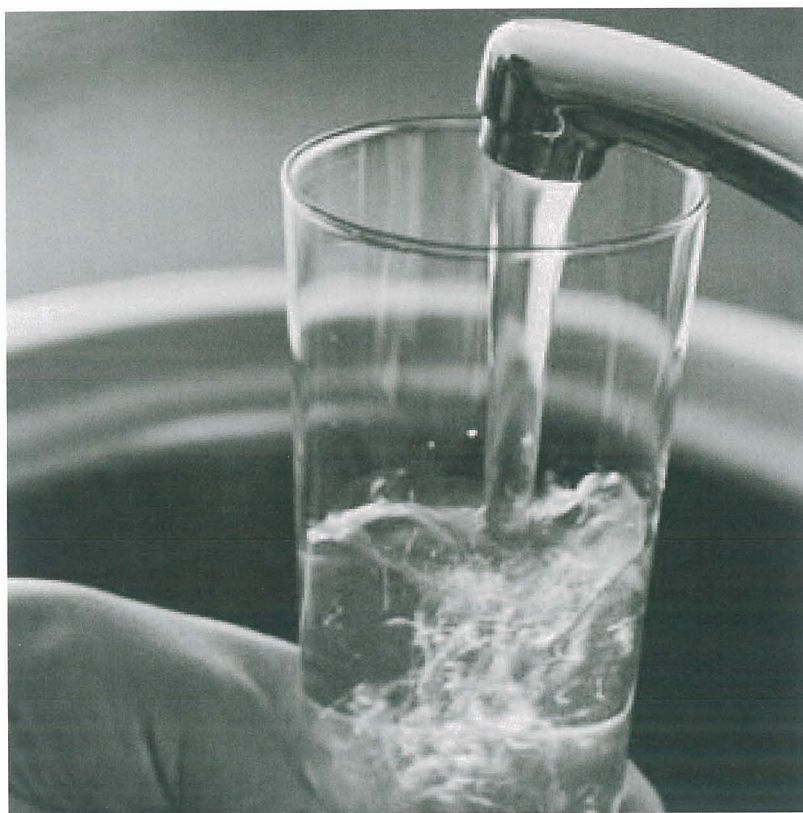


美國自來水可以生飲嗎？

Is Tap Water Better Than Bottle Water?

Presented by George Yen (顏毓佐), MBA, CWS-VI



為了簡化內容，讓讀者易讀易懂，我將以QA的方式來表達“水”的知識，並分成三大部份。

(一) 何謂自來水 (Tap Water)

(1) What is Tap Water? 甚麼是自來水？

1. 自來水是直接由家裡的水龍頭流出來的。
2. 自來水是由政府機構供應的。
3. 自來水公司每分鐘處理數百萬加侖的水。

(2) The Metropolitan Water District of Southern California 南加州大都會自來水公司

1. 此公司提供水給26個城市。
2. 供應水給一千九百萬人，包括LA，Orange，San Diego，Riverside，San Bernardino and Ventura Counties.
3. 每天供應17億加侖。

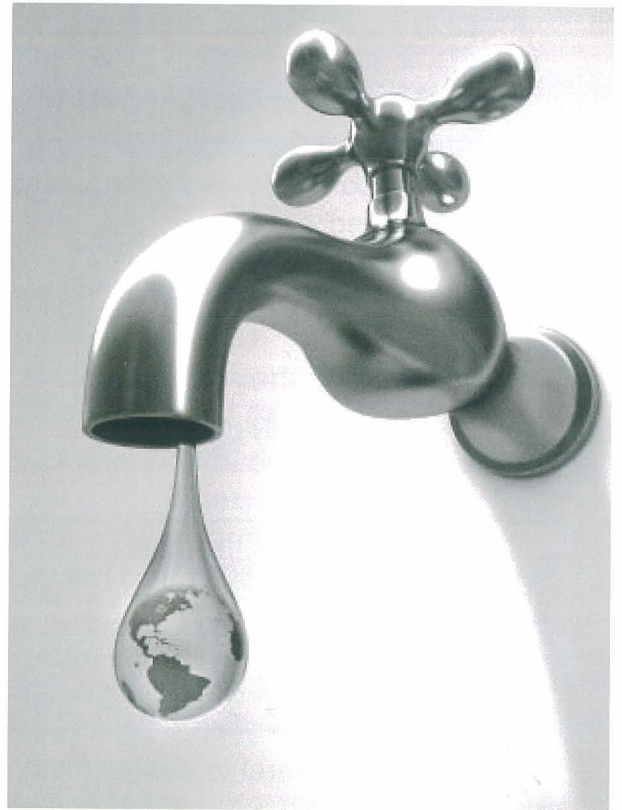
(3) Utility Water Distribution 自來水是屬於使用水

