



## Save Water by Safe Water Storage

*Eng. Akbar Ali Chaudhry  
Food Studies & Surveys Officer  
Dubai Municipality  
Dubai, UAE*

In the Emirate of Dubai- A modern city of safe potable water, it has always been a top priority of the government to provide the public with the best available services which are enjoyed around the globe. Water has been one of the top agenda as well. The following types of water are available publically in the Emirate of Dubai.

## 1. Types of Water:

### A. Bottled Water:

- I. Produced in the Emirate of Dubai: Purified and packed within the emirate.
- II. Imported Water: Various brands from different countries

### B. Un-bottled Water:

- I. Tap Water: Supplied by DEWA (Dubai Electricity & Water Authority) to the buildings (commercial & residential)
- II. Bulk Water Tankers: It is supplied through the water tankers where normal distribution system is not available yet.

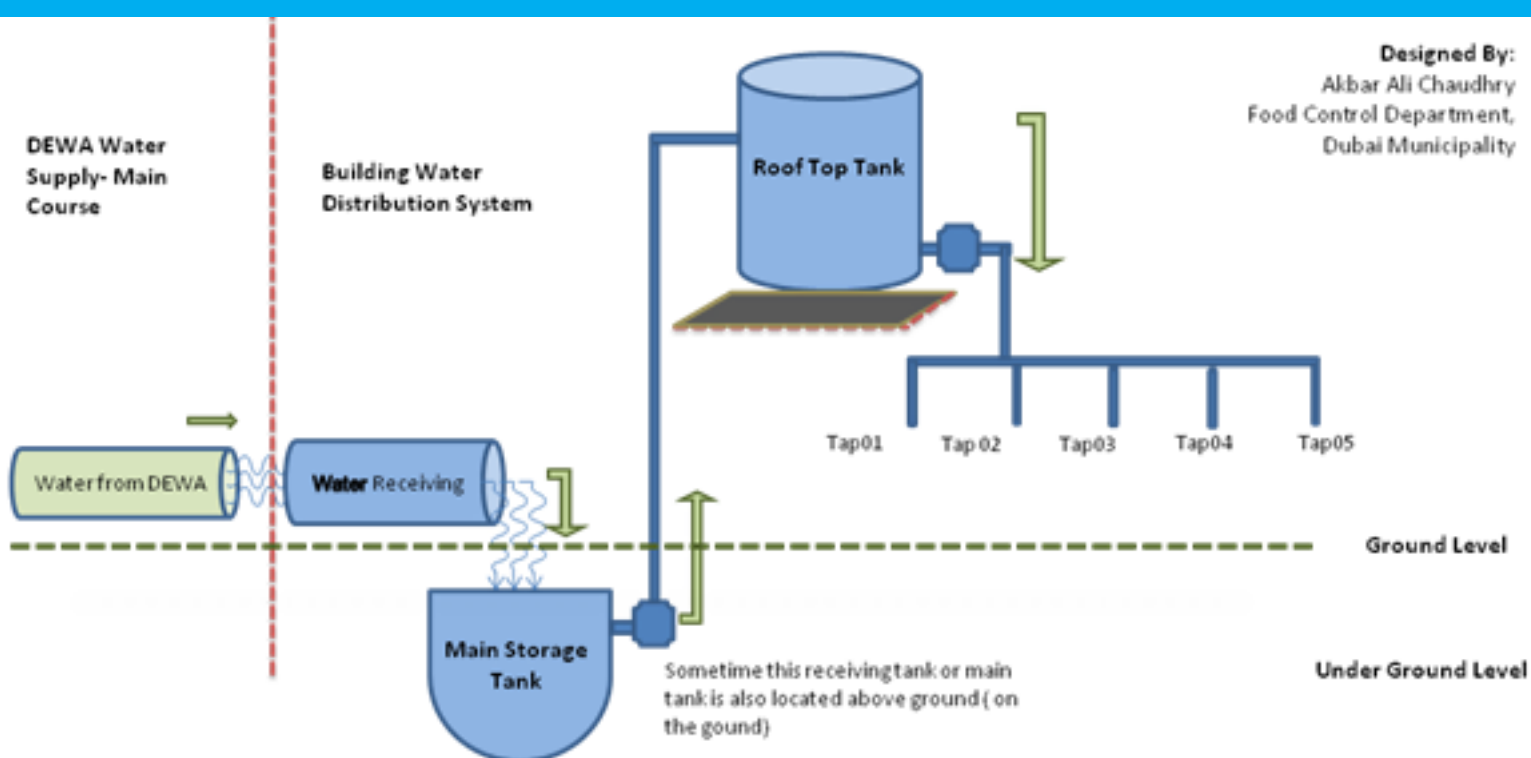
It has been noticed that the un-bottle potable water has been found with very more issues and challenges as compared to the bottled water. Un-bottled water is treated and supplied by DEWA (Dubai Electricity and Water Authority) through its distribution channels network in the city of Dubai. This water is produced as per the UAE potable water standards and tested as per local applicable standards before its regular distribution. Now the question arises, if the water is of good quality at the main source and up to the standard then what are reasons that could affect the water quality & safety till it reaches the end consumer?.

