibility provisions that relate to public pools. While MDH is not directly responsible for implementation of ADA, the agency does not want to adopt rules that would be inconflict with proposed federal guidelines. The provision relating to latches does not appear to conflict with federal access provisions. Forty-eight inches is the standard height for grab bars and door hardware (CFR part 1191, section 4.13.9), so mandating that latches on pool access barriers be four feet from the ground is consistent with the federal guidelines.

4717.1575 POOL COVERS.

Part 4717.1575 is a new provision relating to the use of pool covers. Pool covers are frequently used on pools for energy conservation. They trap heat in the pool water minimizing heat loss and may decrease the evaporation of chemicals such as chlorine and bromine. While covers may be used for their heat retention quality they pose safety concerns.

Many pool covers are NOT designed to keep people from drowning in a pool. Many covers are not sold or designed as "safety" covers or intended for that use. Because the edges of some covers or "blankets" are not firm or tethered and are in the water themselves, objects placed close to the edge may slip underneath the cover into the water. Covers may present a misleading picture to a small child who may view the surface as solid or to be used as a flotation device. In the June 1990 publication of *Pediatrics* Doctors Stephen B. Sulkes and Elise W. Van Der Jagt of the University of Rochester Medical Center, Pulmonology Division of the Department of Pediatrics, recommend that such devices be used only where there is fencing and self locking gates.

MDH proposes that new pool cover installations comply with ASTM Standard F1346-91 *Standard performance Specification for Safety Covers and Labeling Requirements for All Covers for Swimming Pools, Spas and Hot Tubs* to maintain a safe environment

around the pool.

ASTM Standard F1346-91 was developed by the American Society of Testing Materials to address the need for a uniform cover standard for pools that addressed safety as well as energy conservation issues. Reference to ASTM provides for uniformity with a nationally recognized standard.

Item A requires all pool covers to be maintained in a clean and sanitary condition to preclude contamination of the pool water. Covers can become sources for pool contamination when stored wet, in warm areas or in the sunlight if not cleaned. These conditions can lead to the growth of bacteria, algae, and other contaminants.

Item B is requires pools with accessible deck areas when the cover is in place to use covers which are fully secured safety covers. The use of heating blankets or unsecured safety covers on pools when the deck is accessible creates a safety hazard.

Item C is needed to ensure and clarify that a pool cover, regardless of type, may not be used in lieu of a fence or other restrictive barrier. A pool with no fencing or barrier would allow easy access by children, non-swimmers, and animals.

Part 4717.1650 USER SANITATION AND SAFETY.

Subpart 1. **Posting user safety and sanitation rules.** The requirement for posting user safety and sanitation rules in the pool facility are contained in existing part 4717.3700, item F. The requirement is proposed for amendment to specify a minimum letter size and allow the use of pictorial representations, where appropriate. Pictorial representations of sign requirements can be used, where appropriate, creating a universally readable sign for all pool patrons. The one-fourth inch requirement for lettering allows sign to be easily read.

Subp. 2. **Communicable diseases.** The provisions in this subpart are contained in existing parts 4717.0350 and 4717.3700, item B. No substantial change has been proposed.

Subp. 3. **Warning.** The provisions in this subpart is are contained in existing part 4717.3700, item B. No substantial change has been proposed.

Subp. 4. **Showering.** Showering requirements are contained in existing part 4717.3700, item A. The existing requirement is proposed for amendment to add other situations when a person must shower prior to pool use. Perspiration, lotions, and body oils put additional demand on pool filtration and disinfection systems and can be removed from a person's body by showering. The requirement that the showering sign mandate nude showering is proposed for deletion because the requirement is a problem to enforce, however, facilities must still have accommodations that permit nude showering.

Subp. 5. **No spitting.** The provisions in this subpart are contained in existing part 4717.3700, item C. No substantial change has been proposed.

Subp. 6. **No running.** The provisions in this subpart are contained in existing part 4717.3700, item D. No substantial change has been proposed.

Subp. 7. **Glassware.** The provisions in this subpart are contained in existing part 4717.3700, subitem E. No substantial change has been proposed.

Subp. 8. **Diving.** This subpart is a new provision. It requires signage at a pool to indicate that diving is permitted only in certain areas specifically marked for diving. If the pool does not have an area that complies with the diving depth requirements in part 4717.3750, then a "no diving" sign will be necessary and "no diving" markings are required where the depth levels are not adequate. Many pool injuries are caused by pool patrons diving in a pool where the water depth is not adequate to support diving. This provision limits diving to pool areas with complying depths and informs pool patrons where diving is not allowed. This requirement will reduce the possibility for accidents.

Subp. 9. **No pets.** This subpart is added to prohibit domestic animals in the pool enclosure, showers, or dressing rooms. Animals may bring contaminants into the pool area and urinate or leave fecal matter in and around the pool facility. Limiting their access is a reasonable way to maintain sanitary conditions within the pool and attendant facilities.

Part 4717.1750 POOL WATER CONDITION.

Part 4717.1750 is based on existing part 4717.3400. The existing provisions have been amended to establish additional water condition parameters.

Subpart 1. **Maximum water temperature.** Subpart 1 is proposed to set the maximum allowed temperature in a pool at 104 degrees Fahrenheit. This temperature has been recommended to pool operators by the commissioner for many years. The maximum temperature specified is consistent with the United States Department of Health and Human Services' *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Table 1 (F)(1), and is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.52(4)"c".

Subp. 2. **Test kits.** This subpart is a new provision to ensure that appropriate testing equipment is available and used at each pool. Subpart 2 is necessary to clarify the requirements in existing part 4717.3700, subpart 1 that specifies "a testing kit for measuring the concentration of disinfectant" and what the commissioner "may accept" in the way of "other disinfecting materials or methods."

Item A requires a DPD test kit. Diethyl-P-Phenylene Diamine reagent is needed to measure free chlorine, a regulated disinfectant parameter. Other test kits measure both free chlorine and combined chlorine rather than free chlorine alone. Other test kits do not test in the range required by subpart 3, item A. The use of a DPD test kit is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 11.5.1. which states:

A DPD (Diethyl-P-Phenylene Diamine) test kit with the following increments; 0.2,

0.4, 0.6, 0.8, 1.0, 1.5, 2.0, and 3.0 as a minimum shall be provided to measure the chlorine residual. If other halogens are used, an appropriate scale shall be provided.

The kit is also consistent with the U.S Department of Health and Human Services' *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 2.14.2 which states: " The DPD diethyl-p-phenylene diamine) test or other suitable disinfectant test should be required for testing for the free residual disinfectant." A test kit capable of measuring disinfectant residual within 0.1 parts per million is required by existing part 4717.3700, subpart 1.

Item B is a new provision that requires a phenol red Ph test kit. This provision is needed to create a standard measuring device for ph, a regulated parameter. A test kit capable of measuring Ph within the nearest 0.2 Ph unit is required by the existing part 4717.3700, subpart 2. Phenol red is the reagent needed for measurement in the required Ph range.

Item C is consistent with the existing alkalinity condition requirement in part 4717.3700, subpart 2. The requirement for a methyl orange test kit is now expressly required to ensure that the proper testing apparatus is available on the site.

Item D is proposed to require a measuring instrument for cyanuric acid where that acid is used. A standard testing mechanism is needed because the residual of cyanuric acid is now regulated in subpart 3, item c, subitem (1). The test kit requirement is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 11.5.2 standard which states:

In the case of pools using cyanurates for disinfection, a test kit to measure the cyanuric acid concentration shall be provided. It shall permit readings at least to 100 ppm with increments of 25 ppm. A supply of appropriate reagents shall be furnished.

Subp. 3. **Disinfection residual.** This subpart amends the required chemical level in a pool as specified in existing part 4717.3400. The requirement for a pool to be "continuously disinfected" is contained in existing part 4717.3400, subpart 1.

The requirements in item A are contained in existing part 4717.3400, subpart 1. No substantial change is proposed.

Item B is proposed to require that a bromine level of 1.0 parts per million be maintained when bromine is used as a disinfectant. This provision is needed because bromine is often used as a pool disinfectant. The proposed disinfection level is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.320 (a)(2) which specifies that:

a bromine residual shall be maintained between 1.0 p.p.m. and 2.0 p.p.m. as free available bromine.

Item C is proposed to require a higher minimum disinfectant residual in pools where

the water chemistry conditions in items (1) to (4) requires a higher disinfectant residual to maintain safe water.

Subitem (1) requires a higher minimum disinfectant residual for pools with cyanuric acid levels greater than 30 parts-per-million. This is needed because cyanuric acid combines with chlorine in the water to reduce dissipation of the chlorine. The availability of the chlorine with high cyanuric acid levels is reduced limiting the disinfection capabilities of the chlorine.

Subitem (2) requires a higher minimum disinfectant residual for pools with a Ph exceeding 7.7 chlorine and bromine. Disinfectants are less effective with higher Ph water. To maintain constant disinfection capabilities, the disinfectant residual must be raised for higher pH water.

Subitem (3) requires a higher minimum disinfectant residual for pools with a water temperature exceeding 84 degrees Fahrenheit. Water over 84 degrees Fahrenheit creates a more conducive environment for the growth of contaminants than water under 84 degrees Fahrenheit. To maintain constant disinfection capabilities, water over 84 degrees Fahrenheit, must maintain a higher minimum disinfectant residual.

Subitem (4) requires a higher minimum disinfectant residual for wading pools. Wading pools have a higher user load to water volume ratio due to the shallow water present in the pool. Wading pools are also subjected to a higher degree of organic contamination loading than other pools.

Item D is proposed to protect pool users from disinfectant levels which could be harmful. Prohibiting pool use when disinfectant residuals are greater than five parts per million reduces the possibility for overexposure to the disinfectants in the water. This requirement is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers Recommended Standards for Swimming Pool Operation, 1982 Edition, part 1.6.2 which states:

> Swimmers shall not be allowed in the swimming pool during superclorination. They may be allowed in the pool when the free chlorine residual is less than 5 mg/l.

The maximum limit of five parts per million is equivalent to 5 mg/l for purposes of pool disinfection and is consistent with the U.S Department of Health and Human Services, Suggested Health and Safety Guidelines for Public Spas and Hot Tubs, January 1985, Table 1 (A)(1) and (A)(3) which explains:

> The national Spa and Pool Institute has recommended that levels between 5 and 10 ppm be allowable to facilitate frequent shock treatments. Although health department may consider exceptions, current data suggest that during periods of use, levels between 2 and 5 ppm free residual disinfectant are appropriate if maintained continuously in a properly operated facility.

The Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.4(3)"a"(1) also specify a level of five ppm stating: "Bathers shall not be permitted in swimming pools when the disinfectant residual is greater than 5.0 ppm."

The requirement in item E is contained in existing part 4717.3400, subpart 1. No substantial change has been proposed.

Item F is proposed to limit the amount of combined chlorine allowed in a pool. As stated in the National Swimming Pool Foundation, Pool-Spa Operators Handbook, 1983-1990, 1st revision, page 30, combined chlorine or "chloramines, are still disinfectants, but they are 40 to 60 times less effective than free available chlorine" and "chloramines cause eye irritation and the so called "chlorine odor that swimmers complain about." For this reason the chloramines must be removed from the water when present. This requirement is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Operation*, 1982 Edition, part 1.6, which states:

> If the concentration of combined residual chlorine is greater than 0.2 mg/l, the swimming pool water should be superchlorinated to reduce the concentration of combined residual chlorine.

The U.S Department of Health and Human Services' *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Table 1 (A)(2) which comment that "high levels of combined chlorine result in reduced chemical efficacy. Signs of combined chlorine: sharp chlorous odor, eye irritation, algae growth." The Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.4(3)"a"(5), specifies that "the swimming pool water shall be superchlorinated when the difference between the free available chlorine residual and the total chlorine residual exceeds 0.4 ppm." The Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.320 (a)(4) specifies: "When the presence of chloramines is determined, superchlorination to 5-10 p.p.m. is required."

Item G is proposed to set a maximum allowed cyanuric acid level in the pool of 100 parts per million. Cyanuric acid combines with chlorine in the water to reduce dissipation of the chlorine. The availability of the chlorine with high cyanuric acid levels is reduced limiting the disinfection capabilities of the chlorine. The proposed standard is consistent with the U.S Department of Health and Human Services' *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Table 1 (D)(1), which specifies a maximum cyanuric acid level of 100 ppm" and comments that if the stabilizer is too high it "may reduce chlorine efficacy." The Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.52(2)a(3) and Part 15.4(3)a(3) specify that "the cyanuric acid level in all spas shall be sampled weekly and shall be maintained at levels not greater than 100 ppm."

