



Minnesota  
Pollution  
Control  
Agency

Water Quality

Wastewater  
Technical  
Review and  
Guidance

# DISINFECTION SYSTEM – REVIEW CHECKLIST

Water/Wastewater/#5.22, May 2001

FACILITY NAME

DATE

CONSULTING ENGINEER

SITE INSPECTION (DATE & INSPECTOR)

PLANNING OR DESIGN PHASE

Type of Disinfection  
(fill out appropriate section below.)

Pilot study  
(for disinfection, other than chlorine, pilot/full  
scale studies are recommended)

## A. Chlorination

1. Contact Basin Design/Detention Time  
(*>15 minutes at peak hour flow*)

a. L/W ratio(*minimize short-circuiting*)

b. volume

c. peak hourly flow rate

d. detention time at peak flow rate

2. Dosage

(*Normal domestic sewage effluent guide*)

| <u>Treatment Type</u>         | <u>Dosage(mg/l)</u> |
|-------------------------------|---------------------|
| A. <i>Trickling Filter</i>    | 10                  |
| B. <i>Activated Sludge</i>    | 8                   |
| C. <i>Tertiary Filtration</i> | 6                   |
| D. <i>Nitrified</i>           | 6                   |

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3. Chlorination Equipment and Supply

a. point of application  
*(preferably before contact chamber,  
such as influent pipe prior to  
chamber to provide mixing)*

b. stand by equipment/spare parts  
*(capacity to replace largest unit  
during shutdown with spare  
equipment to replace parts subject to  
wear or breakage)*

c. are scale provided?

d. mixing  
*(positively mixed effected in 3 seconds  
with flash mixer or turbulent flow)*

e. liquid chlorine storage  
*(non-metallic storage with secondary  
containment, storage limit  
approximately one month)*

4. Provisions for sludge removal  
*(duplicate tanks, mechanical scrappers  
or vacuum cleaning equipment)*

5. Location and space  
*(room near point of application, near  
ground level, sufficient storage area)*

6. Safety in chlorine supply room

a. isolated from other work areas  
*(gas tight, separate building or entry  
only from outside if connected with  
other building; include panic  
hardware;*

b. fire protection

c. floor drains and ventilation separated  
from other plant/buildings



- d. Inspection window indoor and separate wall.  
*(door window mandatory, separate wall window preferred)* \_\_\_\_\_
  - e. temperature control  
*(minimum temp. for disinfection equipment = 60°F; protection against excess heat; cylinder storage near room temp.)* \_\_\_\_\_
  - f. ventilation  
*(forced mechanical ventilation which provide one complete air exchange/min. when the room is occupied)*
    - 1) scrubbing provided or required by local Fire Marshall? \_\_\_\_\_
    - 2) fans and lights operated manually from outside \_\_\_\_\_
  - g. electrical  
    - 1) fans and lights operated manually from outside \_\_\_\_\_
    - 2) sealed electrical outlets provided \_\_\_\_\_
  - h. chlorine leaks  
*(automatic detection and alarm system)* \_\_\_\_\_
  - i. cylinders fastened to wall or otherwise stabilized \_\_\_\_\_
7. Sampling point provided? \_\_\_\_\_

**B. Dechlorination**

- 1. Is dechlorination required? \_\_\_\_\_

2. Dosage (sulfite ( $\text{SO}_2$ ))

| <u>Dechlor. Chem.</u> | <i>Theoretical<br/>Required per (mg/l)</i> |
|-----------------------|--|
|                       | <u>Chlorine</u>                            |
| Sulfur dioxide (gas)  | 0.9  |
| Sodium meta bisulfite | 1.34                                       |
| Sodium bisulfite      | 1.46                                       |

*Note: excess sulfur dioxide may consume oxygen. Consider reaeration.*

## 3. Equipment

*Multiple units should be considered to compensate for high and low flow ranges. This will minimize excessive application. Feed rates should be based on chlorine residual rates*

## 4. Detention time

*Minimum 30 seconds at peak hourly flow or max. rate of pumpage*

## 5. Standby equipment/spare parts

*Similar to chlorination above*

## 6. Storage room/safety

*Similar to chlorination above*

## 7. Sampling point provided

## 8. Is mixing provided.

**C. Ultraviolet**

## 1. Quality of effluent

*(at least 65% ultraviolet radiation transmittance at 254 nanometers and BOD and suspended solids always less than 30 mg/l)*

## 2. Lamp cleaning provided for?

**D. Ozone**

1. Evaluate on a case-by-case basis. Design standards, operating data and experience with this process are not well established.