



Targeted Constituents

● Significant Benefit		◐ Partial Benefit		○ Low or Unknown Benefit	
○ Sediment	○ Heavy Metals	○ Floatable Materials	● Oxygen Demanding Substances	○ Construction Wastes	
○ Nutrients	● Toxic Materials	○ Oil & Grease	○ Bacteria & Viruses	○ Construction Wastes	

Description

Chemical treatment of swimming pools and spas may prevent health concerns to bathers by killing organisms that live in the water. However, the chemicals that kill such organisms in pools and spas also kill aquatic life (fish, minnows, salamanders, crayfish) in creeks and streams that receive water with chemicals such as chlorine.

Suitable Applications

- Businesses or residential properties that own or maintain a swimming pool or spa
- Commercial contractors that clean and maintain pools and spas

Approach

Since a wide variety of pool and spa treatment chemicals exist, it would be impossible to address proper disposal methods for every available chemical used in the treatment of pool and spa water. Due to federal mandates, the City of Knoxville adopted a Stormwater and Street Ordinance to prohibit discharge of non-stormwater materials (see IC-01, Non-Stormwater Discharges to Storm Drains) such as chlorine, Baquacil, and other treatment chemicals into streets, ditches, storm drains, and natural streams.

The most common pool treatment is chlorine, which dissolves in water and is then very slowly released to the atmosphere as chlorine gas. This process is usually inhibited by the addition of other chemicals. Bromine is another type of pool chemical that is also commonly used. There are a large variety of chemical products which are frequently used to reduce algae growth, adjust pH, remove hardness or metals, remove stains, etc. Knoxville swimming pool and spa owners should use pool testing kits to monitor water conditions, and choose environmentally friendly products if available.

Swimming pool water will naturally release chlorine gas at a rate that is dependent upon water and air temperature, presence of chemical inhibitors, amount of sunlight, amount of wind, water depth and circulation, etc. The process typically takes many days and requires that water should be periodically tested to monitor chlorine levels.

Reducing or Eliminating Discharges

- Before buying chemicals, select a method of pool treatment that has been successfully used in the Knoxville area. Investigate and compare products to ensure that a proven method is selected. Select a method with the least toxic chemicals or chemicals that can be easily neutralized and removed from water.
- Retailers and manufacturers must make information readily available to customers, such as material safety data sheets (MSDS), with each chemical product to cover proper use of chemicals, safety issues, and safe disposal methods. All users of pool and spa chemicals should verify that the discharge and disposal process for

any water treated with chemical products will be able to comply with federal and state regulations in addition to the manufacturer’s recommendation.

- Do not overfill swimming pools and spas so that water is discharged with every splash and wave. Allow adequate freeboard for rainfall and storms. Splashes and waves should drain to a grassy area for ground infiltration.
- Most in-ground pool owners do not choose to drain the pool each year. Due to high groundwater in the Knoxville area, it is often beneficial to leave an adequate weight of water for in-ground swimming pool or spa to prevent cracking or uplift.

Recommended Disposal Alternatives

- Any swimming pool or spa water that has been treated by chlorine only and dechlorinated may then be discharged to grassy yards, streets or the stormwater system. Before discharging dechlorinated pool or spa water, check the water with a pool test kit to verify that it is completely dechlorinated. Dechlorinated discharges to streets and driveways should only occur in dry weather when it will not contribute to flooding for neighbors who live downstream. Do not discharge water during winter months for safety reasons if there is a potential for water freezing in the streets, curbs and gutters.
- Any swimming pool or spa water that has been treated by chemicals other than chlorine is expressly prohibited from discharge to the storm drain system, even if the chemical has been neutralized. Disposal options include: 1) discharging to the sanitary sewer system, 2) drain pool and spa water at a very slow rate to grassy yards where the water will soak into the ground, and 3) constructing an infiltration well or trench to allow water to soak into ground. Typical disposal method is to connect a hose from swimming pool to sanitary sewer system. Connection to sanitary sewer system must be approved by City of Knoxville plumbing inspector (215-2999). Do not discharge water onto or through neighbor’s yard or property. Due to clay soil types, infiltration rates will be very low and a percolation test may be necessary. An infiltration system may dissolve underlying natural limestone rock; geological information and advice should be consulted.
- Backwash water cannot be discharged directly to the stormwater system unless it is completely dechlorinated and not treated with any other chemicals. Typical disposal method for backwash is to connect backwash hose from swimming pool or spa to the sanitary sewer system using a licensed plumbing contractor to install backflow prevention devices. Connections to sanitary system must be approved by City of Knoxville plumbing inspector (215-2999) prior to installation. Alternate disposal method for backwash is to construct an infiltration well or trench as described in ST-03.

Limitations ■ Disposal methods that comply with the City of Knoxville Stormwater and Street Ordinance may not necessarily comply with federal, state, and county regulations. Resolve compliance issues prior to discharging water from swimming pool or spa.

References **30, 31, 32, vendor information** (see BMP Manual Chapter 10 for list of references)