**West Virginia Code**

| **Table 64-16 C - Water Quality Guidelines**  **Table 64-16 C - Water Quality Guidelines** | | | | |
| --- | --- | --- | --- | --- |
| **A. Disinfectant**  **Levels** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. Free chlorine**  **mg/l (ppm)** | **1.0** | **2.0 -3.0** | **5.0** | **Chlorine should be maintained at this level continuously. Super-chlorinate regularly. See B-1 below.** |
| **2. Combined**  **chlorine**  **mg/l (ppm)** | **None** | **None** | **0.5** | **Eliminated by super-chlorination.**  **If too high, you may have:**  **Sharp chlorinous odors**  **Eye burn**  **Algae growth**  **Bacteria growth** |
| **3. Bromine**  **mg/l (ppm)** | **2.0** | **2.0-3.0** | **5.0** | **Consult health dept. officials before use.** |
| **B. Chemical**  **Values** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. pH** | **7.2** | **7.5** | **7.8** | **TOO HIGH**  **Low chlorine efficiency Scale formation**  **Increased chemical demand Cloudy water**  **Eye discomfort**  **TOO LOW**  **Rapid dissipation of chlorine Eye discomfort**  **Plaster/concrete etching Corrosion of metals** |
| **2. Total alkalinity**  **as CaCO3**  **mg/l (ppm)** | **60** | **80-100 or 120** | **180** | **TOO HIGH**  **Increased scaling potential Cloudy water**  **pH maintained too high**  **TOO LOW**  **Corrosion tendency pH bounce** |
| **3. Undissolved**  **solids**  **mg/l (ppm)**  **(Turbidity)** | **None** | **None** | **None** | **TOO HIGH**  **Chlorine level may be too low**  **Filtration system may be inoperative**  **May lead to drowning due to decreased visibility** |
| **4. Dissolved**  **solids**  **mg/l (ppm)** | **300** | **. . .** | **2000** | **TOO HIGH**  **Chlorine may be less effective Salty taste**  **Add fresh water to reduce solids Dull water**  **Chemical balance difficult to maintain**  **Scaling may occur**  **TOO LOW**  **Total alkalinity may be too low Aggressive water** |

| **B. Chemical**  **Values (cont’d)** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| --- | --- | --- | --- | --- |
| **5. Hardness,**  **as CaCO3 mg/l** | **50** | **125** | **800** | **TOO HIGH**  **Scaling may occur Water has bad “feel”**  **Short filter runs**  **TOO LOW**  **Plaster or concrete etching Corrosion may occur** |
| **6. Copper**  **mg/l (ppm)** | **None** | **None** | **0.3** | **TOO HIGH**  **Staining may occur Water may discolor**  **Chlorine dissipates rapidly Filter may plug**  **May indicate pH too low Corrosion may occur** |
| **7. Iron**  **mg/l (ppm)** | **None** | **None** | **0.2** | **TOO HIGH**  **Staining may occur Waste may discolor**  **Chlorine dissipates rapidly Filter may plug** |
| **8. Manganese**  **mg/l (ppm)** | **None** | **None** | **0.05** | **TOO HIGH**  **Staining may occur** |
| **C. Biological**  **Values** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. Algae** | **None** | **None** | **None** | **Super-chlorinate or shock treat facility**  **Supplement with brushing and vacuuming**  **Maintain adequate free chlorine residual**  **Use approved algaecide according to label direction** |
| **2. Bacteria** | **None** | **None** | **Refer to 64CSR3** | **If bacteria count exceeds health dept. requirements:**  **Super-chlorinate recreational water facility**  **Follow proper maintenance procedures**  **Maintain proper free chlorine residual** |
| **D. Stabilizer** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. Cyanuric acid**  **mg/l (ppm)** | **10** | **30-50** | **100** | **TOO HIGH**  **May exceed health department regulations**  **TOO LOW**  **Chlorine residual rapidly destroyed by sunlight**  **NOTE**  **Stabilizer is not needed for indoor facilities**  **and should not be used in hot water facilities. Cyanuric acid may titrate as Alkalinity.** |
| **E. Algaecides** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. Quaternary**  **mg/l (ppm)** | **. . .** | **. . .** | **. . .** | **Not permitted in public recreational water facilities.** |

| **E. Algaecides**  **(cont’d)** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| --- | --- | --- | --- | --- |
| **2. Copper based**  **(nonchelated)**  **mg/l (ppm)** | **0.1** | **0.2** | **0.3** | **Ineffective against some algae.**  **Consult health dept. officials before using.**  **May contribute to staining.** |
| **3. Copper based**  **(chelated)**  **mg/l (ppm)** | **0.1** | **1.0** | **3.0** | **Ineffective against some algae.**  **Consult health dept. officials before using.**  **May contribute to staining.** |
| **4. Silver based**  **mg/l (ppm)** | **0.5** | **1.5** | **3.0** | **Precipitates with cyanuric acid.**  **Ineffective against some algae.**  **Consult health dept. officials before use.** |
| **F. Remedial**  **Practices** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. Super-**  **Chlorination** | **When Combined Chlorine**  **is 0.2 mg/l (ppm) or more** | | | **\* As needed** |
| **2. Required super-**  **chlorination**  **/shock chlorine** | **10\*** |  |  | **\*10 times combined chlorine reading.**  **Must be done when the facility is not in use.**  **May reopen when free chlorine is below 5.0 ppm.** |
| **3. Floccing** | **Not Recommended** | | | **Consult health dept. officials before using.** |
| **4. Water**  **Replacement -**  **Hot water facility** | **. . .** | **. . .** | **. . .** | **Change water and clean monthly as a minimum, more frequently when heavy use and chemical treatment difficulties are experienced.** |
| **G. Temperature** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. Water**  **temperature -**  **Hot water**  **facility** | **Patron preference** | **. . .** | **104EF** | **TOO HIGH**  **Excessive fuel requirement Increased chlorine use**  **Increased scaling potential Patron discomfort**  **Health threat to those with high blood pressure**  **TOO LOW - Patron discomfort** |
| **2. Water temp. -**  **Artificially heated** | **75 EF** | **. . .** | **90 EF** |  |
| **3. Air temperature**  **Indoor facilities** | **Water temp. minus 2EF** | **. . .** | **Water temp.**  **plus 8 EF** | **Excluding hot water facilities.** |
| **H. Water**  **Clarity** | **Minimum** | **Ideal** | **Maximum** | **Comments** |
| **1. Turbidity** | **Must be able to see main drain**  **or six inch black disk**  **on bottom of deepest part**  **from the sidewall.** | | | **TOO HIGH**  **Chlorine level may be too low**  **Filtration level may be inoperative**  **May lead to drowning due to decreased visibility** |