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THE TIDY POOL

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Single Main Drains

Public* with single main drains have a higher risk of creating entrapment problems than properly designed multiple drain facilities. The State Board of Health passed rules in October, 2008 that set minimum protection for single main drains, requiring all pools with single main drains to install an emergency manual shut-off switch and alarm by June 2009. The Board also directed the Department of Health to develop guidance for alternative practices beyond the minimum manual shut-off switch and alarm. This guide presents design and operational information for additional entrapment prevention.

Since the state rule was adopted in 2008, the Virginia Graeme Baker Pool and Spa Safety Act has been enacted. This new federal law requires all main drain covers in public pools meet the new national performance standard, entitled "Section Ratings for Use in Swimming Pools, Hot Tubs, Spas, and Hot Tubs," ASME A112.19.8-2007.

For public facilities with single main drains, additional entrapment protection is required. The federal law identifies several equipment options, but does not include manual shut-off switches and alarms. To meet the new federal law, pools in Washington with manual shut-off switches and alarms will need to select one of the following six options:

- Safety Vacuum Release Systems (Page 2)
- Suction Limiting Vent Systems (Page 3)
- Gravity Drainage Systems (Page 4)
- Drain Displacement (Page 5)
- Multiple Main Drains (Page 6)
- Unblockable Drains with Emergency Shut-off Switches and Alarms (Page 7)

To verify compliance with the federal law and Washington State requirements, pool owners will need to maintain written records and have them readily available. These records will include but not be limited to engineering drawings, equipment installation, and field test results. When planning to install any one of the six available options for additional entrapment protection for the single main drain pools, contact your local health jurisdiction if your pool is in Clark, King, Pierce, Snohomish, or Spokane counties. For all other counties, contact the state health department. These contacts are at www.doh.wa.gov/dhp/wsp/permit-contactinfo.pdf

There are other requirements in the new federal law related to main drains and equalizer lines that are not discussed in this guidance document. For additional details on the new federal law, see www.doh.wa.gov/dhp/wsp/guidance-maindrains.pdf

*Public: For purposes of this document, pool refers to all regulated public water recreation and water contact facilities in Washington State, including all types of pools, spas, and water features.

Determining When Pool Plan Review is Required by the Health Department

Effective December 19, 2008, all public water recreation facilities regulated by state and local health jurisdictions in Washington State will need to comply with federal law requirements. Owners and operators of these facilities:

- Must install new drain covers that meet the new federal safety standards.
- Must also install additional entrapment prevention equipment that meets the federal law and Washington State requirements when their facility has a single drain.

Note: Any design that places multiple drains closer than 3 feet between the centerlines of the drain covers as identified by the Consumer Product Safety Commission as no similar an entrapment potential to a single drain that additional entrapment prevention systems are required to comply with the federal law. Likewise, multiple drain systems that allow any individual drain to be the sole source of suction are considered single drain systems and require additional entrapment prevention systems.

When planning to comply with the new federal law, contact your local health jurisdiction if your pool is in Clark, King, Pierce, Snohomish, or Spokane counties. These local health jurisdictions may require plan review for projects that the state Department of Health does not require. For more information on the state Department of Health, contact information is available at www.doh.wa.gov/dhp/wsp/permit-contactinfo.pdf

Work Performed to Comply with New Federal Law	DOH Plan Review	
	Required	Not Required
Installing a new main drain cover* on an existing outlet sump that meets the cover manufacturer's specifications and the ASME A112.19.8-2007 standard	▲	●
Installing a complete, manufacturer-provided outlet sump, including cover, mounting bases, and sump meeting the ASME A112.19.8-2007 standard	▲	●
Installing new covers on equalizer lines (sumps not required)	▲	●
Installing a manufacturer-unblockable drain and an automatic or manual emergency shut-off and audible alarm	▲	●
Installing Safety Vacuum Release Systems	▲	●
Confirming that existing dual or multiple drains can not function as a single main drain	▲	●
Installing a field fabricated sump or cover, or both to meet ASME A112.19.8-2007	▲	●
Installing Suction Limiting Vent Systems	▲	●
Installing Gravity Drainage Systems	▲	●
Converting a single main drain system to a multiple main drain system (Disabling main drains)	▲	●