Subp. 4. **Disinfection of spa pools.** Subpart 4 is proposed to set the minimum allowed disinfectant residual in a spa pool at 2.0 parts per million. Spa pools have a high user load to water volume ratio and water temperatures over 84 degrees fahrenheit. Both factors require higher disinfectant residuals to maintain water quality. The proposed disinfection level for a spa pool is the same as the level specified in the U.S Department of Health and Human Services' *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Table 1 (A)(1) and (A)(2). The Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.52(2)a(1) specifies that:

A free chlorine residual of at least 2.0 ppm shall be maintained in a spa. If bromine is used, a residual of at least 4.0 ppm shall be maintained.

Subp. 5. **pH.** This subpart amends the existing standard in part 4717.3400, subpart 2 by lowering the allowable high end pH in a pool to 8.0. Halogen disinfectants lose disinfectant capability with higher pH levels. A pH level below 8.0 is specified by other regulatory agencies. A maximum and minimum range must be specified because a pH that is too high reduces disinfectant capability. A pH that is too low, means the water is now taking on a acid quality and starts irritating eyes and skin and corroding the pool, pipes and filtration system. The Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.320 (b) specifies a range of 7.2 to 7.6. The Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.4(3)b specifies that "the pH shall be maintained at 7.2 to 7.8."

Subp. 6. **Alkalinity.** The provisions in this subpart are contained in existing part 4717.3400, subpart 2. No substantial change is proposed.

Subp. 7. **Water clarity.** Water clarity is necessary to maintain to that pool users can determine the depth of an area before entering the pool and the lifeguard can clearly and easily determine whether there are any submerged persons. Existing rule part 4717.3400, subpart 2 currently requires that:

> the water shall have sufficient clarity at all times so that a black disc, six inches in diameter, is readily visible when placed on a white field at the deepest point of the swimming pool. Failure to meet this requirement shall constitute grounds for immediate closing of the pool.

The MDH proposes to change this provision to state: "Whenever the pool is open for use, the pool water must be clear enough so the bottom drain is easily visible." The bottom drain is an easily recognizable object in the deepest portion of the pool which makes verifying water clarity easy. The MDH is modifying this requirement to allow for the use of a less cumbersome procedure. Visual observation of the bottom drain as a water clarity indicator is consistent with the less prescriptive visual observation tool provided for in the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.4(3)c which state:

> A swimming pool shall be closed if a six inch disc of contrasting color on the bottom of the pool is not readily visible, with the exception of plunge pools. If no disk is available, a swimming pool shall be closed if the main drain is not readily visible.

Subp. 8. **Use of nontoxic chemicals; chemical container security.** This subpart amends the existing provision in part 4717.3400, subpart 4 to add the requirement that chemical containers be kept in a secure location, inaccessible to pool users, and properly labeled and stored according to the manufacturer's instructions. Pool maintenance requires the use of many chemicals which may be dangerous if improperly used. Proper storage, identification, and use can minimize the possibility for accidents, injuries or improper use.

Subp. 9. **Bacteriological samples.** The requirement to test for the presence of

bacteria in public pool water is contained in existing part 4717.3400, subpart 3. The existing standard is proposed for revision in this subpart to allow for various testing methods for bacteria and coliform.

Item A is amended to define the required test for bacteria. This is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Operation*, 1982 Edition, part 1.4.2 which states:

> Not more than 25% of a series of samples collected in any 30-day period shall (a) contain more than 200 colonies per one milliliter of water, as determined by the Standard Plate Count, or (b) show a positive test (confirmed test) for coliform organisms in any of the five 10-milliliter portions of a sample when the multiple fermentation tube technic is used, or more than 2 coliform organisms per 100 milliliters when the membrane filter technic is used. When the bacteriological standard is exceeded, the pool shall be superchlorinated immediately and be retested. The cause of the unsatisfactory sample(s) shall be investigated and corrective action initiated if appropriate.

The U.S Department of Health and Human Services' *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Table 1 (C)(2) indicates that local codes shall be used. The 200 bacteria per milliliter maximum allowed level has been specified since 1987 in existing part 4717.3400, subpart 3, item A.

Item B amends existing part 4717.3400, subpart 3, item B, to specify acceptable methods to test for the presence of coliform organisms in the pool water. Proposed item B specifies the tests that shall be used. Standard methods of testing for bacteria have changed since the existing rule was adopted. New federal standards for testing the bacteriological quality of water based on United States Environmental Protection Agency standards are proposed for pools and used in public water supply systems.

Subitem (1) allows the multiple tube test for coliform. Use of a multiple tube test for coliform sampling is consistent with recommendations of the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Operation*, 1982 Edition, part 1.4.2 specified in item A above.

Subitem (2) is based on existing part 4717.3400, subpart 3, item B which allows the use of a membrane filter test for coliform.

Subitem (3) is added to allow the Minimal Medium ONPG-Mug test for coliform. This test was added because it is now a currently used standard method for coliform analysis.

Subp. 10. **Bacteriological treatment.** Subpart 10 is a new provision requiring a pool that does not meet the standard in subpart 9 be effectively treated to meet the requirements in subpart 9. This provision is needed to assure that water quality standards can be enforced.

Part 4717.1850 DEPTH OF POOL WATER.

Subpart 1. **General.** The depths specified in proposed subpart 1 are contained in existing part 4717.1000. No substantial change to the depths specified are proposed.

Subp. 2. **Exceptions.** Subpart 2 clarifies the special purpose pool exceptions in existing part 4717.1000.

Item A specifies a maximum wading pool depth of 24 inches. A wading pool is a special purpose pool. A wading pool is used by small children and they usually do not swim. A wading pool will not be used for jumping, diving or swimming by adults. The general purpose pool minimum depth is designed to absorb the shock of an adult jumping in the shallow end of the pool. Though any appreciable water depth may pose a threat to a child, a minimum depth that is shallow enough for routine use by children is proposed and has been the current practice in wading pool construction for years. Existing part 4717.0200, subpart 8 currently specifies a 24 inch depth for a wading pool, thus distinguishing that type of pool from those generally associated with swimming and diving. The *Public Swimming Pools: Recommended Regulations for Design and Construction, Operation and Maintenance* of the American Public Health Association in section D-25.04 specifies a wading pool depth of "not deeper than 24 inches at the deepest point." The definition of a "wading pool" by the Iowa Department of Public Health is a swimming pool that is a permanent "artificial basin of water no more than 24 inches deep at any point."

Item B is proposed to allow for the situation where a pool has an area with a zero water depth. The additional safety measures specified are the presence of a lifeguard and access barriers where the depth is less than three feet.

The requirement for a lifeguard to be present at the zero depth area at all times the pool is in use in subitem (1) is necessary because a zero depth pool poses physical hazards not present in normal pool design, which could result in serious injuries misuse that could take place without supervision. Subitem (2) is added to require an effective barrier, such as stanchions and ropes to restrict access from the deck of the pool to the area where the water depth is less than three feet, except on the side of zero depth. The barrier must permit easy removal for emergency access or maintenance. The barriers stop access to the pool where the water depth is less than three feet, eliminating the possibility for accidents due to pool patrons entering the pool where the water depth is less than expected, and there is not enough "cushion" to prevent contact with the bottom. The barrier must be removable for easy access to all areas of the pool to allow emergency egress and maintenance.

Part 4717.1950 POOL CLEANING.

Subpart 1. **Cleaning schedule.** The provisions in this subpart are contained in existing part 4717.3500. No substantial change is proposed.

Subp. 2. **Cleaning system.** The provisions in this subpart are covered by existing part 4717.1800, subpart 3. A vacuum-cleaning system is not required on spa pools with less than 75 square feet of water surface. These pools are easily and frequently drained for cleaning. This exception is made in other state and national standards including Michigan (Michigan Administrative Code R 325.2163).

Part 4717.2150 WATER SUPPLY.

Subpart 1. **Potable supply.** The requirement for a potable water supply is contained in existing part 4717.0500. References to what are the regulations governing potable water have been added for clarification and to verify compliance with the requirements for potable water.

Subp. 2. **Backflow prevention.** The provision in this subpart are contained in existing part 4717.0500. No substantial change is proposed.

Part 4717.2250 SEWER SYSTEM.

The provisions in the introductory paragraph and items A, B, D and E are contained in existing part 4717.0600. No substantial change is proposed for those provisions. Item C is contained in existing part 4717.1300, subpart 2.

Part 4717.2350 POOL STRUCTURE.

Subpart 1. **General.** This subpart contains provisions currently specified in existing part 4717.0800. Wood tank construction and vinyl liner pools have been prohibited by the commissioner as an interpretation of existing part 4717.0800. The prohibition specified for wood tank construction and vinyl liner pool is added to clarify MDH interpretation of the existing rule. Wood tank construction and vinyl liner pools are not permanent, enduring types of construction. Wood tanks offer openings in the wood fibers and at seams which are not cleanable and can harbor microorganisms. Vinyl liners are easily ripped, do not conform with pool bottom geometry because they are not permanently attached to pool bottoms, form bubbles under their surface, may collect debris at seams, and the materials used are often slippery when wet.

Subp 2. **Finish.** The provisions in subpart 2 are contained in existing part 4717.0800, second paragraph. No substantial change is proposed.

Subp. 3. **Design, detail, and structural stability.** The provisions in subpart 3 are contained in existing part 4717.0900. No substantial change is proposed.

Subp. 4. **Designer responsibility.** The provisions in subpart 12 are contained in existing part 4717.0900. No substantial change is proposed.

Subp. 5. **Relief valve.** The provisions in subpart 4 are contained in existing part 4717.0900. No substantial change is proposed.

Subp. 6. **Shape.** The provisions in subpart 5 are contained in existing part 4717.0900. No substantial change is proposed.

Subp. 7. **Corners.** The provisions in subpart 6 are contained in existing part 4717.0900, but the proposed rule specifies a minimum radius of one-half inch for clarification. The existing rule lacked definition of appropriate radius. Based on all standard pool constructions, the smallest radius used is one-half inch. This is on separately poured concrete floor and wall pools where an expansion joint is maintained between the concrete slabs.

Subp. 8. **Slope of bottom.** The provisions in subpart 7 are contained in existing part 4717.1400. No substantial change is proposed.

Subp. 9. **Side walls.** The provisions in subpart 8 are contained in existing part 4717.1500. No substantial change is proposed.

Subp. 10. **Ledges.** Subpart 9 is proposed to specify in rule the requirements for the installation of a ledge along the pool wall within the pool basin. A ledge is only allowed if required for sidewall construction. The existence of a ledge creates the possibility for accidents if used by non-swimmers or children in water over their head. This requirement is consistent with the State of Michigan as stated in the Michigan Administrative Code, R 325.2123 (2):

> A ledge shall not protrude into a swimming pool unless it is essential for support of the upper wall. If provided, a ledge shall not exceed 4 inches in width, shall slope toward the pool, and shall be designed to prevent its use as a walkway.

Item A requires the ledge to be at least two feet six inches below the water surface. This is a standard construction depth because the height of the side wall panels for this type of construction is typically three feet. A ledge closer to the surface would present a potentially hazardous obstruction in the pool.

Item B requires the ledge not to be over four inches wide. This requirement is necessary to prevent the ledge from being used as a walkway. The existence of a ledge creates the possibility for accidents if used by non-swimmers or children in water over their head. Eliminating the ledges use as a walkway reduces the possibility for accidents. This requirement is consistent with the Michigan Administrative Code, R 325.2123 (2).

Item C requires the ledge to slope into the pool with a rounded outside edge. Requiring the ledge to slope into the pool eliminates the collection of debris on the ledge and is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (j)(3) and the Michigan Administrative Code, R 325.2123 (2). Requiring the outside edge to be rounded eliminates the possibility for injuries due to a sharp corner in the pool.

Subp. 11. **Wading pools.** The provisions in subpart 10 are contained in existing part 4717.1000. No substantial change is proposed.

Subp. 12. **Fountains.** Subpart 11 is proposed to require that fountains and similar features be approved by the commissioner be located in water two feet or less in depth, and be designed to preclude climbing. Fountains and similar features create an obstacle in the water which may be a safety hazard. The water agitation they create limits visibility thus requiring that they be installed in two feet of water or less. The fountains must be non-climbable to eliminate the possibility of accidents due to slipping and falling and to preclude diving from them.

Part 4717.2450 MARKING AND LINES.

Subpart 1. **Depth Markings.** The requirements in subpart 1, including items A to E,

are contained in existing part 4717.1200. Revised language is proposed to require depth marker units to be stated in feet and inches and be written using letters. This is to better inform the pool patrons of the water depth and reduce the possibility for accidents from incorrect interpretation of water depth markers. Many water-related accidents result from people diving into water which is too shallow or from non-swimmers entering water which is to deep. Some proposals to mark depths in meters the department has received would be confusing to users.

Subp. 2. **Depth transition markings.** Subpart 2 requires a depth transition marker on the bottom and walls of the pool where a transition to a steeper bottom slope occurs. This line is needed to inform non-swimming pool patrons where changes in the bottom slope occur to better avoid the possibility of drowning. Requiring a transition marker is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"e"(3) which states:

> The boundary line between the shallow and deep areas (five-foot dept line) shall be marked by a line on the floor and walls which is at least four inches in width and which is a color which contrasts with the color of the pool floor and walls.

