

Chapter 1

Introduction

Water covers nearly 80 percent of the Earth's surface, yet less than 1 percent can easily be cleaned for drinking. The vast majority of water is ocean or sea which is too salty to imbibe without expensive treatment (Wendy Koch, 1996). Humans need water to live. It makes up two thirds of our bodies and we cannot go much more than three days without it.

Tap water supply comes from surface water and ground water. However, in the Klang Valley in Malaysia, most of the tap water supply comes from surface water sources which include rivers, lakes and reservoirs. However, groundwater is being used on a considerable scale for public consumption in other states of Malaysia; for example, in Kelantan, Perlis, Terengganu, Pahang, Kedah, Sarawak and Sabah, ground water is pumped from wells that are drilled into aquifers. Aquifers are geologic formations that contain water. The quantity of water in an aquifer and the water produced by a well depend on the nature of the rock, sand or soil in the aquifer where the well withdraws water.

The average water consumption varies considerably throughout the world and is closely related to the level of industrial development. The average annual water use per capita in United States, Canada, Belgium, India and China in gallons is 525,000 , 310,000 , 221,000, 132,000 and 122,000 gallons respectively (Van Der Leeden, 1990). These consumption figures comprise residential, industrial and agricultural sectors (Refer to Appendix 1).

Usually a small portion of the tap water supplied by the public water systems is actually used for drinking. Households use most of the water for other purposes, such as toilet flushing, bathing, cooking, cleaning and lawn watering. The consumption pattern at homes also varies during the day. According to the Residential Water Use Patterns, (AWWRF, 1993) the lowest rate of use is between 11.30 pm to 5.00 am. The high rate of use is between 5.00 am to noon with an hourly peak use from 7.00 am to 8.00 am. The moderate use is from noon to 5.00 pm with a lull around 3.00 pm. There is also a high evening use between 5.00 pm to 11.00 pm where the second minor peak is between 6.00 pm to 8.00 pm.

Lately, consumers who once gave little or no thought to the water that comes from our taps are increasingly having doubts on the safety of drinking tap water. While tap water that meets federal and state standards generally is safe to drink, there are increasing worldwide concerns on the quality and availability of drinking water. Malaysia like any other countries in the world is not spared from the concerns like microbiological and chemical contaminants which can enter our water supplies. These pollutants can be the results of human activity or can be found in nature. For instance, chemicals can migrate from disposal sites and contaminate the sources of drinking water. Animal wastes and pesticides may be carried to lakes and streams by rainfall runoff. Human wastes may be discharged to receiving waters that ultimately flow to water bodies used for water supply due to improper sanitation. Besides that, there is a worldwide scarcity of water source which is suitable for drinking water as the world population keeps growing. This problem has been accentuated in Malaysia due to the migration of villagers to suburban and urban areas.

The water scarcity was most prevalent when Malaysia was hit by a bad dry spell from March to October of year 1998. Following this, actions were taken to improve the water level in reservoirs which led to water rationing in most parts of Klang Valley and in certain extreme cases water supply was only available for a day in a week. During this period, the water quality deteriorated. In some areas, tap water and water from static tanks were murky. A citation as reported on 28 April 1998 in the Malay Mail. "Water samples pass muster! Some 30 percent of samples taken from water tankers, feeder points and static tanks during the first three weeks of the water rationing exercise have been found to be murky. Of the 220 samples taken from lorry tankers by the Selangor Health Department, 87 were found to be murky and exceeded the Health Ministry's guidelines on turbidity". This occurrence has provoked consumer reaction with regard to tap water quality. In Malaysia, the water leaving the reservoir is tested before it enters the distribution system but there is little information on what happens along the distribution system.

The aim of this work is to find out some of the physical and chemical parameters in our tap water which are of health and aesthetic concern and to study the consumers' response to the quality of tap water. The field work includes collection of tap water samples and conducting survey on consumer's feedback regarding the physical quality of their tap water in 20 adjoining areas. These 20 areas are SS 1, SS 2, SS 3, SS 4, Sunway, Subang Jaya, Subang USJ, Puchong, Sri Damansara, Damansara Jaya, Tropicana, Bandar Utama, Taman Tun Dr. Ismail, Bangsar, Section 12, Section 14, Section 17, Section 19, Section 10 and PJ Old Town. These areas are highlighted in yellow as shown in Figure 1.

According to informed sources, the tap water from SS 1, SS 2, SS 3, SS 4, Subang Jaya, Sri Damansara, Bandar Utama, Damansara Jaya, Tropicana, Taman Tun Dr. Ismail, Section 12, Section 14, Section 17, Section 19, Section 10 and PJ Old Town originates from Selangor river (Sungai Selangor). The tap water from USJ, Sunway and Puchong originates from Semenyih river (Sungai Semenyih) whereas the water from Bangsar originates from Klang Gates Dam.