▲ - Requires engineer or architect verification of compliance with the federal law using the DOH construction report.
● - Construction can be verified by a pool professional completing the Compliance Verification Form, which is available at www.doh.wa.gov/dhp/wsp/verform.htm

DOH 323-104, February 2009
All references with abbreviations, this document is linked to other forms.
All requirements shown, including unblockable drains, must be verified by a professional or a pool professional completing the Compliance Verification Form, which is available at www.doh.wa.gov/dhp/wsp/verform.htm

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Virginia Graeme Baker Pool & Spa Safety Act

If you haven't heard by now there is a new federal law that was passed by congress in December 2007 that requires all public pools to be in compliance with certain suction entrapment protections by December 18, 2008. The U.S. Consumer Product Safety Commission (CPSC) is the federal agency responsible for enforcing this law. In order to help our public pools comply with the law we are providing some basic information to alert you of the requirements.

The Washington State Department of Health developed a nine page guidance document to help public pools in Washington State comply with both the federal law and state regulations. You should have already received a copy of this document in the mail. It is also available on our website along with links to other information about the federal law. If you are receiving this newsletter, your facility must comply.

The laws main impacts for pools in Cowlitz County are the requirement to have all existing and new pools have main drains and alarm drain covers that meet the ASME A112.19.8-2007 standard and the requirement for additional protection for single main drains (please note the CPSC considers multiple drains with less than 3 feet of space between centers of the drain outlets to be a single drain).

- The CPSC does not recognize the manual shut-off switch and alarm as an acceptable protection for single main drains as a method to comply with the federal law. Swimming pools that installed manual shut-off switches and alarms to comply with state regulations will most likely need to install additional protection to meet the federal law.
- Existing drain covers at all public swimming pools and spas in the county will most likely need to be replaced. Replacing these drain covers may not be as simple as finding a cover that is compliant with the new standard.

Covers need to match the drain sump that is below the cover, must handle the flow of the recirculation system and fit the existing sump in order to be compliant with ASME A112.19.8-2007. Additional information is in the guidance document about proper selection of drain covers and what needs to be done if none match or there is no sump.

Before installing a new cover or additional single main drain entrapment protection to meet the federal regulations, plans need to be submitted to the Washington State Department of Health for review and approval. See the guidance document on the website for more information about plan submittals.

Certified Pool Operator Classes



Links to Certified Pool Operator(CPO) classes in Washington and Oregon can be found on our Water Recreation section of our website. See www.NSPF.com for more CPO classes or to take the course online.

2008 Most Frequently Cited Violations

The table included with this article lists the top 6 violations for Cowlitz County for 2008. Three of the top six violations encountered in Cowlitz County were pool chemistry violations and a fourth violation was maintaining proper records documenting pool chemistry.

Please take note that approximately 1/3 of all routine or follow-up inspections in 2008 led to closure of a pool or spa. Low chlorine, high chlorine and low pH are three of the top six violations and each can lead to closure of a swimming pool or spa.

Low Disinfectant: The most frequently cited violation in 2008 was for low chlorine levels. Maintaining proper chlorine levels is the primary method of protecting swimming/spa pool users from illness. The chlorine level in pools and spas should be tested frequently to ensure proper levels.

High Disinfectant: One of the next most cited violations in 2008 was for excessively high disinfectant. High levels of disinfectant can lead to irritation of skin, redness, itching and loss of body hair. The maximum allowable level for chlorine/bromine is 10ppm. Even this level may be too high for sensitive individuals or individuals who spend long times in the pool/spa.

Low pH: Maintaining proper pH is one of the most important aspects of having properly balanced pool water and the most effective disinfection levels. Low pH is an irritant to the swimmers and creates corrosive water. Corrosive water damages pool surfaces and destroys pool equipment.

Improper signage: Regulations require certain rules to be posted at all times at all pools and spas. The lists of rules are available on the Health Department's website.