The proposed rule provision is also recommended by the American Public Health Association in *Public Swimming Pools: Recommended Regulations for Design and Construction, Operation and Maintenance* section 17.04 which states:

> Consideration should be given to the placement of markers across the bottom of a swimming pool to accentuate the points of slope change.

Subp. 3. **No diving markings.** This requires pools and sections of pools which do not comply with the depth requirements for diving boards in part 4717.3750 to designate the noncomplying area with one of two markings as specified in items A and B. These markings are necessary to inform pool patrons of water which does not meet diving requirements and to reduce diving accidents. The require is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"e"(7)"4" and 15.5(13)"e"(7)"5" which specify:

> All swimming pool areas where diving is not permitted shall be marked "No Diving" (or equivalent wording or graphics) within three feet from the edge of the swimming pool at intervals no greater than 25 feet around the perimeter of the area and within five feet of each corner.
>
> All letter, number or graphic markers shall be slip-resistant, of a contrasting color and at least four inches in height.

Item A requires the words "NO DIVING" in letters not less than four inches high in a color contrasting with the background and be located on the pool deck on all sides of the pool and spaced not more than 25 feet apart where the pool does not meet diving requirements.

Item B allows the option of the universal no diving symbol not less than four inches high in a color contrasting with the background and accompanied by the words "NO DIVING" in letters not less than one half inch high. The marker must be located on the

pool deck on all sides of the pool where diving is not permitted and spaced not more than 25 feet apart where the pool does not meet diving requirements. These spacing requirements are used for depth markers as stated in the existing part 4717.1200 and have been found to be adequate.

Subp. 4. **Stair markings.** Subpart 4 is added to require an accent stripe on the leading edge of stair treads in a dark contrasting color. This requirement is needed to inform pool patrons where stair treads are located and to reduce accidents. This requirement is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"e"(6) which states:

> when stairs are provided for entry to a swimming pool, a stripe at least one inch in width of color contrasting with the swimming pool floor shall be provided on the leading edge of each tread. The stripe shall be of slip-resistant material.

The requirement for stair markings is also contained in the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (m)(3) which states, "Steps leading into a swimming pool shall be of contrasting color or marked or constructed to contrast from the bottom...."

Part 4717.2550 RECIRCULATION SYSTEM.

Part 4717.2550 is proposed to clarify MDH interpretation of existing parts 4717.0100 to 4717.3900 and part 4717.1800. The clarifying language indicates what basic components make up the recirculation system. This part also incorporates the existing part 4717.0500, subitem (3) to specify continuous system operation.

Part 4717.2560 RECIRCULATION RATE.

Subpart 1. **General recirculation rate.** The requirements in subpart 1 are contained in existing part 4717.1800, subpart 1. No substantial change is proposed.

Subp. 2. **Wading pools and special purpose pools.** The requirements in this subpart are contained in existing part 4717.1800, subpart 1. No substantial change is proposed.

Subp. 3. **Spa pools.** This subpart requires that a spa pool has a recirculation rate of 30 minutes or less, except that a minimum rate of 35 gallons per minute is required. The higher water temperature and higher user load to water volume ratio associated with spa pools requires a high turnover rate to maintain water quality and the proper disinfectant residual. The 30 minute turnover requirement is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers Recommended Standards for Swimming Pool Design, 1982 Edition, part 14.15 which states:

> The recirculation flow rate shall be 30 gallons per minute per skimmer or provide a 30-minute turnover, whichever is greater.

The requirement for a minimum flow rate of 35 gallons per minute is contained in existing part 4717.1700, subpart 2, which requires a minimum flow rate through skimmers of 30 gallons per minute and an additional 20 percent of the total flow

through the bottom drain.

Subp.4. **Dedicated plunge pools.** This subpart requires a dedicated plunge pool to have a recirculation rate of one hour or less. The higher user load to water volume ratio associated with plunge pool and water slide use requires a higher turnover rate to maintain water quality and the required disinfectant residual. This requirement has been used by the commissioner since 1984 in conjunction with plan review and approval. The requirement is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers Recommended Standards for Swimming Pool Design, 1982 Edition, part 15.7.3 which specifies that "the water shall be recirculated and treated in a turnover of one hour or less."

Subp. 5. **Zero depth pools.** This subpart is proposed to specify the recirculation rate requirements for zero depth pools. Item A requires the area of a zero depth pool with a water depth of less than three feet to have a recirculation rate of two hours or less. This requirement is consistent with existing part 4717.1800, subpart 1, which requires a two hour or less turnover rate for special purpose pools. The higher user load to water volume ratio associated with zero depth pools requires a high turnover rate to maintain water quality and the proper disinfectant residual. The shallow area is subjected to a heavier organic loading from users such as small children.

Item B requires the area of a zero depth pool with a water depth greater than three feet to meet the turnover requirements in subpart 1. A water depth greater than three feet is a standard water depth requiring a six hour turnover as stated in subpart 1.

Item C requires a system of bottom inlets in the shallow end of a zero depth pool. A system of bottom inlets along the zero depth area allows that area to maintain a disinfectant residual in the shallow water. Shallow water does not maintain a disinfection residual very well due to chlorine dissipation by sunlight and high user load to water volume ratios. The inlets also allow additional scouring of the pool bottom to remove debris. This requirement has been used by the commissioner for plan approval since 1988 and is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (i)(1)(c). This provision states:

> The minimum depth of water in a swimming pool shall be two and one half feet except for ... zero depth pools where the bottom of the pool in the shallow end is designed and constructed to meet the pool deck surface at a slope not to exceed one in twelve. In such pools where the water depth is less than 2 1/2 feet, floor inlets shall be provided and spaced uniformly at a distance no greater than 20 feet apart and located no further than 20 feet from the point where the pool bottom intersects the deck, and not more than 20 feet from any wall. A continuous trench drain flush with the deck shall be provided along the point of zero depth. The trench shall have dimensions at least equal to the recirculation gutter dimensions.

Part 4717.2570 RECIRCULATION EQUIPMENT.

Subpart 1. **General.** The requirements in this subpart are contained in existing part 4717.1100. NSF International Standard 50, adopted in 1992, consolidated and updated the circulation standards specified in existing part 4717.1100 in 1987.

Subp. 2. **Recirculation system strainers.** The provisions in subpart 2 are contained in existing part 4717.1800, subpart 1. No substantial change is proposed.

Subp 3. **Recirculation system piping.** This subpart amends the recirculation system piping requirements specified in existing part 4717.1800, subpart 2.

Item A amends the maximum allowable flow rate for discharge and gravity flow piping. The maximum flow rate of six feet per second for suction piping is in existing part 4717.1800, subpart 2. The requirement for a maximum flow rate for discharge piping of eight feet per second is proposed to allow a higher flow rate for discharge piping. The proposed amendment is consistent with the Jefferson County (Alabama) Department of Health, Rules and Regulations Governing the Design, Construction, and Operation of Public Swimming Pools and Spas, July 13, 1988, part 2.6.2 which states:

> All piping shall be designed to reduce friction losses to a minimum and to carry the required quantity of water at a maximum velocity not to exceed six (6) feet per second for suction piping and not to exceed eight (8) feet per second for discharge piping. Piping shall be on non-toxic material, resistant to corrosion, and able to withstand operating pressures. Pipe shall be NSF approved.

The change in the standard will allow for the use of smaller pipe sizes. In jurisdictions where this standard has been used, no problems have been noted.

A maximum flow rate for gravity feed piping of three feet per second is proposed and consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 9.2 which recommends:

> The sizing of pipes, fittings and valves of the pool recirculation system shall be based on flow velocities not exceeding six (60 feet per second under suction, ten (10) feet per second under pressure and three (3) feet per second in gravity.

Gravity piping is often used in pools with gutter systems. The gravity feed piping has no artificial forces acting on it to dictate higher flow rates.
The requirements in items B and C are contained in existing part 4717.1800, subpart 2. No substantial change is proposed.

Subp. 4. **Rate-of-flow indicator.** The requirements this subpart are contained in part 4717.1800, subpart 4. No substantial change is proposed.

Subp. 5. **Pumps.** The provisions in subpart 5 are contained in existing part 4717.1800, subpart 5. No substantial change is proposed.

Subp. 6. **Heaters.** The requirements in this subpart are contained in existing part 4717.1800, subpart 6. The wording has been amended to clarify that the thermometer must measure the temperature of the water being returned to the pool to assure that the thermometer is not in a heater bypass line or heater line, which would not provide an accurate measure of recirculated water temperature.

Subp. 7. **Valves.** Proposed subpart 7 requires valves on the main drain and skimmer lines. This is necessary to permit balancing of the recirculation flow.

Skimmers and bottom drains may be at different distances from the pump house thus inducing different resistances to flow. The ability to control the flow in different pipes, by the use of valves, balances the flow in the pool and ensures that water quality is maintained. This requirement has been used by the commissioner since 1984 for plan review approval. It is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(10)"c" which specifies:

> There shall be a control valve to adjust the flow between the main drain and the skimmer or gutter system.

Part 4717.2580 INLETS AND OUTLETS.

Subpart 1. **Outlets.** This subpart is amended to clarify outlet requirements as stated in item D. Items A, B and C are consistent with existing part 4717.1300, subpart 1. No substantial change is proposed for these items. Item D is added to require pools with one outlet to have an outlet at least 100 square inches in size or have an antivortex cover. This reduces the possibility of pool patrons becoming stuck to the outlet. Accidents can occur when pool patrons become trapped to the suction openings in a pool due to high water velocities through small openings. Requiring an antivortex cover is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 2.7.9 (b). The provisions in item E are in existing part 4717.1300, subpart 1. No substantial change is proposed.

Subp. 2. **Inlets.** The provisions in this subpart are in existing part 4717.1300, subpart 3.

Sub. 3. **Adjustable inlets.** Subpart 3 proposes to amend existing part 4717.1300, subpart 4 to allow integral supply orifices in engineered, manufactured gutter systems as stated in item D. Requiring directionally adjustable inlets which maintain a uniform disinfectant residual throughout the pool is consistent with existing part 4717.1300, subpart 4.
The provisions in items A, B, and C are contained in existing part 4717.1300, subpart 4. Item D is proposed to allow integral supply orifices in engineered, manufactured gutter systems instead of individual directional inlets. Engineered, manufactured gutter systems have been used at several facilities and have successfully maintained a uniform disinfectant residual throughout the pool.

Part 4717.2590 OVERFLOW GUTTERS.

Subpart 1. **General.** This subpart proposes to amend existing part 4717.1700, subpart 1 to clarify when automatic water level control is required as stated in item K. The requirement for overflow gutters to extend completely around the pool, except at steps or recessed ladders is consistent with existing part 4717.1700. The provisions in items A through J are found in existing part 4717.1600. Item K is proposed so new overflow gutter systems include the installation of automatic water level controls to provide automatic and continuous skimming during quiescence. Pools without automatic water level control often have water levels below the gutter skimming level, completely eliminating the gutters effectiveness.

Subp. 2. **Surge systems and surge capacity.** This subpart is proposed to clarify the in-pool surge and surge capacity requirements in existing part 4717.1600. Surge capacity is the amount of water displaced when users enter the pool. The surge system must be able to effectively handle the displaced water.

Item A is proposed so in-pool surge weirs are self-closing during normal pool use. During normal pool use the water level is at a height near the gutter skimming level. For the gutter to skim properly the in-pool surge weirs must be closed.

Item B is proposed so the surge capacity of the pool recirculation system is at least one gallon per square foot of pool water surface area. The addition of pool patrons into a pool raises the water level in proportion to the volume the pool users displace. This is approximately one gallon per square foot of pool water surface area. The proposed standard is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 9.5.1.3 which states, "All overflow systems shall be designed with an effective surge capacity of not less than one gallon for each square foot of pool surface area."

The Michigan Administrative Code, R 325.2143 (4) states "a swimming pool with a perimeter overflow system shall have surge capacity of at least 1 gallon per square foot of pool water surface area."

Item C is proposed to require the gutter system to carry 50 percent of the recirculation flow, as required in subpart 1, item B above, which is consistent with existing part 4717.1600, even if the gutter system supplies some of the pool surge capacity. This allows for continuous operation of the gutter system.

Subp. 3. **Rollout and deck systems.** The provisions in this subpart are contained in existing part 4717.1600. No substantial change is proposed.

Part 4717.2595 SKIMMERS.

Subpart 1. **Skimmers.** Amendments to existing part 4717.1700, subpart 1 clarify when equalizer piping for a skimmer is not required as stated in item G. The requirement for a skimmer to induce motion to remove debris from the pool and having the edge of the pool deck provide a handhold are consistent with existing rule.

