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Environmental Problems of Tuz Lake (Konya-Turkey)[#]

H. Nagehan UCAN[*], Sukru DURSUN

Selcuk University, Engineering and Architecture Faculty, Konya, Turkey

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Abstract: Tuz Lake is second biggest lake as a surface area in the Turkey. Tuz Lake has an important salt production potential for Turkey and occupies a wide area in the central part of Anatolia. The Tuz Lake basin occupies about 1,500 km2, and located between several cities and towns (Konya, Aksaray, Cihanbeyli, Kulu, Şereflikoçhisar). The lake altitude is 905 m and distances maximum 80 and 50 km, North to South and East to West respectively. About 3 billion population are living around Lake. It has small catchment basin sources. Environmental problems have increased on a World basis during the last century. Water pollution is one of the important problems discharged form the neighbour cities and towns. So that, salt production form the lake has some difficulties due to industrial pollutants. An other and main problem of the lake decreasing water level that it is seen third biggest lake after Beyşehir lake. It seen to be dry in 10to 20 years period. The aim of this study, investigation of environmental problems of Tuz Lake and to improve some suggestions on these problems.
Keywords: *Tuz Lake, Salt, Environment, Pollution, Closed Basin, Wetland.*

Introduction

Environmental problems have increased on a World basis during the last century. Water pollution is an important problem with the needs to provide drinking and cleaning water for the for the increasing world population. In recent years, fresh water sources are suffering due to contamination with waste-water discharge. In some developing countries, water treatment plants are still not sufficient to cope with a national requirement, and some others do not have any establishment, and they also do not have enough clean water sources.

The soils of Tuz Lake have been developed on the ancient lake main sediments and very flat topographic volcanic rocks. Tuz lake has an important salt potential in Turkey and occupies a wide area in the central part of Anatolia. The Tuz lake basin occupies about 15000 km2, several cities and towns (Konya, Aksaray, Cihanbeyli, Kulu, Şereflikoçhisar) also surround the lake).

There are a number of industrial factories in Konya which are about 10000 small or medium sized manufacturing units and 50 high standard industrial plants. These industrial plants are discharging all their wastewater to the lake by the main drainage channel of Konya. There is no active wastewater treatment plant in Konya yet. After the investigations done by the University of Selçuk on the drainage channel, a couple of wastewater treatment units have been planned by the local authority which is supported financially by the Turkish Government to save Tuz lake, but there is no activity on this project yet. It is already late to start construction of this unit, considering the time necessary to set this unit up. With increase in population, similar activities must be started as soon as possible in Aksaray before any dangerous problem occur.

Main Matter of The Tuz Lake

Pollution of this lake

1. Not enough valley control and not enough sewerage system purification (microbiological, biological and physical pollution, detergents)
2. Eutrification dangers
3. Not control rushes and tree cutting, conflagration and erosion
4. Originating from agricultural (pesticides, nitrogen, phosphorus and heavy metals)

[*]*Corresponding: E-mail: nagehanucan@selcuk.edu.tr; Tel: +90 332 2232062 Fax: +90 332 2410635*
[#]*This study has been presented 24-25 April 2009-alblakes09 Pogradec Albania,*

5. Boat oils (lead and grease etc.)
6. Becoming industrialized (industrial wastes)
7. Become to closer of wastes to lake

Reduced of the lake water

1. Insufficient water and falling
2. Filling of lake wide mouthed with erosion
3. Absorbing too much water
4. Planning new irrigation projects that can be risks

Spoiling biological balance, variety of the lake and spoiling nature life in ecosystem

1. Chemical pollution and accumulation
2. Lake base vegetation and variation vegetation at islands
3. Being reduced amount fish and bird kinds
4. Insufficient of AR-GE

Water pollution in Turkey, especially at the metropolitan cities (Istanbul, Izmir etc.), is the most important environmental problem. The sewage of these cities is sent directly to seas, bays or lakes. In previous years, very important water pollution problems have occurred around Istanbul and Isomer and the effects of previous problems are still continuing in these areas.

Tuz lake water could be classified as a Na-Cl type brine with more dilute compositions in the deep zone. Salt in the Tuz lake water occurs from evaporates in the bottom of the salt layer. The water of (meteoric origin) Tuz lake has more dissolved matter than sea water.

Concentration of oil and grease was very high in Uluırmak stream and this indicates that untreated industrial liquids are directly given to wastewater system. In the region, industrial activities increased in recent years and some new establishments are under construction. In addition to organic matter, a number of cations and anions were also found in the stream which takes all these ions to lake. Heavy metals in these ions may affect vegetation around the stream and the lake. A number of animals living in this stream might be already affected. If these chemical constituents are not controlled, they will affect human life indirectly and possibly directly.

Figure 1. Location of Tuz Lake

Some scientist indicate that the pollution situation is of major concern in the Southern boundary of Tuz lake which is coming from Konya, but there is not enough scientific investigation in the Eastern boundary. In the Eastern boundary of Tuz lake, there are two main pollution sources, Aksaray and Şereflikoçhisar.

However, there are some environmental problems in the Konya Closed Basin, such as scarcity of water supplies in the region for realization of the planned irrigations, since water storage difficulties owing to geologic and topographic characteristics of the area and drainage problems of irrigated agricultural areas. There will be water shortage in the basin and irrigation water demand should be re-calculated.

Water losses should be kept to a minimum so that the amount of water obtained from water resources can be reduced and eventually the possible biological and ecological adverse impacts of the project will decrease and the diversity of species of flora and fauna will be preserved and endemic species will be protected. With respect to the water conservation, the water level of Tuz Lake should not be reduced since water losses by leakage and evaporation will be enhanced at a low level. In order to achieve the economic use of the water modern irrigation methods should be applied in conjunction with the education program for the farmers. The use of treated water should be considered and treated and reclaimed water into the water bodies and the construction of an effective drainage and irrigation system are strongly advised.

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