FORMULA FOR **CT**

The following formula can be used to calculate the CT for a system using chlorine for disinfection, when there is chlorine added continuously to a stream of water in a pipe before the water gets to the first user.

C = chlorine concentration at first user (mg/l)
Q = flow rate (gpm)
D = pipe diameter (in)
L = length of pipe between chlorine injection point and first user (ft)

$$CT = 0.04 \times D \times D \times L \times C / Q$$

Example 1: A system injects a chlorine solution into the pipe immediately after the water is pumped from the well. The water goes directly to the building plumbing from the well. The well is 40 feet from the building. The pipe from the well to the building is 2-inch in diameter. The chlorine residual at the first "user" in the building is 0.2 mg/l.
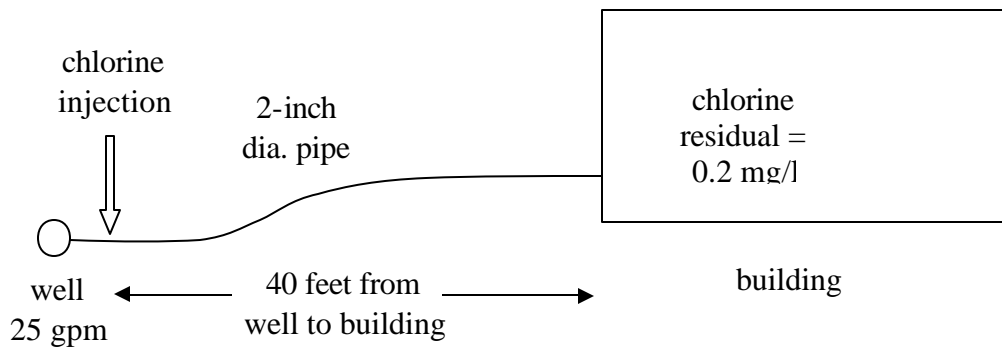
C = 0.2;   Q = 25;   D= 2;   L = 40   CT = 0.04 x 2 x 2 x 40 x 0.2 / 25 = 0.0512
In this case the CT < 2.0, so this system does not provide 4-log removal.

Example 5: A CUC well pumps at 50 gpm into a 4-inch transmission line. The water is chlorinated at the well. The first user is ½ mile from the well. The chlorine residual at the first user is 0.5 mg/L.
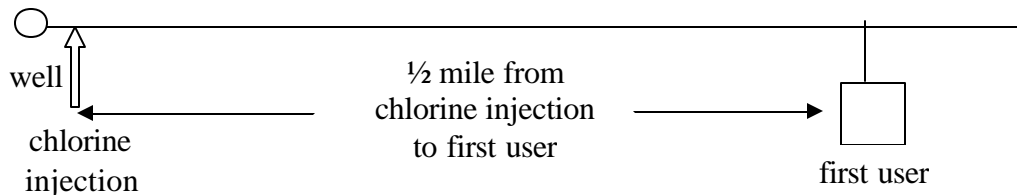
C = 0.5; Q = 50; D= 4; L = 0.5mi x 5280ft/mi=2640 ft
CT = 0.04 x 4 x 4 x 2640 x 0.5 / 50 = 17
17 is greater than 2.0, so this system meets the 4-log virus treatment.