The provisions in items A, B and C are contained in existing part 4717.1700, subpart 1. The provisions in items D and E are contained in existing code part 4717.1700, subpart 2. The provisions in item F is contained in existing part 4717.1700, subpart 3. Subitem (3) of item G is proposed to allow the installation of a skimmer without an equalizer line on pools equipped with an automatic level control and on spa pools with less than a 1,000 gallon capacity. Pools with automatic level control do not require equalizer lines because the automatic level control maintains the water level at a depth which will not drop below the skimmer height eliminating the possibility of the skimmer inducing an airlock. Item G makes the regulation less restrictive by not requiring equalizer lines on spa pools with less than a 1,000 gallon capacity. The modification is reasonable because it accommodates smaller spa pools where the installation of equalizer piping is difficult. Installations of this sort had been addressed by variance

and the variance granted. This amendment moves a commonly requested and granted variance into rule.

Subp. 2. **Screen.** The provisions in proposed subpart 2 are contained in existing part 4717.1700, subpart 4. No substantial change is proposed.

Part 4717.2610 DISINFECTANT AND CHEMICAL FEEDERS.

The provisions in part 4717.2610, are contained in existing part 4717.2500. They have been moved for formatting purposes. No substantial change is proposed.

Part 4717.2620 CHEMICAL HANDLING EQUIPMENT; PROTECTIVE EQUIPMENT.

This rule part proposes new requirements for chemical handling equipment and the protective equipment. This part is needed to promote the safe handling of chemicals used to maintain pool water quality. The equipment and piping used to apply chemicals to the water must be sized, designed, and made of material that does not clog and is easily cleaned to maintain a disinfected pool. The material must be resistant to the chemical used to reduce corrosion and leaks.

The protective equipment recommended by the chemical manufacturer for the safe handling of any chemical used is necessary to provide to maintain a safe environment for chemical handlers and pool patrons.

Part 4717.2630 USE OF GAS CHLORINE.

Subpart 1. **General.** This subpart proposes amendments to clarify requirements for enclosures for chlorine gas in existing part 4717.2600. The provisions in item A are contained in part 4717.2600, item A. The provisions in item B are consistent with interpretations used by the commissioner for part 4717.2600, item A, and with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(11)"e"(1); the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (i)(4)(a); and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 11.2.1 and 11.2.2. Many existing installations have implemented the use of reach-in enclosures to store chlorine gas and existing rules have been used to specify requirements for their installation in conjunction with pool plan review.

Subp. 2. **Rooms.** This subpart proposes amendments to existing part 4717.2600. The provisions in item A are contained in existing part 4717.2600, item A. Item B is proposed to require a shatter resistant inspection window in an interior wall or door of a chlorine room. The presence of a window allows inspection for possible problems in the chlorine room prior to entrance. This requirement is currently mandated by the Iowa Department of Public Health in Swimming Pool Rules, Part 641-15.5(11)"e"(1)"5", and the state of Illinois in Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (i)(4)(a).

Item C proposes to require a ventilating fan with a capacity to provide one complete air change per minute when the room is occupied. The presence of chlorine gas can overtake pool personnel and the air change requirement can remove chlorine gas

allowing personnel to exit the room. This requirement is currently mandated by Illinois in Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (i)(4)(a): is recommended by the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers in *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 11.2.2.

Item D proposes to require fan and light switches, protected from vandalism, outside the chlorine room and a signal light indicating fan operation if the fan is controlled from more than one point. The requirement for separate switches controlling the fan and lights located outside the chlorine room is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(11)"e"(1)"8"; the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (i)(4)(a); the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 11.2.3; and the Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers *Recommended Standards for Water Works*, 1987, section 5.4.

Separate switches for the fan and lights allow for independent operation of the two fixtures. Switches protected from vandalism reduce the possibility of the system being made nonfunctional by vandals. A signal light indicating fan operation will show chlorine room operators if the fan is operating, independent of fan switch position.

Item E is amended to clarify room ventilating fan location requirements. Suction outlets for the chlorine room must be near the floor because chlorine gas is heavier than air and tends to concentrate near the floor. Maintaining the suction openings near the floor is consistent with existing code as stated in Minn. Rules, 1987, part 4717.2600, Subpart A. The suction being located as far from the door or air intake as possible allows for venting of the entire room. Locating the point of discharge such that it does not contaminate air inlets for rooms or structures minimizes the possibility for contaminating adjacent facilities.

Item F is proposed to require louvers or other ventilation openings near the ceiling to allow for fresh air in the chlorine room. Suction outlets for the room are near the floor because chlorine gas is heavier than air and tends to concentrate near the floor. Fresh air inlets near the ceiling allow complete ventilation of the chlorine room. This requirement is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(11)"e"(1)"4" which states "a louvered air intake shall be provided near the ceiling of the chlorine room". The Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (i)(4)A) states :

> The chlorine supply and gas feeding equipment shall be housed in a separate, relatively air-tight room. The room shall be provided with an exhaust system which takes its suction not more than 8 inches from the floor and discharges out-of-doors in a direction to minimize exposure to toxic fumes. The fan shall be capable of producing one air change per minute. Means for introducing a fresh air supply to the enclosure through appropriate openings such as filters, grill openings etc., at a high point opposite the exhaust fan intake shall be provided. The room shall have a window at least 18 inches square and shall have artificial lighting. Electrical switches for lighting and ventilation shall be outside and adjacent to the door. Scales for weighing chlorine cylinders in service shall be provided.

The Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 11.2.2 recommends that the:

> chlorine room shall have an airtight duct beginning near the floor and terminating at a safe point of discharge to the out-of-doors. A louvered air intake shall be provided near the ceiling. A ventilating fan, capable of one air change per minute and operated from a switch outside the door, shall be provided in conjunction with the airtight duct.

Item G is proposed to require floor drains in chlorine rooms to discharge to the outside of the building and not be connected to other internal or external drainage systems. Chlorine is denser than air and concentrates at floor level when not contained. The presence of floor drains would allow the chlorine to reach a lower point and thus the chlorine would enter the floor drains and move to other parts of the building. This piping must discharge outside of the building to dilute the concentrated chlorine.

Subp. 3. **Reach-in enclosure.** This subpart is proposed to add requirements for the installation of reach-in enclosures. Item A requires reach-in enclosures to be not over two feet in depth. It is necessary to allow for the storage of chlorine tanks and needed equipment but to limit the space so people do not enter the enclosure.

Item B requires a "vandal resistant enclosure." While it is impossible to guarantee that anything will not be vandalized, provision must be made for the enclosure to be of sturdy construction and to at least have a lock on the doors of the enclosure so its contents are not easily tampered with. Providing an enclosure and access devices that retard malicious or willful entry or destruction reduces the possibility for unnecessary chlorine leaks and accidents due to damage.

Item C is added to require natural ventilation of the enclosure. The requirement for an opening in the lower part of the enclosure is consistent with existing part 4717.2600, item A. Chlorine is denser than air and concentrates near the floor requiring ventilation openings near the floor for chlorine gas egress and openings at the top of the enclosure as a fresh air source. The requirement for an opening in the upper part of the enclosure is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(11)"e"(1)"4", the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (i)(4)(a), and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers Recommended Standards for Swimming Pool Design, 1982 Edition, part 11.2.2 specified above.

Subp. 4. **Doors.** The provisions in this subpart are contained in existing part 4717.2600, item A. No substantial change is proposed.

Subp. 5. **Seals.** This subpart proposes to require all openings between a chlorine room or enclosure and other enclosed space to be sealed to eliminate the possibility for chlorine to leak into the other enclosed space. This requirement is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (i)(4)(a) specified in subpart 2 above which requires an air tight room.

Subp. 6. **Venting.** The requirements in this subpart are contained in existing part 4717.2600, item A. No substantial change is proposed.

Subp. 7. **Chlorinating equipment.** This subpart proposes to amend the provisions in existing part 4717.2600, item B. Chlorinating equipment must be capable of withstanding wear without developing leaks. The provisions in items A, B, C are contained in existing part 4717.2600, item C. The provisions in item D are contained in existing part 4717.2600, item D. The provisions in item E are contained in existing part 4717.2600, item E. And the provisions in item G are contained in existing part 4717.2600, subpart F. No substantial change is proposed to these provisions.

Item F is proposed to add the requirement that pressurized chlorine feedlines not carry chlorine gas beyond the chlorinating room. This provision is necessary to eliminate the possibility for chlorine leaks due to equipment failure in areas not designed or ventilated to efficiently remove chlorine. This provision is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 11.2.6, which requires mixing of chlorine gas and water only in the confines of the chlorine room.

Subp. 8. **Respiratory protection equipment.** This subpart proposes to amend existing part 4717.2600, subpart G to clarify the respiratory protection equipment requirements. Respiratory equipment must meet either the requirements of the United States Bureau of Mines or the National Institute for Occupational Safety and Health (NIOSH). Requiring the respiratory protection equipment to be stored at a convenient location, in a closed cabinet accessible without a key, but not inside any room where chlorine is used or stored, is consistent existing part 4717.2600, item H. Item A is proposed to define the types of respiratory protection equipment allowed. When respirators use compressed air, a 30 minute capacity is required to verify an adequate air source is present for any necessary use of the equipment.

The respirator must be one of two types. The first respirator type provides compressed air and is compatible with or exactly the same as those used by the fire or emergency rescue MDH responsible for the pool facility, in order to allow all those potentially involved with an emergency incident to be familiar with the equipment to be used. The other respirator type is a canister type gas mask with full face mask which would protect the user. The use of a canister type respirator requires that replacement canisters be provided for back-up use. The use of such equipment is intended for egress of pool personnel from the chlorine room and not for repair or rescue operations which must be done by trained personnel.

The provisions contained in item B are contained in existing part 4717.2600, item G. No substantial change is proposed.

Subp. 9. **Chlorine leak detection.** This subpart is proposed to require chlorine leak detection equipment. Chlorine leaks can be easily detected using an ammonia solution. Detection aides reduce the possibility for accidents. Requiring the availability an ammonia solution is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition, part 11.2.9 which states that a "plastic bottle of ammonia for leak detection shall be provided." The Great Lakes Upper Mississippi River Board of

State Public Health & Environmental Managers *Recommended Standards for Water Works*, 1992 edition, section 5.3.3 provide for lead detection solutions, repair kits for large containers, and alarm systems. The proposed subpart 9 is the same as the water works association standard. It is reasonable to have the same requirement for detection measures in facilities using chlorine, whether it be a pool or public water supplier, to facilitate uniformity of standards statewide and because the safety issues are the same.

Item A proposes to require that emergency leak repair kits be present where ton chlorine containers are used. The presence of the kit may reduce problems arising which can easily be solved with the repair kit.

Item B is proposed to require that automatic leak detectors, when provided, be equipped with both an audible alarm and visual warning. The audible alarm and visual warning will allow for quick recognition of chlorine leaks. This requirement is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(11)"e"(1)"3".

Subp. 10. **Trained personnel.** The provisions in this subpart are contained in existing part 4717.2600, item I. No substantial change is proposed.

Part 4717.2650 USE OF HYPOCHLORITE SOLUTION.

The provisions in this part, including items A to D, are contained in existing part 4717.2700. No substantial change is proposed.

Part 4717.2750 USE OF EROSION FEEDERS.

Part 4717.2750 is proposed to specify the requirements for erosion feeders. Many pool installations include erosion feeders. Item A is added to verify that erosion feeders used are capable of supplying a pool with the required disinfectant residual in proposed part 4717.1750, which is consistent existing part 4717.3400, subpart 1.

Item B is proposed to require that erosion feeders have adjustable output rates. This allows adjustment for various pool conditions and user loads and is consistent with existing part 4717.2500.

Item C is proposed to require that erosion feeders be capable of continuous operation. This is consistent with existing part 4717.2500.

Part 4717.2850 SAND FILTERS.

Subpart 1. **Applicability.** This subpart amends the requirements in existing part 4717.2300, subpart 2. The provisions in item A are contained in existing part 4717.2300, subpart 2.

Item B is proposed to set the maximum allowed flow rate through high-rate sand filters and vacuum sand filters at 20 gallons per minute. This is consistent with the NSF International Standard 50, Revised May 1992, part 5.2.6. Higher flow rates may cause failure of the filter. Filters are not tested and approved at higher flow rates.

Subp. 2. **Filter material.** This provisions in this subpart are contained in existing part 4717.2300, subpart 3. Item A is proposed to change the filter material depth for high-rate sand filters. The filter material depth for standard pressure sand filters of 20 inches deep is consistent with part 4717.2300, subpart 3. The filter material depth for high-rate sand filters of 12 inches deep is consistent with current standard practice for pool filter construction.

Item B requires that the filter material be supported by at least ten inches of graded filter gravel. This provision is the same as existing part 4717.2300, subpart 3. No substantial change is proposed.

Item C is proposed to provide for an alternate method of assuring performance when equivalent performance and service is demonstrated through compliance with NSF 50 which specifies a performance standard in lieu of a design standard.

Subp. 3. **Underdrain system.** The provisions in this subpart are contained in existing part 4717.2300, subpart 4.

