

To: District Council Chief EHO's
Cc: Senior/lead food EHOs – District Council
Group Chief EHO's
NIFLG Members
LACORS
CIEH

26 September 2007

Reference: **ENF/NI/07/046**

Dear Colleagues,

Health risks from “Zam Zam” Water

The Agency is aware that some brands of bottled water labelled as Zam Zam water continue to be found on the market, particularly in those areas which have a significant Muslim population. The Zam Zam Well, which is located within the precinct of the Holy Mosque in Makkha (Mecca), Saudi Arabia, is sacred to Muslims and it is their belief that this water has healing properties.

The Agency has received written confirmation from the Royal Embassy of Saudi Arabia in London that Zam Zam water is only available to pilgrims and can neither be exported nor sold, on a commercial basis, within or outside Saudi Arabia.

Recent sampling of bottled water labelled as Zam Zam has identified that the arsenic levels exceed the limit of 0.01 mg/L contained in the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 1999 (SR 1999 No. 301) as amended. The Agency considers breach of this level to present a risk to health, as arsenic is a known genotoxic carcinogen. In addition, nitrate has been found to exceed the permitted limit of 50 mg nitrate/L. Although these levels of nitrate raise no particular health concerns for the general population, it is not advisable for infants to consume water with excess nitrate because infants are more sensitive than

other population groups to the effects of nitrate on haemoglobin in the blood. Further information on the legal limits and health concerns is provided in the Annex to this letter.

The Agency last wrote to you on 25 September 2006 (Reference: ENF/NI/06/047) on this issue. It is an offence to bottle or sell any drinking water that contains any substance listed in Schedule 3 of the Regulations at a level which exceeds the maximum limit specified in relation to that substance.

Given that the demand for Zam Zam water is likely to increase during the month of Ramadan (which started on 13 September) the Agency would like to remind enforcement authorities of this issue and ask that you be aware of these products. Enforcement authorities can take appropriate action against bottled water labelled as Zam Zam, including sampling, with a view to removing suspect products from sale and also to obtain any relevant information to help trace suppliers.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Michael Jackson', written in a cursive style.

MICHAEL JACKSON
HEAD OF AUDIT AND MONITORING

Agency advice on arsenic and nitrate in bottled water labelled as Zam Zam water

Arsenic and nitrate – legal limits

Maximum limits for certain parameters in bottled waters are laid down in the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations (Northern Ireland) 1999 (as amended). The waters labelled as being Zam Zam water would need to comply with the legal requirements for bottled drinking water. The limit for arsenic in these types of water is 0.01 milligrams per litre, and 50 milligrams per litre for nitrate. Water found to exceed these limits would not be in compliance with the Regulations and would be considered illegal.

Consumer health issues

Arsenic

The Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) has advised the Agency that inorganic arsenic is genotoxic (it damages DNA) and a known human carcinogen, associated with an increased risk of lung, bladder and skin cancer. Since arsenic causes cancer by damaging DNA, there is no threshold for the effect which means that even a single exposure could, in theory, start the chain of events that could ultimately lead to cancer. Therefore, the Committee concluded that exposure to inorganic arsenic should be as low as reasonably practicable. Furthermore, the World Health Organisation established a guideline maximum value for arsenic in drinking water of 0.01 milligrams per litre since this value is the realistic limit to measurement. In practice, occasional consumption of small amounts of the water labelled as Zam Zam would represent a very low risk.

Nitrate

The toxicity of nitrate has been extensively studied and the available data considered on a number of occasions by independent expert committees, including the EC Scientific Committee on Food (SCF, the predecessor to the European Food Safety Authority) and the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

An Acceptable Daily Intake (ADI) for nitrate has been set at 3.7 mg/kg body weight and the limit set for bottled water takes into account the average intake from food and beverages to ensure that the majority of the population do not exceed this ADI. Occasional consumption of small amounts of the water labelled as Zam Zam would represent a very low risk for adults and older children and therefore would not pose any particular health concerns for the general population.

However, elevated levels of nitrate can result in increased levels of methaemoglobin (a modified version of haemoglobin which is less efficient at transporting oxygen in the blood) in infants. The risks posed by elevated levels of nitrate, additional to those posed by arsenic, lead to our recommendation that infants should not consume bottled water labelled as Zam Zam water offered for sale in the UK.

General advice if consumers have already drunk contaminated water

Although occasional consumption of small amounts of the water is likely to be a minimal risk, don't drink any more and ensure that others you know also don't drink any more. If you have any health concerns, then consult your GP.