

**WATER RESOURCES OF THE RIYADH AREA  
AND THE CHEMICAL ANALYSIS OF THE MINJUR  
AND JUBAILA WATER, SAUDI ARABIA**

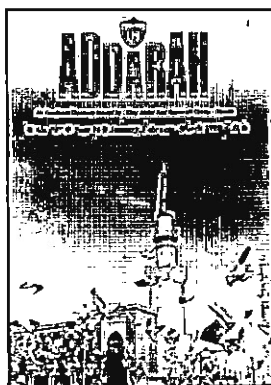
**BY  
DR. AHMED ALMOHANDIS**

**- ABSTRACT -**

*This paper summarizes the geological formations of the water resources of the Riyadh area , Saudi Arabia . The rocks of the Riyadh area, especially the carbonates, are characterized by their hardness and geographic extensions. These rocks contain a lot of faults and parallel fractures which facilitate the existence of pot holes and voids during the rainy periods.*

**The** Riyadh area is situated on a plateau which is composed of limestones of the Jubaila and Arab Formation . The paper summarizes the nature of the most important aquifers of the Riyadh area ; namely Minjur , Dhurma , Jubaila and Biyadh Formations and their water quality. The chemical analyses of waters from the Jubaila and Minjur Formations show that they contain more concentrations of calcium , sodium , magnesium, chloride and sulphate than potassium and carbonates . The concentrations of iron , copper and the toxic elements such as arsenic, cadmium, lead and selenium are less than 0.01 ppm. The concentrations of the above elements are within the international acceptable limits.

*The chemical analyses show the water quality in certain places and time of sample collection. The Jubaila water is harder than the Minjur water. The Minjur water can be used for drinking purposes after simple chemical treatment while the Jubaila water would require necessary chemical treatment before its use as drinking water*



• Cover Picture •

*The writers' views do not necessarily reflect those of the magazine*



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**SUMMARY**

**THE WELFARE DEEDS AND ACTIVITIES  
OF THE ABBASID CALIPH AL- MAHDI  
AL-ABBASI TOWARDS**

**THE PEOPLE OF THE HIJAZ ( 158/774 - 169/785)**

**by Dr. Gethan Ali**

The article deals with the welfare activities of the Abbasid Caliph Al-Mahdi towards the people of Hijaz during his Caliphate . He used to visit the two Holy cities of Makka and Medina while performing the annual pilgrimage and distribute large sums of money which he brought either from Iraq or from the other regions of the Islamic State, such as Yemen and Egypt. These gifts were not only in money but also in goods of material value such as clothes, food, etc. These gifts were not only given to the elites but also to the commons. Furthermore, the Caliph himself used to look for and contact the needy and the poor to give them money and gifts.

The Caliph also took great care of the cultural development and construction in Hijaz. So he ordered the expansion of the Grand Mosque twice and the Prophet Mosque once. In addition, he ordered the repair and maintenance of various public services inside and outside the cities.