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| This study was designed to high light about the effect of these factors individually or in combination that shared in the reduction of the chlorine activity and efficiency for meeting the bacterial standards as a disinfection agent for drinking water at Baghdad city! Al- Rasafa.  To achieve our objectives one hundred and thirty six (136) drinking water samples were collected from July up to the end of November 2007 from the houses of Baghdad's citizens! Al- Rasafa to find out the concentration of free chlorine in drinking water that affect the coliform counts, besides that, to study the effect of the temperature, pH and oxidation- reduction potential of water on the stability and germicidal action of the chlorine in water.  The statistical data revealed that there was a significant negative correlation (P < 0.01, r = -0.050) between the chlorine sanitizing efficiency with both the concentration of the free chlorine and its contact time with microorganisms while the effect of temperature pH and oxidation- reduction potential of water showed non-significant effect on the chlorine sanitizing efficiency.  In order to find out the drinking water sanitizing efficiency by chlorine at the consumer in absence of the advanced digital instrument or to confirm the sensitivity of such instrument chlorine disk diffusion test, was established by using the same cultural media that was used for antibiotic sensitivity test except replacing the antibiotic discs by blank discs that were saturated by the chlorine solution and comparing their results with that accomplished by the advanced digital instrument and for that reason 15 drinking water samples were collected and tested by the above mentioned methods. The results of statistical analysis showed that a significant positive linear correlation was between the chlorine concentrations with the diameter of the inhibitory zone which was similar to our values by using colorimeter.  Data revealed that the free chlorine in drinking water was below the standards set by the World Health Organization (WHO) in the period from July up to the end of August 2007, where the highest coliform counts in drinking water were established during the above mentioned months, while the coliform counts decreased in the period from September up to the end of November 2007 due to the utilization of higher concentrations of total chlorine in drinking water in municipal water supply, in addition to that, the effect of some variables such as quantity of free chlorine, temperature, pH and oxidation- reduction potential of water on the sanitizing efficiency of the chlorine were studied. | | | | | | Abstract |