Flow Meter Inoperative: The flow meter should be checked daily to make sure it is operating correctly and that the flow is maintained within the proper range. Water flow that is too high or too low can effect proper filtration and water flow that is too high could lead to entrapment issues with the main drains. When a flow meter is stuck it needs to be cleaned until the bobber fluctuates slightly up and down.

Maintaining Proper Records:

Records are required to be maintained everyday the pool is open and be kept on file for at least three years. Log sheets are available on our website at http://www.co.cowlitz.wa.us/health/environmentalhealth/living_environment/recwatersafety.htm

Violation	# of Violations Marked
Low Chlorine/ Bromine	17
High Chlorine/ Bromine	12
Low pH	12
Flow Meter Inoperative	12
Improper Signage	12
Chemical Records	11

POOL RULES

Item to be Recorded	Frequency
Chlorine/Bromine	Taken as often as needed to verify they are within acceptable ranges and at least daily
pH	Taken as often as needed to verify they are within acceptable ranges and at least daily
Alkalinity	Weekly
Cyanuric Acid	Weekly (if used)
Spa Pool Temperature	Daily
Flow Rates	Daily
Chemicals Added To Pool	Quantities to be recorded when added to pool
Incidents of known pool water contamination	Whenever incident occurs

Washington State Department of Health
Swim Pool Log Sheet
 Pool Name _____ Month _____ Year _____ Size of Pool (gallons) _____ Flow Rate Required (GPM) _____
 Type of Disinfectant _____ Minimum of 1.5 PPM if inorganic chlorine, 2.0 PPM if stabilized or organic, and 2.5 PPM if Bromine.

Date	Daily Tests			Flow GPM	Weekly Tests		Chemicals Added		Maintenance & Notes	
	Disinfectant PPM	Combined Chlorine < 50% free	pH 7.2-8.0		Alkalinity Rec. Range 80-160 PPM	Cyanuric Acid if used < 90	Quantity of Disinfectant Added	Other Chemicals Added	Back-wash	Vacuum or Brush
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2										
3										
4										
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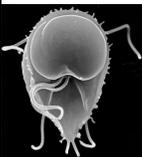
Recreational Water Illnesses

Recreational Water Illnesses are those that are spread through the swallowing, breathing, or having contact with contaminated water from pools, spas, lakes, rivers or oceans. The most commonly reported recreational water illness is diarrhea.

Five of the most common diarrheal illnesses associated with swimming pools and spas are *Cryptosporidium*, *Giardia*, *Shigella*, norovirus and *E. coli* O157:H7. *Pseudomonas dermatitis* "hot tub rash" is the most common recreational water illness associated with spas. The following is a description of the six commonly associated illnesses with swimming pools and spas.

Cyptosporidium

Crypto has become one of the most common causes of water recreation diarrhea illness in the United States. This parasite is found in people's stool. It causes diarrhea, cramps, headaches and vomiting. Symptoms can last for weeks and may result in weight loss and dehydration. It's highly resistant to chlorine disinfection and can survive in a pool for as long as ten days. Swallowing contaminated water is how people are often infected.

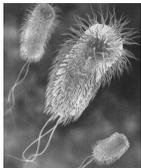


Giardia

Giardia is another common cause of diarrhea and is found in infected people's stool. It can take about 45 minutes for this germ to be killed by chlorine disinfection in pools. This is another parasite and symptoms can include: diarrhea, cramps, bloating, gas, fatigue or weight loss. Symptoms can last for weeks and people can be contagious for months.

Shigella

Shigella is a bacteria that causes severe diarrhea, which is often bloody as well as fevers, cramping, nausea and occasional vomiting. It can be spread if an infected person with diarrhea swims or plays in areas such as beaches or inadequately disinfected pools. Having hand washing stations with soap near swimming areas helps keep the water from becoming contaminated.



E. coli O157:H7

People have gotten an *E. coli* infection by swallowing lake water while swimming. Symptoms are similar to *Shigella* and include severe diarrhea and bloody stool. This infection can also be life-threatening and cause permanent damage to the kidneys. Swimming in inadequately disinfected pools or contaminated beaches are potential sources of infection.

Norovirus

Noroviruses are very contagious and can spread through an infected person's stool or vomit. The illness often begins suddenly and usually includes nausea, vomiting, diarrhea, and stomach cramps. Chlorine disinfection helps kill this virus.