1. 使用在洗澡，洗衣，灑水，澆花，洗碗的水都從自來水公司同一水管出來，涵蓋了5200平方英里。
2. 雖然水是合乎標準，但是運送百里路過程也可能會污染。

(4) Utility Water vs. Drinking Water 使用水和飲用水有何不同

使用水是家用水但不可飲用，比如：

- a. 沖廁
- b. 游泳池
- c. 魚池
- d. 洗碗機
- e. 洗澡水



(二) Safe Drinking Water Act (SDWA) 安全飲用水規範

- (1) 1. 在1974年美國總統簽訂的條款，並在1986，1996年補充。
2. 美國有220,000公共使用水都必須由USEPA (環保署) 和SDWA (安全飲用水規範) 來管轄。

(2) Maximum Contaminant Level (MCL) 最高污染的容忍度

由 USEPA (環保署) 制訂水的最高含鋁量是1000 ppb.

- USEPA establishes a MCL for each regulated substance in drinking water.
- An MCL is the highest permissible level of a contaminant allowed in water delivered to the consumer's tap.
- Aluminum's MCL is 1000 ppb.

(3) Maximum Contaminant Level Goal (MCLG) 最高污染容忍度之目標

- USEPA also must set a non-enforceable health goal - the MCLG.
- MCLGs are no known adverse effects on the health occur and which allow an adequate margin of safety.

- The enforceable MCL is set as close to the non-enforceable MCLG as USEPA determines is feasible, taking into consideration the costs and treatment techniques available to public water systems.
- MCLG for Aluminum is 600 ppb.

(4) Secondary Maximum Contaminant Levels (SMCL) 次要的最高污染容忍

- The National Secondary Drinking Water Regulations, issued by USEPA pertain to the aesthetic, cosmetic and public acceptance (taste, odor, color and appearance) but not health-related.
- The SMCLs are not enforceable by the federal government.
- The SMCL for Aluminum is 200 ppb.

(5) What do they (MCL, MCLG and SMCL) mean to us? MCL, MCLG and SMCL 對我們有甚麼意義？

- Please look at the 2007 Water Quality Table provided by our water district.
- Total Coliform Bacteria
- In 2007, 8905 samples were analyzed and 2 samples were analyzed and 2 samples were positive. The MCL was not violated.
- Arsenic
- MCL is 1000, but MCLG is 0.004
- Which means the state does not have enough money or technology to reach the goal of 0.004.
- MCL is the federal forceable level, MCLG is the nonenforceable goal.
- Aluminum: MCL = 1000, MCLG = 600, SMCL = 200 ppb.

(三) Potable (drinking) water 飲用水的種類

1. Spring Water 山泉水
由地下自然泉湧而出之水

2. Bottled Natural Water 瓶裝水的種類

- Bottled Spring Water 山泉水
 - Bottled Mineral Water 礦泉水
 - Bottled Artesian Water 冰川之水
 - Bottled Well Water 地下井水
- 以上瓶裝水的水泉並非來自自來水公司的系統。

3. Bottled Mineral Water 瓶裝礦泉水

- 瓶裝水必須來自被USEPA認證的發源處。
- 瓶裝礦泉水內的礦物質含量必須在水源處是穩定。
- FDA規定瓶裝礦泉水的標籤必須至少要有250 milligrams per liter (ppm) 的固體總溶解質。



4. Bottled Distilled Water 蒸餾水
蒸餾水的固體總溶解質低於10 ppm。

5. Purified Water Bottled Water 瓶裝
過濾水的規格

- 此種產品的水質必須符合USEPA的安全指標。
- 平常的飲用水是處過蒸餾法，密滲透，離子交換來處理。



蔡格明

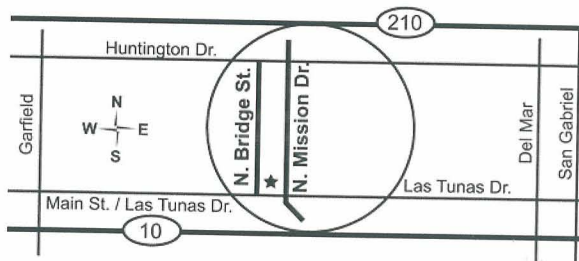
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