Subp. 4. **Freeboard.** This subpart proposes to change the 12 inch freeboard requirement in existing 4717.2300, subpart 5, to only require that the filter be designed to prevent loss of filter material during backwashing. Preventing filter material loss during backwashing was the intention of a 12 inch freeboard requirement. The amendment changes the requirement to a performance standard from a design specification.

Subp. 5. **Filter system.** This subpart, including items A to E, contains the provisions in existing part 4717.2300, subpart 6. No substantial change is proposed.

Subp. 6. **Filter access.** This subpart contains the provisions in existing part 4717.2300, subpart 7. No substantial change is proposed.

Subp. 7. **Coagulant feed.** This subpart contains the provisions in existing part 4717.2300, subpart 8. No substantial change is proposed.

Subp. 8. **Tank.** This subpart contains the provisions in existing part 4717.2300, subpart 9. No substantial change is proposed.

Part 4717.3050 DIATOMACEOUS EARTH FILTERS.

Subpart 1. **Area.** The provisions in this subpart are contained in existing part 4717.2400, subpart 1. No substantial change is proposed.

Subp. 2. **Rate of filtration.** The provisions in this subpart are contained in existing part 4717.2400, subpart 2. No substantial change is proposed.

Subp. 3. **Use of body feeder.** The provisions in this subpart are contained in existing part 4717.2400, subpart 3. No substantial change is proposed.

Subp. 4. **Filter and components**. The provisions in this subpart are contained in existing part 4717.2400, subpart 4. No substantial change is proposed.

Subp. 5. **Filter tank.** The provisions in this subpart are contained in existing part 4717.2400, subpart 5. No substantial change is proposed.

Subp. 6. **Filter plant.** The provisions in this subpart are contained in existing part 4717.2400, subpart 6. No substantial change is proposed.

Subp. 7. **Complete draining of filter.** The provisions in this subpart are contained in existing part 4717.2400, subpart 7. No substantial change is proposed.

Part 4717.3150. CARTRIDGE FILTERS.

Part 4717.3150 is proposed to specify the requirements for cartridge type filters. The maximum flow rate of 0.375 gallons per minute is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (h)(5)(c), the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(6)"j"(2) and is consistent with NSF International Standard 50. Higher flow rates may cause inadequate filtration.

The requirement for an effluent pressure gauge and an air relief valve are included to reduce the possibility for over pressurizing the filter creating the possibility for damage to the filter and injury to pool operators. Effluent pressure gauges also are needed so pool operators know when the filter requires cleaning.

Spare cartridges allow continuous operation of the filter system when filter cleaning is required. Requiring a spare set of cartridges is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.210 (h)(5)(d) and the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(6)"j"(3).

Part 4717.3250. STEPS, LADDERS, HANDHOLDS, AND HANDRAILS.

Subpart 1. **Step or ladder location in-pool.** The provisions in this subpart are contained in existing part 4717.1900, subpart 1. No substantial change is proposed.

Subp. 2. **Steps.** This subpart amends the requirements in existing part 4717.1900. Item A is proposed to require an accent stripe on the leading edge of stair treads. Agitation in the pool by pool users or pool features lessens the ability to see objects under the water. This requirement has been used by the commissioner in conjunction with pool plan reviews. It is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"e"(6) which states:

> when stairs are provided for entry to a swimming pool, a stripe at least one inch in width of a color contrasting with the swimming pool floor shall be provided on the leading edge of each tread. The stripe shall be of slip-resistant material.

The Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (m)(3) specifies:

> Steps leading into a swimming pool shall be of contrasting color or marked or constructed to contrast from the bottom....

The provisions in item B are contained in existing part 4717.1900, subpart 2. No substantial change is proposed.

Item C proposes to require the handrail installed at the pool steps to be reachable from the pool bottom. A handrail is required in existing part 4717.1900, subpart 4. Handrails being reachable from the bottom of the pool is an interpretation of codes requiring "handrails be attached to the bottom step" or the handrails "serving all stair treads in the pool." Codes including these requirements include the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"b"(6)"2", the U.S Department of Health and Human Services, Suggested Health and Safety Guidelines for Public Spas and Hot Tubs, January 1985, Section 2.4.1.f, and the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (m)(3).

Item D proposes to require at least two handrails when the steps are over six feet wide or an additional railing to define the location of the steps when needed. This is necessary to allow pool patrons to reach a handrail any time they are on the pool steps and to easily ascertain the step location. This provision is designed to reduce injury.

The provisions in item E are contained in existing part 4717.1900, subpart 3. No substantial change is proposed.

Subp. 3. **Ladders.** The provisions in this subpart are contained in existing part 4717.1900, subpart 3. No substantial change is proposed.

Subp. 4. **Handrails.** The provisions in this subpart are contained in existing part 4717.1900, subpart 4. No substantial change is proposed.

Subp. 5. **Handholds; coping.** This subpart amends existing requirements in parts 4717.1600 and 1717.1700. The requirement for a continuous handhold along the pool edge is contained in part 4717.1600 and part 4717.1700, subpart 1. The provisions in item A are contained in existing part 4717.1700, subpart 1. The provisions in item B are contained in existing part 4717.1600.

Item C is proposed to require brick coping to be completely rounded, overhang the pool wall 1-1/2 inches, and slope away from the pool 1/2 inch over the length of the brick. These requirements allow the coping to be used as a handhold and move deck water away from the pool. These requirements can be easily implemented using existing brick coping.

Subp. 6. **Diving boards.** The provisions in this subpart are contained in existing part 4717.1900, subpart 5. No substantial change is proposed.

Part 4717.3350. DECKS AND WALKWAYS.

This part amends existing part 4717.2000 to clarify deck requirements and ceiling height requirements. All requirements in this part are consistent with existing part 4717.2000, except as noted below.

The provisions in items A and B are contained in existing part 4717.2000. No

substantial change is proposed.

Item C is proposed to prohibit the use of wood decking. Wood decking has not been allowed by the commissioner as an interpretation of the existing provision which requires "a nonslip surface" as specified in part 4717.2000. Codes which require an impervious and/or slip-resistant material, which would prohibit wood decking, include the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(4)"b", the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design, 1982 Edition*, part 15.9, and the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (l)(7). Wood decking absorbs the water it is constantly in contact with and deteriorates. Openings in the wood promote the growth of microorganisms.

Item D is proposed to require a seven foot ceiling above pool edges and pool decks. This requirement has been used by the commissioner since 1984 in conjunction with plan review and is consistent with the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (l)(3) which specifies that "all decks and walkways shall have an unobstructed overhead clearance of at least 7 feet in height."

Subitem (1) is proposed to verify ceiling requirements over diving apparatus meet requirements set for diving boards in the proposed part 4717.3750 and the existing part 4717.2100.

Subitem (2) is added to verify adequate spacing for the installation of slides and to verify compliance with the state building code requirements.

Part 4717.3450 LIGHTING, VENTILATION, AND ELECTRICAL REQUIREMENTS.

Subpart 1. **Lighting.** The provisions in items A and B are contained in existing part 4717.2900. No substantial change is proposed. The provisions in item C amend existing part 4717.2900 to require a performance standard of a measurable lighting intensity rather than a design standard of watts per square foot. The former standard did not address lighting, merely energy consumption. Lighting intensity at the pool is also a factor of fixture location and efficiency.

Item D is proposed to require additional lighting at pools used for education, training, or competition. Training and education would include facilities other than those at a school if the pool is used for lessons or instruction. This requirement has been used by the commissioner for plan review and allows better visibility of the pool and its surrounding area. This is important for pools used by persons who may be learning to swim. Item E is proposed to require illumination of the entire pool area when security lighting is used to assure effectiveness.

Subp. 2. **Ventilation.** This subpart is proposed to amend existing part 4717.2900 to require ventilation of pool equipment rooms and compliance with the Minnesota State Building Code. The requirements for mechanical ventilation of all indoor pools, dressing rooms, shower rooms, and toilet space is contained in existing part 4717.2900. No substantial change is proposed.

Item A is proposed to require natural or mechanical ventilation in pool equipment

rooms. This requirement eliminates the possibility for overheating of rooms and equipment not working properly. This is consistent with the Michigan Administrative Code, R 325.2181 (3).

Item B is proposed to require new ventilation to comply with the Minnesota State Building Code. This requirement will allow proper ventilation of buildings as required by the State Building Code. Proper ventilation is required by the State of Michigan as stated in the Michigan Administrative Code, R 325.2181 (4).

Item C is proposed to cross reference to the ventilation requirements for gas chlorine rooms in proposed part 4717.2630, subpart 2.

Subp. 3. **Electrical.** The provisions in this subpart are contained in existing part 4717.2900. No substantial change is proposed.

Part 4717.3475. STARTING BLOCKS AND PLATFORMS; SLIDES; OTHER OBJECTS.

The provisions in this part are proposed to specify the standards for starting blocks, starting platforms and play equipment used at a pool.

Subpart 1. **Starting block or platform use.** This subpart is proposed to require the removal of starting blocks or platforms when the water depth is less than five feet except when the pool is used for competitive swimming functions. This will eliminate blocks in areas not used for supervised competitive swimming or training for competitive swimming. This provision will reduce the possibility for accidents involving the starting apparatus. The requirement of starting blocks or platforms being positioned at a water depth no less than 5 feet is proposed to reduce diving accidents. The American Red Cross has recommended this requirement because of the many accidents which have occurred from the use of starting blocks located in water less than five feet in depth. The Council for National Cooperation in Aquatics in Diving Injuries Prevention of the Most Catastrophic Sport Related Injuries, indicates the ability to reach at least the five foot water depth using conventional starting techniques. This depth is also

Subp. 2. **Play equipment.** This subpart is proposed to define the requirements for play equipment installed at pools. Installing equipment designed for pool use, according to the manufacturer's recommendations, means the equipment is installed as it was designed to be used. Many pools are installing play equipment to attract additional pool users. It is necessary that the equipment not only be installed properly, but also that it is equipment that is designed for use with a pool.

Part 4717.3550. DRESSING ROOMS.

The provisions in this part are contained in existing part 4717.3100.
No substantial change is proposed.

Part 4717.3650. TOILETS, LAVATORIES, AND SHOWERS.

The provisions in this part amend existing part 4717.3100 for toilet, lavatory, and shower requirements.

Subpart 1. **General.** This subpart is proposed to ensure convenient access to toilets, showers, and dressing rooms for pool patrons.

Item A proposes to clarify the required restroom location for pool patron use, as required in existing part 4717.3100. The intent of this subitem is to have conveniently available facilities for pool patrons as interpreted pursuant to the existing code and as used by the commissioner for plan review. Conveniently means within a nearby hotel room, apartment or similar lodging used by the pool patron.

Item B is proposed to verify that facilities located near the pool must not become a source for pathogens which could enter the pool. Maintaining sanitary conditions in public areas is general practice, is required by the commissioner and is consistent with interpretation of the existing code.

Item C is proposed to ensure that provision is made for nude showering at all toilet facilities that will be used by pool users. Showering is a requirement contained in existing part 4717.3700, item A. Nude showering allows for complete cleansing of the body before entering the pool. Where a pool is available in a complex with private residential or guest rooms and showers, showering occurs in the resident or guest room. However, when provision is made for toilet facilities in the pool area, each toilet room must include showers which permit nude showering.

Item D is proposed to require a shower conveniently located near the pool when a sauna or exercise facility is also provided. If the person using the sauna or exercise facility is also using the pool, then showering is necessary. A person who uses a sauna or exercise facility will perspire and produce oils and other potential contaminants. Perspiration must be rinsed off before entering a pool to maintain water disinfectant levels. If a pool is located in an apartment complex or hotel, a shower is not mandated to be constructed as part of the pool complex because personal showers are available in resident and guest rooms. However, if a sauna or exercise room is available in the facility, even though personal showers are available in guest or resident rooms, at least one shower must be available in the pool area for use prior to entering the pool. This requirement has been used by the commissioner since 1984 in conjunction with pool plan review. This provision is consistent with the existing requirement for a person to shower before entering a pool.

Subpart 2. **Ratios.** This subpart is proposed to amend the sanitary facility ratios in existing part 4717.3200. Ratios of female fixtures for user loads up to 300 persons and the shower ratios for both men and women at all bathing levels are the same as that contained in existing part 4717.3200. Fixture ratios for males at all user load levels, with the exception of showers, and fixture ratios for females over 300 are proposed for change. The ratios required by the existing rule have been found to require excessive fixtures and created maintenance problems. Requiring a smaller fixture ratio for higher user loads is consistent with the ratio requirements of other states including Michigan as stated in the Michigan Administrative Code, R 325.2175 Table 2.

Subp. 3. **Additional fixtures.** This subpart is proposed to require additional sanitation facilities at pools which have extensive deck areas or ancillary facilities which would allow additional patrons at the facility. The MDH proposes to refer to the state building code ratios for sanitation fixture requirements as a reasonable means to

establish a uniform statewide standard in all facilities.

