

Chapter one

INTRODUCTION

1.1 General:

No drinking water is truly pure. Instead, water contains minerals and other substances dissolved from the surrounding rocks and environment. Equipment used to analyze water samples varies in their ability to detect dissolved substances and other impurities, especially at low levels. Some highly sophisticated and sensitive instruments can find and report minute amounts of many impurities in drinking water. Analytical results sometimes report zero amounts of some contaminant but should properly report it as $<$, less than, whatever the detection limit of the analytic equipment or methods. It is important to make this distinction because there could still be a significant amount of a contaminant that is present at less than the detection capability of a crude analysis. However, it should also be noted that just because a very good analysis can detect a measurable amount of a contaminant, the tiny amount of contaminant may not necessarily be significant. It is the purpose of the drinking water standard to tell us at what level the contaminant is considered to be significant. Therefore, it is not only important to have water tested, but it is important to identify the methods used in the analysis and the detection limit for the method.

Thousands of contaminants might be present in water, and it would normally be much too expensive to test for every possible contaminant. However, there are some simple, inexpensive tests that can act as red flags for possible contamination. High conductivity and total dissolved solids, i.e., TDS; tests suggest there likely are high levels of some kind of contamination. These tests will not indicate specifically what the

contaminants are but would indicate that additional testing is probably recommended. Low conductivity and TDS results would suggest that there is no serious water contamination, but it is possible for this type of water to be corrosive and cause leaching of trace metals from household plumbing.

In water analysis, if the water evaporated, solids are left. These solids can be defined in numerous ways such as total solids, suspended solids, dissolved solids, settleable solids, volatile solids, and fixed solids. All these types of solids may affect water or effluent quality adversely in a number of ways. Waters with high dissolved solids generally are of inferior palatability and may induce an unfavorable physiological reaction in the transient consumer. For these reasons, a limit of 500 mg dissolved solids/L is desirable for drinking waters. highly mineralized waters also are unsuitable for many industrial applications. Waters high in suspended solids may be esthetically unsatisfactory for such purposes as bathing. Solids analyses are important in the control of biological and physical wastewater treatment processes and assessing compliance with regulatory agency wastewater effluent limitations.

Tigris river is the eastern member of the two great rivers that defines Mesopotamia. It is important to keep the river pure due to its many benefits. Some of impurities are total solids(TS), dissolved solids(DS) and suspended solids(SS).

1.2 objective of the study:

The project's aim is to take apart of Tigris river, from north to south of Baghdad about 37 km length, starting from sharq dejla water treatment plant to al-rasheed water treatment plant and studying the spread of total

solids, suspended solids and dissolved solids in it as a result of waste water being thrown in the river.

1.3 limitations:

Some limitations are imposed on this study such as:

1. The number of samples taken during the in tier work. Because of time issues only samples of 4 month are taken and tested in laboratory.
2. The number of water samples in each month. Only eight samples were taken in each test because it is the number of water treatment plants existing in the taken part of Tigris River.

Note that the samples are taken from the intake of water treatment plants in order to make sure that the samples are taken from the same place in each month.

1.4 organization of the study:

The reviews on total solids, suspended solids and dissolved solids along with reviews on Tigris River are presented in chapter two. Water quality requirements and standard units are presented in chapter three details of the experimental work and laboratory procedures are presented in chapter four. Chapter five includes the result of test and their analysis. Finally chapter six deals with the results, conclusion and recommendations.