

## EVALUATION OF WATER QUALITY PASSING THROUGH DISTRIBUTION NETWORKS OF FOUR REGIONS IN THE BASRAH PROVINCE CENTER

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**Abstract:** The tap water samples transferred from the water distribution networks were collected from four regions located in the Basrah governorate center, during autumn, winter and summer seasons, the regions are: Hay - Alhussain, Al - shamshomeya, Dur - Aldobat, Al - Qebla, the regions were supplied with water from three water purifications plants. Some physical and chemical properties have been measured at the consumer's tap in the water distribution networks for the four regions, as well as the produced water in the three purifications plants. The results showed that the summer season recorded the highest pollution rate, followed by autumn, then winter season. Studies also showed that the water delivered to the consumer is not suitable for drinking, where it recorded a violation of the specifications approved by some parameters. The study showed pollution in all networks of the four regions, and the Hay - Alhussain region recorded the highest pollution, while the lowest pollution was recorded in Dur – Aldobat region, and that there are indications of pollution of water reaching the consumer at the four areas with wastewater due to damage in the water conveying network.

**Keywords:** water distribution networks, water purifications plants, pollution, specification limits.

### Introduction

Variations in the chemical composition of river water are very important in the field of water purification and distribution for different uses. The qualitative evaluation of water through studying the chemical and physical properties gives important indicators about the quality of water before it reaches the consumer. Water is considered safe to drink when it is within the qualitative specifications of water, which are determined by governments and the World Health Organization (WHO).

Projects for supplying citizens with pure water are very sensitive and important projects since they relate to the most important human being needs for the life as well as his health. Therefore, If people supplied with a healthy and continues water, their life would be safer and happier. On the contrast, if the water supply was unsafe and unhealthy, it could cause diseases and spread epidemics in cities and communities as water is considered a major source of infection. Statistics show that %80 of diseases in the world is transmitted by water (Haseena, et al, 2017). In Basrah, the deterioration of water sources has become a major crisis in the summer of 2018 where at least 118,000 people were hospitalized due to symptoms that identified by doctors as related to water quality (Human Rights Watch, 2019). Water means money. Rather, it is more valuable and