Subp. 4. **Shower temperature.** This subpart proposes to amend the existing required shower water flow rate in part 4717.3200 and set a maximum allowed water temperature. The minimum required temperature of 90 degrees Fahrenheit and requiring a thermostatic, tempering, or mixing valve is contained in existing part 4717.3200. The flow rate of 2.0 gallons per minute is an amendment to the existing requirement of 3.0 gallons per minute. This change is proposed to provide for compliance with the Minnesota Energy Conservation law specified in Minnesota Statutes, section 216C.19, subdivision 19 which states "No showerhead, other than a safety shower showerhead, may be sold or installed in Minnesota if it permits a maximum water use in excess of 2.5 gallons per minute when measured at a flowing water pressure of 80 pounds per square inch."

The maximum temperature allowed is 130 degrees Fahrenheit. This maximum is proposed to avoid scalding and is the same as the standard applicable to the general public in regulations for the lodging, hotel, and motel industry contained in part 4625.1300.

Subp. 5. **Layout.** The provisions in this subpart are contained in existing part 4717.3200. No substantial change is proposed.

Subp. 6. **Floor finish.** This subpart adds the requirement that the floor between toilet and shower areas and the pool meet the flooring requirements for the toilet and shower areas and the pool area. The flooring requirements for the toilet and shower area and the pool area are stated in existing part 4717.3100 and 4717.2000. Maintaining a nonslip and nonabsorbent surface in all areas used by pool patrons when wet reduces the possibility for accidents and the growth of contaminants in and on the floor.

Subp 7. **Wading pool exception.** This subpart is proposed to allow free standing wading pools to be installed without on-site showers if a chlorine residual of at least 2 parts per million is maintained and the owner requests that no showers be installed. Free standing public wading pools are generally installed in neighborhood settings where shower facilities are available at pool users homes. Maintaining a free available chlorine residual of 2 parts per million will help eliminate the presence of contaminants in the water.

Subp. 8. **Lighting.** This subpart is proposed to ensure proper lighting in toilet, shower, and locker facilities. Proper lighting promotes better sanitation and reduces the possibility for injuries. The requirement of lighting in the above mentioned areas is consistent with the Michigan Administrative Code, R 325.2181. The lighting levels specified are consistent with pool area lighting requirements specified in existing part 4717.2900.

Part 4717.3675. DRINKING FOUNTAINS.

This part amends the requirement in existing part 4717.3200 for a drinking fountain in the swimming pool area to require that a drinking fountain be provided only where there is a pool of over 1,600 square feet. The proposed modification is reasonable in

that it limits the requirement to larger pools. Pool water is for recreational use. Pool water is not designated as potable water for drinking. Recreational use of a pool like other recreational uses, may make the user thirsty. The availability of a drinking fountain where the pool is likely to be used for swimming and large muscle activity remains reasonable.

Part 4717.3750. STANDARDS FOR POOLS WITH DIVING.

Proposed part 4717.3750 amends the provisions in existing parts 4717.2100 and 4717.3900 to change the diving area requirements for pools with diving.

In a comprehensive study *Diving Injuries: The Etiology of 486 Case Studies with Recommendations for Needed Action,* Nova University Press published in 1990 the results of a extensive study. The study participants found that:

* participation in aquatic activities became the number one recreation activity of Americans in the mid 1970s
* about half of the people who swim, do so in a pool
* diving injuries ranked fourth behind auto accidents, falls, and gunshot wounds as the contributor to spinal cord injuries
* of the distribution of sports related accidents, diving was by far the major cause of spinal cord injury resulting from participation in sports.

Residential pools, owned and operated by individual families were involved in 54 percent of the pool accidents. Hotel and motel pools were the site of 17 percent; apartment and condominium pools accounted for 15 percent of pool related injuries.

While shallow water and diving into shallow water was determined to be where most pool diving injuries occur, the truncated sides of hopper bottom pools caused a number of injuries to people. "The appearance of a pool (particularly when a springboard is present) to first time visitors invariably conveys an illusion of safety relative to diving which is not always the case," the study concluded.

The study participants recommended diving well standards similar to those proposed and the elimination of hopper bottom pools as "dangerously deceptive" and constituting an "entrapment to divers." Pools with spoon shaped bottoms were also recommended for design discontinuance. Those who design and construct pools with diving equipment were urged to follow the Nova University recommendations for diving well, signage, marking, lighting and the pool bottom. Pools with diving equipment installed in a pool which does not meet the recommended specifications were urged to remove their board, or at a minimum restrict use to children under the age of 12.

The MDH has reviewed the existing standards for pools with diving and proposes amended standards consistent with recommended national specifications.

The provisions in proposed item A are contained in existing part 4717.2100. No substantial change is recommended at this time.

Item B is proposed to qualify the design standard in cases where the pool depths must be adequate for a level of competition that is greater and divers can achieve

greater heights and deeper penetration. Some diving competition requires deeper water. The proposed standards are for usual public pool diving use. In competitive settings where high dives or other competitive diving activity will take place, additional depth will be needed. Other standards such as those of the National College Athletic Association (NCAA) or the National Federation of State High School Associations (NFSHSA) may also be used to set diving area specifications, provided the standards are more protective.

The language in item C is contained in existing part 4717.2100.

Item D proposes to amend the diving well requirements in existing parts 4717.2100 and 4171.3900 to reduce the possibility for diving accidents and to create requirements that are in conformance with other state and national standards. The proposed six foot water depth (D_0) requirement is the same as that in the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.500, Appendix A, Illustration C. The water depth requirement at the tip of the board to a distance (L_1) from the tip, depth D_1, is the same as the depth in Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, Table 1. The proposed standards are the same as Illinois for one and three meter boards (Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.500, Appendix A, Illustration C) and the same as the standards in the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"a".

The minimum overhang (O_h) requirement is consistent with Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.500, Appendix A, Illustration C and falls within the ranges given in existing part 4717.3900.

The length of the diving well (L_1) for the deck level and one meter boards are consistent with Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.500, Appendix A, and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, Table 1. The requirement for the 3 meter board of 13 feet is 1 foot more than other codes including the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.500, Appendix A, Illustration C and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers Recommended Standards for Swimming Pool Design, 1982 Edition, Table 1. It is the same if measured from the wall of the pool. An additional foot is proposed because three meter boards are often installed with an over hang greater than five feet. The run-out (L_2) requirement is the same as the pool bottom slope requirements for water over five foot in depth in existing part 4717.1400. The proposed dimensions for diving areas are, in general, the same as those in the American Public Health Association's standards for public pools. Adjacent board's center-to-center distances of 10 feet and the center-of-board-to-sidewall distances proposed are the same as those in existing part 4717.3900. The water depths shown in the illustration of 3 foot to 3 foot-six inches and 5 foot are contained in proposed parts 4717.1000 and 4717.1400 respectively and are not proposed for substantial change.

Part 4717.3850. SPA POOLS.

This rule part is proposed to specify in rule the standards which have been used by the commissioner for spa pool plan approval. The existing pool rules do not include requirements that can be applied to the spa pool situation.

Subpart 1. **Applicability.** This subpart is necessary to ensure that spa pools meet all pool requirements except as modified in this part.

Subp. 2. **Recirculation rates.** This subpart is proposed to provide an adequate turnover rate for a spa pool. A higher turnover rate is necessary to compensate for the general tendency of spa pools to have water chemistry problems due to high water temperatures and high user load to water volume ratios. The 35 gallon per minute minimum required flow rate is based on skimmers needing 30 gallons per minute to operate properly and an additional 20 percent of the total flow through the main drain to eliminate dead spaces on the bottom of the spa pool. The flow rate is the same as that contained in existing part 4717.1700, subpart 2. The requirements in this subpart have been used by the commissioner since 1984 for plan review approval. The proposed provisions are consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 2.8.2. and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition, part 14.15.

A 30 minute or less turnover rate helps spa pools maintain adequate water quality and is generally achieved with the required 35 gallon per minute flow rate. Pools larger than 1,050 gallons would require flow rates greater than 35 gallons per minute to maintain a 30 minute turnover rate. Pools this size also accommodate larger user loads thus requiring higher flow rates to maintain water quality.

Subp. 3. **Inlets.** This subpart is proposed to provide adequate recirculation in the spa pool and eliminate dead spaces where bacteria, algae, or other contaminants would other wise concentrate. The requirement has been used by the commissioner since 1984 for plan review approval. It is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition, part 14.12 which states "one wall inlet shall be provided for each 20 feet of pool perimeter, and a minimum of two wall inlets shall be provided."

Subp. 4. **Main drain.** This subpart is proposed to define "acceptable bottom drain installations" to prevent entrapment of spa pool users and allow for complete drainage of the pool. The requirement has been used by the commissioner since 1984 for plan review approval.

Items A and B are proposed to specify the equipment required to eliminate the possibility for spa pool users to get stuck to a bottom drain due to lack of drain size or creation of a vortex due to a high water velocity through a small opening. The proposed requirements are consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 2.7.9.b which provide one "one anti vortex drain;" and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition,

part 14.10 which recommend:

> Outlets shall be designed so that each pumping system prevents patron entrapment. Acceptable means include the use of multiple unvalved outlets, an antivortex drain, and a 12" by 12" square grate or one of equivalent area.

Subp. 5. **Agitation System.** This subpart is necessary to provide proper water recirculation and reduce the possibility for spa pool users to get stuck to an agitation system suction inlet. The requirements in this subpart have been used by the commissioner since 1984 for spa pool plan review and approval.

A separate pump for the agitation system is required so the agitation system has no effect on the recirculation and chemical feed systems of the spa pool, and so it can be shut off by a timer.

Two remotely located side inlets will reduce the possibility of spa pool users becoming stuck to a side inlet due to high suction rates. The flow through inlet two increases when inlet one is covered, allowing the blockage over inlet one to be removed. If only one inlet were present, covering it would create an increased flow through a smaller opening. This situation would increase the suction force not allowing the obstruction to be removed. This requirement is contained in the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 2.7.9.a.

Subp. 6. **Timer.** This subpart is needed to reduce the possibility of spa pool users staying in a spa pool for extended periods of time, increasing the chance for medical complications. Extended time in the heated spa pool water can increase core body temperature and may lead to organ damage. Timers located five or more feet from the spa pool require the spa pool user to leave the spa at least every 15 minutes. Exposure to high temperature water over an extended period of time does not allow the body to maintain proper body temperature which can lead to medical complications. The proposed requirement has been specified by the commissioner since 1984 in conjunction with spa plan review and approval. It is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 1.3.1. and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation, 1982 Edition*, part 14.16.

Subp. 7. **Access.** This subpart is proposed to provide adequate access to a spa pool. The requirement has been used by the commissioner since 1984 for spa plan review and approval.

Item A is needed to define the deck space required for adequate access to the spa pool. The deck must be unobstructed to reduce the possibility for accidents and allow for easy access to, and maneuverability around, the spa pool. The deck must be at pool level to eliminate the obstructions created by a raised or sunken spa pool and the access limitations created by such a pool. The requirement is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition, part 14.6.

Item B is needed to define the deck space required for adequate access to the spa pool when item A above cannot be met. Requiring a five foot deck on at least 25 percent of the pool perimeter has been used by the commissioner since 1984 in conjunction with pool plan review. Requiring the remaining 75 percent of the spa pool deck to measure one foot or less is added to limit access to the remaining deck area. This reduces the possibility for accidents that would other wise occur with a limited spa pool deck measuring less than five foot wide. The five foot deck must be located adjacent to the steps of the spa pool allowing easy access to the spa pool for spa pool users and for emergency egress.

Item C is proposed to allow for a design that would provide access to spa pools for persons with disabilities.

Subitem (1) is necessary to verify access requirements are met as specified in item's A and B.

Subitem (2) sets height requirements of raised spa's for easy access by spa pool users in wheel chairs. The height of 18 to 20 inches is standard chair height allowing easy transfer from a wheel chair to the pool ledge. This requirement has been used by the commissioner since 1984.

Subitem (3) sets requirements for stairs outside raised spa pools so they line up with stairs inside the spa pool and are the same size and dimensions as the stairs on the inside of the spa pool. The uniformity of the stairs reduces opportunities for injury. The requirement has been used by the commissioner since 1984 and the dimensions have been previously implemented for pool stairs in existing part 4717.1900, subpart 2.

Subitem (4) limits the width of the pool edge to limit access on top of the ledge and the opportunities for injuries associated with persons walking on the ledge. This requirement has been used by the commissioner since 1984.

Subp. 8. **Steps.** This subpart is proposed to ensure proper construction of steps for a spa pool.

Item A requires a handrail for steps giving access to raised spa pools. This is consistent with proposed part 4717.1900, subpart 4, and with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 2.4. The existence of handrails reduces the possibility for injuries. Item A also requires steps leading into raised spa pools to meet the deck material requirements in proposed part 4717.2000. This requirement has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 2.4.1.e. The decking requirements reduce the possibility for injuries on wet surfaces.

