

By Email



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Health Protection Agency

Communications

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Dear Mr Jones

Re: Chloramine in tap water – is it safe?

Thank you for your Freedom of Information request dated 26 September regarding Chloramine in tap water. Under section 1 (1) (a) of the Freedom of Information Act, I can confirm that the Health Protection Agency (HPA) does hold some of the information you require.

Disinfection of drinking water is an important public health measure and public water suppliers in the UK are required to disinfect the water that they supply. This is fundamental to preventing the spread of waterborne diseases, such as cholera.

Background

Chloramine is primarily used as a residual disinfectant for public drinking water supply and is formed by the reaction of ammonia with chlorinated water. Monochloramine is the predominant chloramine compound produced, with only traces of other chloramines.

The HPA does not hold any information on the health risks of chloramine used to disinfect the public water supply other than that which is already in the public domain. The HPA was not involved in any risk assessment prior to the introduction of chloramination for disinfecting the public drinking water supply in England and Wales and has not subsequently been asked to do so. The HPA endorses the opinion of the World Health Organization (WHO) and its recommended Guideline Value (GV) ^A for monochloramine in drinking water. The WHO GVs are subject to rolling revision in the light of new information. The WHO is an independent international authority that conducts expert evaluations on the health risks of chemicals in drinking water. The WHO drinking water GVs are generally used as a basis for European and national Member States regulatory standards for drinking water. A WHO background document on the toxicity data for monochloramine and basis of derivation of the monochloramine GV is available.

^A A GV represents the concentration of a compound that does not result in any significant risk to health of the consumer over a lifetime of consumption

http://www.who.int/water_sanitation_health/dwq/chemicals/en/monochloramine.pdf

The HPA endorses the WHO health risk assessment of monochloramine in drinking water and the recommended GV of 3 mg L⁻¹. Consequently, we consider that the consumption of chloraminated tap water at concentrations not exceeding GV of 3 mg L⁻¹ monochloramine is not expected to result in any appreciable risk to health. Inadequate disinfection of drinking water is likely to result in a substantial risk to health.

Lead pipes

The question of whether chloramine affects the release of lead from lead pipes is a matter for the Drinking Water Inspectorate (DWI) rather than the HPA. However, it is correct that lead is a neurodevelopmental toxin and that exposure can lead to cognitive defects, such as reduced IQ in children (HPA, 2007)

Anaemia

Regarding anaemia, the HPA is not aware of any specific studies that have linked chloramine with anaemia in children. Adverse effects on red blood cells such as acute haemolytic anaemia and methaemoglobinaemia have been reported in haemodialysis patients when tap water containing chloramine was used in dialysis. However, this dialysed route of exposure is not relevant to the exposure to the general public to drinking water (WHO, 2004a). For example, when exposed via drinking, humans consume small volumes of chloraminated water relative to the volume of red blood cells exposed (IPCS, 2000)

Rectal and bladder cancer

There have been a number of epidemiological studies that have associated chlorinated drinking water with bladder and colon cancer (WHO, 2004a). However, the HPA is not aware of any epidemiological studies specifically on chloraminated drinking water that have been associated with an increase risk of bladder or rectal cancer. The WHO considered that the available animal data do not support an association between the occurrence of this cancer and chloraminated drinking water (WHO, 2004a). Furthermore, monochloramine is not considered to represent a genotoxic hazard to humans i.e. it is not considered to have the potential to damage the genetic material (WHO, 2004a). Genotoxic substances can cause a mutation in the DNA, which in theory over time could lead to cancer.

The international Agency for Research on Cancer (IARC) considers that chloramine is not classifiable as to its human carcinogenicity as there is inadequate human and animal evidence to make the assessment (IARC, 2004)

I hope you have found this information useful, however, if you are dissatisfied with this response and would like a copy of the HPA complaints procedure then please contact Mr George Stafford, Complaints Manager at: Health Protection Agency, 61 Colindale Avenue, London NW9 5EQ.

Please note that you have the right to an independent review by the Information Commissioner's Office if a complaint cannot be resolved through the HPA complaints procedure. The Information Commissioner's Office can be contacted by writing to Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire SK9 5AF.

Please contact me if you require any further information or assistance.

Yours sincerely

Leigh Kelly
Freedom of Information Officer
Health Protection Agency

References

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Plewa M et al., 2008. Occurrence, synthesis and mammalian cell cytotoxicity and genotoxicity of haloacetamides: An emerging class of nitrogenous drinking water disinfection by-products. Environmental Science and Technology, 41 (2), 955-961.

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