To diagnose the real cause, we must overview the water flow and its storage till it approaches to the end consumer or resident. The water from the DEWA main course is supplied to the building which is distributed to building internal main pipeline leading to the storage tank(s). So the following segments of the water distribution channel cannot be ignored which are involved within the building for water storage distribution system till to reach the end consumer/resident up to the tap:

1. Water Receiving Channel to Main Water Storage Tank: Normally to a Ground Tank/Main Water Storage Tank
2. Main Tank Water Storage
3. Water transfer channel from Ground Water Tank/Main Tank to Roof Top Tank
4. Roof Top Tank Water Storage
5. Building Water Distribution System for residential or for commercial usage.

## 2. Sources of Problems & Contamination:

These above stated 5 steps/segments are of too much significance while doing the risk assessment and to set the water safety plan to assure the water safety. As these are involved before the water is consumed by the residents as crucial points. Most of the time the water storage tanks and water distribution system within the building has been noticed as the root cause of any water contamination. The following diagram clearly gives an idea how the water is distributed to the residential and commercial building units.





Possible sources of contamination are the building water storage tanks and water distribution channels which have not been cleaned as per the cleaning frequency endorsed by the Dubai Municipality which is every 6 months. Some buildings give impression as the water tank has never been cleaned up since its establishment or the cleaning frequency has not been followed.

### **A. Contaminants:**

Contaminants mean the undesirable and health hazardous substances which are introduced into the water by any possible means. This contamination may lead to a serious health issues. There are variety of problems noticed which fall under the following three categories:

- I. **Physical:** There are certain physical contaminants which normally include Algae, Fungi, sand, dust, rust, insects, birds or animals' body parts of the birds and any other objectionable foreign matter which is visible with the naked eye. These physical contaminants could also be a source of microbial contamination depending on the situation, condition and level of contamination.
- II. **Chemical:** There are possibilities of the chemical contamination, e.g. any contamination from a newly installed water tank, bad quality of water tank material, building paint, pesticide used in the building and its storage, Cyanotoxins (These are toxins produced by bacteria called cyanobacteria (also known as blue-green algae). Unapproved cleaning chemicals & disinfectants or Sanitizers and DBPs (Disinfection By-Products), dead and spoiled animals or bird's body parts.
- III. **Microbial:** All the harmful germs including; harmful bacteria (Cryptosporidium which may occasionally pass through the water filtration system and causes gastrointestinal disease called Cryptosporidiosis), viruses & fungi etc.

For microbial quality verification, indicator organisms are generally monitored. The most widely used verification system is to use the fecal indicator bacteria E.coli or thermo tolerant coliforms at the representative points in the water supply system (Whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes may cause short term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

Heterotrophic Plat Count or Clostridium perferingens may be used for operational and investigative monitoring for better understanding of the water supply system.

### *B. Reasons/Sources of Contamination:*

- I. Tanks Structural damages: Lids damages, very old tanks with cracks, internal surface damages of the water channels & tanks and rusting.
- II. Sand storms are possible source for such contamination with the open lid tanks.
- III. Birds & animals sitting on tank for drinking water and their droppings.
- IV. Cross contamination of the potable water with the drainage & waste water because of improper building design & layout.
- V. Improper cleaning and untimely cleaning of water tanks.
- VI. Use of un-approved cleaning and disinfection chemicals.
- VII. Use of un-trained cleaning staff.
- VIII. Use of un-approved cleaning company for the tank cleaning.

If we can control these reasons affecting water quality then this tap water which is a potable water can be used for drinking, cooking and for any other normal use.

### *C. Responsibility (ies):*

A good quality potable drinking water is converted to a bad quality of water by not following the Dubai Municipality regulations for water storage, water tanks cleaning. So responsibility to keep the water up to the standard lies with all the residents, landlords and property owners to take this matter seriously and provide with their observations and feedback to the concern responsible person or department. The government departments are monitoring the water safety issues on regular basis.