Item B is needed to allow for prefabricated spa pools. Prefabricated spa pools have been used in the State of Minnesota with success. The steps in prefabricated spa pools do not always meet required stair dimensions, but existing installations have shown to be generally safe with some variation allowed. This provision has been used by the commissioner since 1984 in conjunction with plan review and approval.

Subp. 9. **Disinfectant.** This subpart is needed to define the disinfectant residual required to eliminate bacteria, algae, and other contaminants in the water. This level has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Table 1 (A)(1) and (A)(3).

Subp. 10. **Signs.** This subpart is needed to set the required signage for spa pools. References are made to existing regulations which are stated in proposed parts 4717.0350; 4717.3300, subpart 4; and 4717.3600. This subpart proposes to also require signage which has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Public Spas and Hot Tubs*, January 1985, Section 1.3.1 and 4.4 and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition, part 14.17.

Item A warns small children, parents of small children, pregnant women and those with physical ailments that the use of a spa pool may be dangerous. Extended exposure to the water temperatures in a spa pool does not allow the body to maintain needed body temperatures and can result in medical complications.

Item B warns those under the influence of alcohol or drugs that the use of a spa pool may be dangerous. Combining alcohol and warm temperatures associated with a spa pool can cause medical complications.

Item C warns spa pool users that the extended use of a spa pool may be dangerous and that a reasonable time limit in the spa pool must be observed.

Part 4717.3870. POOL SLIDES.

This proposed rule part is necessary to specify the standards for pool slide installations. The existing code does not address the installation of slides.

Subpart 1. **General.** This subpart is proposed to specify the general requirements of pool slides and to ensure use of the equipment only as intended by the manufacturer. Slides used at a pool must be designed for use with a pool and for use as a slide to maintain a safe environment for pool users.

Subp. 2. **Standard pool slide.** This subpart is added to verify that all slides used at pools meet national standards as stated in the Consumer Product Safety Commission Standard " Safety Standard for Swimming Pool Slides," Code of Federal Regulations, title 16, part 1207, as amended through December 18, 1978. This is requirement is consistent with the Iowa Department of Public Health, Swimming Pool Rules, Part 641-15.5(13)"k". The installation of properly designed and installed slides reduce the possibility of injury.

Subp. 3. **Slides in wading pools.** This subpart is proposed to allow for the installation of kiddie slides in wading pools. Facilities use such slides as an additional attraction for pool patrons. Such slides must be designed for use in wading pools and

installed according to manufacturer recommendations.

Subp. 4. **Drop slides.** This subpart is needed to define requirements for pool slides with drops to the water ranging from two to 42 inches above the water.

Item A requires an attendant to be present at all times the slide is open for use. This requirement has been used by the commissioner for plan approval, is consistent with recommendations from Miracle Recreation Equipment Company, Product Specifications, Model 184 Series, September 11, 1992 Rev.B, which states "The slide must not be used except when supervised." An attendant helps maintain safe use of the equipment installed.

Item B requires space for slide users to enter the slide and assist bars to help users position themselves. This is necessary to reduce injuries. This requirement has been used by the commissioner for plan approval.

Item C requires handrails on both sides of steps and guardrails on platforms and landings. This requirement has been used by the commissioner for plan approval and is consistent with general practices used in the construction of stairways and elevated platforms.

Item D defines the required plunge area for a slide. Subitem (1) is needed to reduce the possibility for slide user collision with the users of other slides or diving equipment. Subitem (2) is needed to create a landing area unique to the slide to reduce the possibility for accidents due to slide users colliding with pool users. This requirement has been used by the commissioner for plan approval. Subitem (3) is needed to allow the installation of slides in separate diving areas if access to the area is restricted to patrons using the slide or diving equipment. This provision is needed to reduce the possibility for accidents due to slide users colliding with pool users. This requirement has been used by the commissioner for plan approval.

Item E requires each slide to have a unique means of egress for the slide users. This requirement reduces the possibility for accidents which occur when slide or diving equipment patrons enter the plunge area of an adjacent slide to reach a ladder or stair. This requirement has been used by the commissioner for plan approval.

Item F requires the terminus of a slide to extend beyond the pool wall to eliminate the possibility for collisions between the slide user and the pool wall. This requirement has been used by the commissioner for plan approval. This item also requires the slide terminus to be oriented so the landing area for the slide does not interfere with the landing area of any other slide or diving apparatus. This reduces the possibility for collisions between users of adjacent features.

Item G requires the slide terminus to be angled between zero degrees and 11 degrees, measured downward from horizontal, to reduce the possibility for contact with the pool bottom. This requirement has been used by the commissioner for plan approval and is consistent with the Consumer Product Safety Commission Standard "Safety Standard for Swimming Pool Slides," Code of Federal Regulations, title 16, part 1207.5 (f)(7), as amended through December 18, 1978.

Item H defines the required water depth for slide installations. The water depth extending six feet in front of the slide must meet the requirements listed below. The six foot area is where slide users enter the water thus creating a safe landing zone. This requirement has been used by the commissioner since 1984 for plan approval. Subitem (1) requires the slide to be oriented so slide users enter the water in the six foot area in front of the slide. Subitem (2) sets requirements for slide installations in water five feet or less in depth. The pool bottom slope must not exceed one foot in twelve feet and the slide must not be located within five feet of a change to a steeper slope. These requirements reduce the possibility for drowning due to changes in pool bottom slope. Subitem (3) defines the water depth required for slides with drops from the slide terminus to the water level of twelve inches or less. The water depth for the six feet in front of such slides must be between four feet and five feet. This depth has been found to be adequate for safe use of the slide and has been used by the commissioner for plan approval. Subitem (4) defines the water depth required for slides with drops from the slide terminus to the water level greater than twelve inches. The water depth for the six feet in front of such slides must be at least eight feet. This depth has been found to be adequate for safe use of the slide and has been used by the commissioner for plan approval. It is the depth recommended by the Miracle Recreation Equipment Company, *Product Specifications, Model 184 Series*, September 11, 1992 Rev.B.

Item I is needed to set the maximum allowed distance between the slide terminus and the water level at 42 inches. This requirement has been used by the commissioner for plan approval and reduces the possibility for accidents when dropping into the water from too high above the water level.

Item J is needed to define requirements for slides with water pumped from the pool to the slide. Such pump intakes must be enclosed or constructed to prevent injury or entrapment of pool users and the intake velocity must not exceed 1-1/2 feet per second in order to reach that goal. This requirement has been used by the commissioner since 1984.

Item K requires control of drop slides at all times. Location and construction of the slide must allow for easy supervision and ability to prevent access to the slide when not in use and supervised. This requirement eliminates the possibility for slides being used improperly.

Item L requires signage for slide installations. Subitem (1) is needed to reduce the possibility for slide users colliding with one another. This requirement has been used by the commissioner and is consistent with the Consumer Product Safety Commission Standard "Safety Standard for Swimming Pool Slides," Code of Federal Regulations, title 16, part 1207.7 (g), as amended through January 19, 1976. Subitem (2) is needed to define the positions allowed when using the slide. This requirement has been used by the commissioner and reduces the possibility for injuries. Subitem (3) is needed to prevent slide users from stopping on the slide and creating the possibility for collision in the slide. Subitem (4) is proposed to reduce the possibility for slide users to collide with one another. Subitem (5) is proposed to warn slide users of the water depth and reduce the possibility for drownings when non-swimmers enter water over their head. Subitem (6) is proposed to inform non swimmers that they are not allowed to use the slide because of a water depth greater than five feet.

Part 4717.3875. FLUME WATER SLIDES.

This rule part is proposed to specify the standards for plan review and maintenance of flume water slide installations. The existing code does not address flume water slides. Minnesota has several flume water slides already installed along with several proposed installations. Flume water slides differ from a standard water slide in that they generally range from 45 to 250 feet in length or more. They may include several curves and corners and have a entrance to the water at water level. They usually have a water system that provides for water flow on the slide itself.

Subpart 1. **Applicability.** This subpart is needed to ensure that flume water slides meet all pool requirements except as modified in this part.

Subp. 2. **Attendant required.** This subpart is needed to protect flume users and maintain a safe environment. The requirement has been used by the commissioner for plan approval since 1984 and is consistent with Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.250 (K)(1) which states:

> At least one attendant shall be on duty at all times when the slide is in operation in order to control the traffic of individuals using the slide. Attendants shall ensure that the slide is used in a safe and responsible manner. This attendant shall be qualified in both first-aid and life-saving techniques through Red Cross, YMCA, or equivalent training. One attendant at the plunge pool shall not be assigned other duties that would distract his attention from proper observation of persons in the pool area or that would prevent immediate assistance to persons in distress.

Subp. 3. **Discharge pool.** This subpart requires a dedicated plunge pool or dedicated area of an existing pool, with a stair or ladder, for the plunge area of a flume slide. This is required for safe operation of the flume slide and has been used by the commissioner for plan approval since 1984. The requirement is consistent with Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.250 (h)(3) which states "where a swimming pool is used as a plunge pool, the area where the slide exits shall be roped off from the area of the pool used for swimming...."

Item A is needed to define a safe water depth for use of a flume water slide. The depths specified allow safe stopping of flume users, yet is shallow enough for non-swimmers. The requirements have been used by the commissioner since 1984. The Illinois Administrative Code, Title 77, Chapter 1, Subchapter n, Section 820.250 (h)(1) specifies a depth between 2 1/2 and 3 1/2 feet. The U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 3.3.10 specifies a splash depth of 3 feet.

Item B specifies the extent of the safe water depth required in item A for use of a flume water slide. The dimensions specified have been used by the commissioner since 1984. The Illinois Administrative Code, Title 77, Chapter 1, Subchapter n, Section 820.250 (h)(1) specifies a distance of at least 10 feet.

Item C requires steps with handrails or a ladder at flume slide plunge pools for egress of flume users. The requirement has been used by the commissioner since 1984 and is consistent with Illinois Administrative Code, Title 77, Chapter 1, Subchapter n,

Section 820.200 (m)(1) and other pool egress standards specified in these pool rules.

Subp. 4. **Flume exit design.** This subpart is proposed to establish requirements for the safe entrance of flume water slide users into the dedicated plunge area. The requirements in this subpart have been used by the commissioner since 1984. The Illinois Administrative Code, Title 77, Chapter 1, Subchapter n, Section 820.250 (g)(1) specifies that:

> a flume shall be perpendicular to the plunge pool wall for a distance of at least 10 feet from the exit end of the flume. The last 10 feet of the flume shall have a slope which is not steeper than 1 in 10.

The U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 3.3.8 specifies:

> Flumes should terminate either at a depth of at least 6 inches below the splash pool's operating water surface level or no more than 2 inches above the water surface, provided the flume is level for a distance of at least 10 feet from its exit end.

The Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.2.1 states that " a flume shall be perpendicular to the plunge pool wall for a distance of at least 10 feet from the exit end of the flume."

Item A is needed to require the flume exit to be near water level allowing slide users to enter the water smoothly. Exit heights different than those specified may cause flume user injuries due to dropping into the water and hitting the bottom or being stopped in the flume and not being able to exit the pool promptly. The requirement has been used by the commissioner for plan approval since 1984 and is consistent with Illinois Administrative Code, Title 77, Chapter 1, Subchapter n, Section 820.250 (g)(3), which specifies termination between a depth of six inches below the water surface and two inches above the water surface. The U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 3.3.8, specifies the same requirement as does the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.2.3.

Item B is proposed to reduce the possibility for contact with the side wall of the pool when using the flume water slide. The requirement has been used by the commissioner since 1984 and is the same as the standard of the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition, part 15.2.2.

Item C is proposed to reduce the possibility for contact between users of separate flume water slides. The requirement has been used by the commissioner since 1984 and is contained in the Illinois Administrative Code, Title 77, Chapter 1, Subchapter n, Section 820.250 (g)(2); the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 3.3.7, and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition,

part 15.2.2.

Item D is proposed to reduce the possibility for contact with the pool wall opposite the flume exit by flume water slide users. The requirement has been used by the commissioner since 1984 and is the recommended standard of the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 3.3.7 and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.2.2.

Subp. 5. **Water reservoirs.** This subpart establishes requirements for safe transfer of water from the plunge pool to the top of the flume water slide. The use of a reservoir eliminates the possibility for flume user entrapment.

Item A is proposed to reduce the possibility for slide user entrapment by eliminating access to flume water slide reservoirs. The requirement has been used by the commissioner since 1984.

Item B is proposed to reduce the possibility for slide user entrapment and equipment vandalism by securing access to any flume water slide reservoir. The requirement has been used by the commissioner since 1984 and a recommended standard of the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.4.3.

Item C is proposed to reduce the possibility for collection of contaminants in and around flume slide reservoirs while maintaining safety requirements preventing entrapment of slide patrons. This provision has been contained in flume slide guidelines developed by the commissioner since 1984. The provision is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.4.2 which specify that "all of the reservoir area shall be accessible by 3-foot minimum width decks for cleaning and maintenance."