Psuedomonas Dermatitis

Hot Tub Rash or dermatitis is an infection that causes an itchy bumpy rash on the skin. The rash usually occurs within days of swimming in poorly maintained hot tubs or spas, but can also be spread by swimming in a contaminated pool or lake. Properly maintaining hot tubs and pools helps eliminate the germ that causes this rash.

Ways to prevent outbreaks or the spread of illness at your pool or spa.

1. Maintaining proper disinfection and pool chemistry at all times
2. Posting and enforcing pool rules such as: restricting people from using the pool within 2 weeks of diarrhea or vomiting associated with a communicable disease, changing diapers at diaper changing stations, wearing of protective coverings over diapers, showering before swimming
3. Closing the pool or spa if fecal matter or vomitus enters the pool and following the pool contamination guidelines prior to reopening.
4. Providing educational material about Recreational Water Illnesses at the pool/spa. Posters and brochures are downloadable from the CDC Healthy Swimming Webpage.

For more information see the CDC's Healthy Swimming webpage at <http://www.cdc.gov/healthyswimming/index.htm>. Some examples of the signs available at the CDC's website are shown on the next page for you to preview.

Revision to Pool Contamination Guidelines

In April 2008 the Washington State Department of Health updated the Guidelines for Pool Contamination from Vomitus and/or Feces.

The guidelines were updated due to new information on the amount of chlorine contact time needed to achieve a 3 log (99.9%) inactivation of *Cryptosporidium*, which are chlorine resistant germs and a leading cause of outbreaks in swimming pools.

The new guidelines for fecal or vomitus in the Pool Contamination Guidelines stipulate a contact time of 15,530* (contact time is a measure of minutes x ppm chlorine) or a free chlorine residual of 10PPM for 25.5 hours prior to reopening a pool in the following situations:

- Loose stool in the pool
- Stool is not easily picked up from the pool
- Illness is the suspected cause of vomiting incident in the pool

The complete guidelines with the High Chlorine dosage

worksheet for those pools unable to close for at least 25.5 hours is available on the water recreation section of our website or you can stop by the office for a copy. Please note that spas should be drained and cleaned with a 100ppm chlorine solution then refilled prior to reopening.



For additional information or clarification on the guidelines please feel free to contact the Health Department or your pool inspector.

***A recent study indicated that pools that have 50ppm cyanuric acid in the pool were unable to achieve a 3-log inactivation of *cryptosporidium* at these guidelines. If your pool uses cyanuric acid it may want to consider extending the time the pool is closed to allow more contact time for essential inactivation of *cryptosporidium*.**

Extrapolation of the data in the study suggested it would take 30 hours at 40ppm free chlorine with a pH of 6.5 and a temperature of 77°F to achieve the 3-log reduction with the 50 ppm cyanuric acid.

Injury Reporting

Owner and operators of public swimming pools are required by RCW 70.90 and WAC 246-260 to report any serious injury, drowning or near drowning to the Health Department within 48 hours of the incident.



A serious injury means someone has called for emergency aid (such as "911") and/or the person needs immediate medical treatment at a clinic or emergency room and/or is admitted to a hospital.

The injury reporting form is a one page document that is required to be filled out and submitted to the department after any of these incidents. The most current injury reporting form is available in our office or in the water recreation section of our website.



Injury reports are used by the state health department to gather information throughout the state on current safety issues that maybe arising with swimming pools and spas. Any helpful information can then be sent back to all public pools to provide safer recreational activities.

It is suggested that blank forms be kept in your facilities Operation Manual. If you don't already have one it is an opportunity to start building one. An Operation Manual template can also be found on our website.

Pool Class

May 13, 2009, Cowlitz County Health Department conducted its pool operator class as a refresher for individuals who maintain public swimming pools or spas. Approximately half of the facilities in Cowlitz County attended.

The class covered basic pool chemistry and other operational issues involved with public pool operations.

A portion of the class was presented by Gary Fraser, Washington State Department of Health covering the Virginia Graeme Baker Pool and Spa Safety Act.

