

## **Abstract**

**Introduction:** Human life and health depend more than anything on healthy drinking water, and the basis of human life is related to healthy water. Disinfection of drinking water is done with disinfectants such as chlorine. In the water treatment industry, the use of chlorine in effective disinfection and in the destruction of pathogenic microbes has a long history. In relation to the measurement of residual chlorine in water, the behavior of chlorine or its compounds in water is important, and It depends on various factors such as turbidity, temperature, pH, contact time, chlorine concentration, type of organism, type of distribution network, method of chlorination, etc. Therefore, this study was conducted to investigate the changes in the concentration of residual free chlorine at the point of consumption and distribution network of drinking water in the city of Parih Sar and the factors affecting it in 1400.

**Materials & Methods:** The statistical population in this study was the drinking water of Parih Sar city to measure the concentration of free chlorine remaining at the point of consumption and distribution network according to the population of the city which is over 10 thousand people, in terms of work accuracy and the effect of parameters (temperature, turbidity, pH, coliform) 420 samples in the autumn quarter, one month in a row, at least 10 samples daily from the point of consumption and 10 samples from the distribution network (10 points of the city) and the parameters of residual free chlorine, temperature, turbidity , pH and coliform (at points in the network where the concentration of residual free chlorine is not standard) were measured by standard methods. For sampling according to the instructions of the Ministry of Health (n = 10 and n-0.1n), the city was divided into 9 equal squares and daily sampling was done from 9 points according to the standard instructions. The remaining 1 sample was assigned to either the end of the grid or blind spots or dense points. Data analysis was performed using SPSS software, standards and guidelines.

**Findings:** Out of 210 samples taken for consumption point, the range of parameters of free residual chlorine concentration was 0.2-1.5 mg / l, temperature was 10.3-23.4 ° C, pH was 6.8-7.8 and turbidity 0.23-4.75 NTU and among the 210 samples reported for the distribution network, the range of parameters of free residual chlorine concentration is 0.5-1 mg / l, temperature is 11.3-21.3 ° C, pH 6.8-7.8 and turbidity of 0.18-2.42 NTU was calculated and no general form was observed in high turbidity points. Analyzes showed that there was no significant relationship between the concentration of residual free chlorine at the point of consumption and the distribution network. Residual free chlorine changes both at the point of consumption and in the distribution network were independent of changes in temperature, turbidity and pH (distribution network) and only a positive relationship was established between the concentration of free chlorine remaining at the

point of consumption and pH at the point of consumption. Is. Also, the values reported by the health network were slightly different from the values measured in this study, but all concentrations were within the standard range of 1053.

***Discussions & Conclusions:*** Except for 1 case out of 210 free chlorine concentration measurements at the point of consumption and 10 out of 210 free chlorine concentration measurements remaining in the distribution network, all results related to the measurement of residual free chlorine concentration, temperature, turbidity and pH are all in accordance with There were standards and guidelines.

***Keywords:*** water resources; Consumption point; Drinking water distribution network; Turbidity; coliform; Residual free chlorine.