

Drinking Water

Drinking water is estimated that acclimatised individuals at rest consumes around 2 litres of water per day. This value may rise dramatically in more unfavourable conditions (warmer climates, increased exertion etc.) The following values represent the average balance of daily input and output of water.

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Intake/Production:

- 1-2 Litres_ direct ingestion as drink
- 800-1000ml_ food
- 200-400ml_ oxidation of food

Output:

- 800-1000 Litres_ air vapours on expiration
- 200ml_ sweat
- 200ml_ feces
- 1-2 Litres_ urine

Quality Requirements

Water quality refers to the physical, chemical and biological properties of water. The parameters set to evaluate water quality depend on its intended use. Laboratory analysis is used to assess water quality.

The following factors are important in determining the quality of drinking water:

Environment

A pathogen and toxic contaminant free environment must be maintained. The concept of water protection zones (ground water) is concerned with the control of land areas and water ways within the proximity of a water plant reservoir.

Organoleptic Requirements

Concerned with those features of water as experienced by the senses e.g. smell, taste.

The following factors are to be considered.

pH: 6-8

Temperature: (ideally) 10-12 °C

Colour: colourless

Odour: odourless

Taste: refreshing; This depends on the level of hardness of the water. The hardness is expressed in terms of calcium carbonate (CaCO_3) concentration.

Technical Requirement

These are concerned with those properties of the water that could cause damage to, or compromise the integrity of the water purification and distribution systems. These factors must be taken into consideration and the required adjustments must be made which usually involves limiting and regulating certain elements and compounds which

may not be of any direct danger ,as such, to humans (e.g. Excessive carbon dioxide or manganese may damage distribution pipes)

Composition

There are no universally recognized and accepted international standards for drinking water. In addition, there is considerable variation in the permissible doses of water components between countries. Most developed nations issue guidelines concerning the quality requirement of mass supplied drinking water. In most cases, these are merely guidelines and are not legally binding, the exceptions being, the USA and European Union. In nations in which no national guidelines or recommendations exist, the WHO's recommendations may be used. For example, in the U.S, the regulatory body is the Environment Protection Agency (EPA). In accordance with the 'Safe Drinking Water Act' it specifies both primary standards (regulation of substances that effect human health) and secondary standards (concerned with organoleptic qualities) of water.

Bottled Water

Often, the governing bodies that specify the legally permissible amounts of dissolved substances for public drinking water supplies are not responsible for private drinking water well. If bottled water is drawn from such wells and springs, the composition and quality of the water is therefore totally governed by the supplier. However, in some countries, certain levels of regulation do exist. For example, in the U.S, The Food and Drug Administration (FDA) establish limits to contaminants in bottled water.

Links

Related Articles

- Individual Sources of Drinking Water
- Mass Water Supply

Bibliography

1. Vladimir Bencko et al: Hygiene and Epidemiology, (Selected Chapters) _ Charles University Press.
2. Joseph LaDou: Current Occupational and Environmental Medicine_ Lange,