Item D is proposed to reduce the possibility for injuries caused by the presence of underwater obstructions. Limiting access to obstructions in the water eliminates the potential for accidents. This requirement has been used by the commissioner since 1984 in conjunction with plan review and approval.

Item E is proposed to reduce the possibility for slide user entrapment by limiting the velocity through reservoir inlets. Water velocity through suction openings under 1-1/2 feet per second allow persons coming in contact with such openings to easily remove themselves from the area. The requirement has been used by the commissioner since 1984 in conjunction with plan review and approval. It is consistent with Illinois Administrative Code, Title 77, Chapter 1, Subchapter n, Section 820.250 (l).

Subp. 6. **Pump Valves.** This subpart is proposed to maintain water in the entire system and control the water level maintained in the flume water slide plunge pool. A check valve installed after the flume slide pump discharge keeps water in the pipe from the pump to the top of the flume. This allows the flume water slide pumping system to maintain the water required to operate properly without excessively lowering

the plunge pool water level when the pump is turned on, or flooding the plunge pool when the pump is turned off. This requirement has been used by the commissioner since 1984 in conjunction with pool plan review. The provision is consistent with Illinois Administrative Code, Title 77, Chapter 1, Subchapter n, Section 820.250 (h)(2) which states:

> A surge storage area shall be provided which will contain the water used for pumping onto the slide during periods when the slide is not in use, except where the plunge pool is a swimming pool where the water elevation will not be lowered more than 1 inch when the flume pumps are in operation.

The U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 3.3.14 specifies that "the pump reservoirs should have sufficient volume to contain at least 2 minutes of combined flow from all water treatment and flume pumps and enough water to insure that the lower splash pool will maintain a constant depth." The Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.4.4.2 recommends that "each flume pump discharge pipe shall have a check valve."

Subp. 7. **Dedicated plunge pool.** This subpart is proposed to specify the required turnover rate for a dedicated plunge pool. Disinfectant residuals are difficult to maintain in shallow pools which would include the water flowing down a flume water slide. The small amount of water flowing down a slide requires an increased turnover rate to maintain a disinfectant residual. The relatively small volume of water and large user load dictate the need for a high turnover rate. This requirement has been used by the commissioner since 1984 in conjunction with plan review and approval and is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.7.3 which specifies that "the water shall be recirculated and treated in a turnover of one hour or less."

Subp. 8. **Walkway, stairs, and platform surfaces.** This subpart is proposed to require walkways, stairs, and platform surfaces from the pool deck to the top of the flume tower to meet deck material requirements as stated in existing part 4717.2000. This requirement would maintain safe walking surfaces for flume water slide users. This requirement has been used by the commissioner since 1984 in conjunction with pool plan review and approval. The provision is consistent with the U.S Department of Health and Human Services, Suggested Health and Safety *Guidelines for Recreational Water Slide Flumes*, July 1981, Sections 2.1.1, 3.3.11, 3.3.12 and 3.3.14; and the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design and Operation*, 1982 Edition, part 15.1.

Subp 9. **Fencing.** This subpart is proposed to require the flume water slide equipment and the surrounding area to be enclosed by fencing to control access. Water flume slides require the same protection as other pools to reduce injury or accidents. The requirement has been used by the commissioner for pool plan review and approval. It is consistent with part 4717.0350, the U.S Department of Health and Human Services, Suggested Health and Safety Guidelines for Recreational Water Slide Flumes, July 1981, Sections 2.1.1, and the Great Lakes-Upper Mississippi River Board

of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.1 which recommends that those access provisions that pertain to pools in general apply also to the flume water slide.

Subp. 10. **Flume plan content; certification.** This subpart is proposed to define the plans needed for a thorough review of a flume water slide project. The items listed are needed to verify compliance with adopted rules and construction of a safe flume water slide. The proposed requirements have been used a guidelines for plan approval by the commissioner.

Item A is proposed to verify flume slide slopes, required spacing, and a construction which allows for the safe use of the flume water slide. Item B is proposed to verify adequate support for the flume water slide. Item C is proposed to verify that construction of a tower structure, stairs, and platforms meet safety requirements specified in rule. Item D is proposed to verify that all construction details are submitted to the commissioner for review so a safe flume water slide is constructed. The structural integrity of the flume water slide supports and tower structure must be approved by a registered engineer or approved by the local building official to verify the structural integrity. The requirement for certification by a registered engineer or local building official has been used as a guideline by the commissioner in conjunction with plan review and approval.

Subp. 11. **Signs.** This subpart is proposed to require signage which communicates the actions needed to use the flume water slide safely. Location of the sign near the flume slide entrance is required so the sign is visible to all flume slide users. The requirement has been used for plan approval by the commissioner since 1984. It is consistent with the Great Lakes-Upper Mississippi River Board of State Sanitary Engineers' *Recommended Standards for Swimming Pool Design*, 1982 Edition, part 15.8.

Item A is necessary so flume slide users are in full control of themselves before entering the slide in order to prevent unnecessary injury. The requirement has been used by the commissioner since 1984. It is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 2.1.3 which notes that sliders have suffered fall and impact injuries with the following circumstances "adult sliders who are under the influence of alcohol enter the splash pool headfirst in a steep dive."

Item B is necessary to verify that flume slide users follow instructions given by flume slide attendants in order to prevent unnecessary injury. The requirement has been used by the commissioner since 1984 and is consistent with Miracle Recreation Equipment Company recommendations as stated in *Product Specifications, Pool Slide, 184 Series*, September 11, 1992, Rev. B, page 6 of 8.

Item C is proposed to verify flume slide users use the flume slide as it was designed to be used in order to prevent unnecessary injury. The requirement has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 2.1.3, and with Miracle Recreation Equipment Company recommendations as stated in *Product Specifications, Pool Slide, 184 Series*,

Item D is proposed to reduce the possibility for accidents due to people colliding with one another. The requirement has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 2.1.3, and with Miracle Recreation Equipment Company recommendations as stated in *Product Specifications, Pool Slide, 184 Series*, September 11, 1992, Rev. B, page 6 of 8.

Item E is proposed to reduce the possibility for injuries due to flume slide users making contact with objects outside the flume slide, attempting to stop themselves by grabbing objects outside the flume slide or grabbing the top edge of the flume slide. The requirement has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 2.1.2 which notes that "abrasions and cuts are predominantly associated with hand, arm, or torso contact with the wall edge of the flume or the edge of tunnels during a descent."

Item F is proposed to reduce injuries due to diving from the flume into water which is not deep enough to support diving. The requirement has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 2.1.3.

Item G is proposed to reduce the possibility of collisions occurring in the water when one flume slide user could enter the plunge pool hitting the previous flume slide user. The requirement has been used by the commissioner since 1984 and is consistent with the U.S Department of Health and Human Services, *Suggested Health and Safety Guidelines for Recreational Water Slide Flumes*, July 1981, Section 2.1.3 and with Miracle Recreation Equipment Company recommendations as stated in *Product Specifications, Pool Slide, 184 Series*, September 11, 1992, Rev. B, page 6 of 8.

Part 4717.3950 WAVE POOLS.

This part is proposed to provide requirements for wave pool installations. Wave pools have come into existence since previous rule adoption and present special health and safety concerns not addressed in the present code. Wave pools in general provide a setting where the water in the pool basin is deliberately put into motion. The pool is often designed like a beach with a zero depth end. Because of water motion, pool users may be more prone to loss of footing and discernment of depth may not always be possible because of water turbulence.

Subpart 1. **Applicability.** This subpart ensures that wave pools meet all pool requirements for a regular pool except as modified in this part. This provision is reasonable since a wave pool has the same properties of a normal pool, water condition, depth markings etc. plus additional factors designed to provide a different recreational use.

Subp. 2. **Lifeguard required.** This subpart requires lifeguards at wave pools to

protect wave pool users. Wave pool users are subject to unique risks caused by artificial wave action in the pool. Such pools require specially trained lifeguards and the need for the frequent rescue of pool users overcome by the stress of the wave action. This requirement has been a guideline used by the commissioner for plan approval.

Item A is proposed to define the number of lifeguards needed to adequately observe the wave pool. The number specified is consistent with the lifeguard to pool user ratio in the Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.300 (b)(3)(B).

Item B is proposed to clarify that additional lifeguards, are needed where the number specified in item A cannot provide complete observation of the pool.

Subp. 3. **Water depth.** This subpart is proposed to allow for the installation of a zero depth area. A zero depth area allows for the dissipation of waves and for pool patrons to gradually adjust to the unique forces present in the wave pool. Waves crashing against a flat vertical wall would create waves which would bounce back into the pool creating unpredictable water depth fluctuations. This requirement has been used by the commissioner for plan approval since 1988 and is consistent with Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (w)(4).

Subp. 4. **Access barriers.** This subpart is proposed to require that access to the wave pool only be allowed at the zero depth area of the pool. It would be unsafe to allow access to the sides of the pool, especially when the water is shallow and the deck is several feet above the water elevation. Designing the deck several feet above the water elevation allows for control of the wave action in the pool. A sufficient barrier is a rope and stanchion at least 42 inches high with at least one intermediate height rope. Standard guardrail height is 42 inches. Allowing access only from the zero depth area allows wave pool users to gradually adjust to the waves and the forces associated with them. This requirement has been used by the commissioner for plan approval since 1988.

Subp. 5. **Emergency shut off.** This subpart is added to require an emergency shut off for the wave pool which would allow for safer rescue of endangered wave pool users. The forces associated with a wave pool make it unique and may create situations pool users are not use to and not prepared to handle. Locating an emergency shut off at a lifeguard chair or station allows those observing the pool to easily stop the waves and protect the shut off from use by the general population at the pool. This requirement has been used by the commissioner for plan approval since 1988 and is consistent with Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (w)(2).

Subp. 6. **Wave strength.** This subpart is added to reduce the possibility for wave pool users to become injured from contact with the pool bottom. The waves created must not be large enough to create a motion which would normally cause the user to have contact with the pool bottom. The buoyant force of the waves can very easily lift people several feet off the pool bottom and drop them back down. Wave strength must be such that the possibility for injury is minimized. This requirement has been used by the commissioner for plan approval since 1988.

Subp. 7. **Overflow gutters.** This subpart is proposed to allow for installing a wave pool without overflow gutters along the deep end of the pool. This is to allow for the installation of wave generating equipment at the deep end of the pool. This provision has been used by the commissioner for plan approval since 1988 and is necessary for function.

Item A is proposed to maintain adequate skimming of the wave pool surface when the wave generating equipment is not in use. When the wave function is not in use, a means of removing debris on the pool surface at the deep end is required. Skimmers are designed for this application and must operate at all times the wave function is not in operation in order to maintain a clean pool. This requirement has been used by the commissioner for plan approval since 1988.

Item B is proposed to require a gutter along the zero depth area. All debris in the pool is moved to the zero depth area when the wave pool is in operation by the wave action in the pool. The debris must be efficiently removed and a gutter along the zero depth area would supply the needed drainage. This requirement has been used by the commissioner for plan approval since 1988 and is consistent with Illinois Administrative Code 1987, Title 77, Chapter 1, Subchapter n, Section 820.200 (i)(1)(C).

Subp. 8. **Decks.** This subpart is proposed to allow for pool user access to be omitted from the deep end of the wave pool to allow for installation of wave generating equipment. This provision has been used by the commissioner for plan approval since 1988 and is needed for function.

Subp. 9. **Recirculation system.** This subpart is proposed to define the required flow rate for adequate disinfection, circulation and filtering of the wave pool water. A four hour turnover rate is required because of a high user load to water volume ratio created by the zero depth area. A system of bottom inlets along the zero depth area allows that area to maintain a disinfectant residual in the shallow water. Shallow water does not maintain a disinfection residual very well due to chlorine dissipation by sunlight and high user load to water volume ratios. The inlets also allow additional scouring of the pool bottom to remove debris. This requirement has been used by the commissioner for plan approval since 1988.

Part 4717.3970 POOL CLOSURE.

This rule part is proposed for amendment to include pool closure when construction of or alterations to a pool have been made without prior approval by the commissioner as stated in item D. All other closure conditions are in existing part 4717.3800. Item D is proposed to allow pool closure when alterations to a pool have been made without prior approval by the commissioner. Requiring plan review of alterations is consistent with existing part 4717.0300. Item E is the same as existing part 4717.3800.

Part 4717.3975 VARIANCE.

This part is proposed to allow the commissioner to grant variances to parts 4717.0150 to 4717.3950. When the owner of a pool facility can demonstrate safe operation of a given feature and ability to maintain proper water quality the commissioner may allow a variance for the feature. The variance shall be considered only in accordance with

the criteria and procedures in parts 4717.7000 to 4717.7600.

REPEALER. The MDH proposes to repeal the existing swimming pool code and replace all existing provisions with proposed parts 4717.0150 to 4717.3975.

Date: 8/3/94

Mary Jo O'Brien, Commissioner
Minnesota Department of Health

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