

本署檔號 Our Ref.: () in DH SEB NCD/15/38

29 July, 2015.

Dear Doctor,

Quality of Drinking Water at Lower Ngau Tau Kok Estate

I would like to alert you to the finding of elevated lead level in tap water in Lower Ngau Tau Kok Estate (LNTKE), 牛頭角下邨, Kwun Tong, Kowloon, after Kai Ching Estate, Kwai Luen Estate (Phase 2) and Wing Cheong Estate.

From the health perspective, long term exposure to lead, which when accumulated in large amounts in the body, may result in anaemia, hypertension, brain and kidney damage. In everyday life, however, lead is a common substance which exists everywhere. Lead can contaminate the air when lead soldering is used in construction work, lead in soil can contaminate vegetables and water, lead in fumes are generated when smoking, while lead is found in some cosmetics and traditional herbal medicines. Notwithstanding the above, it is always good for health to achieve the lowest possible lead level in the body.

The World Health Organization's (WHO) Guidelines for Drinking-water Quality has set a provisional guideline value of not more than 10 microgram/litre for lead. Lifetime consumption of water that meets the WHO's guideline value for lead does not represent any significant risk to health. Short term exposure to elevated levels of lead in drinking water unless at very high levels is unlikely to cause acute toxicity.

Lead level in water samples taken from LNTKE were found to have exceeded WHO guideline value. Residents at LNTKE are recommended to take precautionary measures which include running tap water for a while before drinking or cooking especially if the plumbing system has not been used for some time, for example, overnight. As hot water increases the amount of lead that may leach from the pipe materials, use only water from the cold-water tap for drinking and cooking.

Moreover, it is advisable for infants and young children under six years of age, pregnant women and lactating mothers to use alternative source of drinking water such as bottled distilled water.

To better assess blood lead levels among the more easily affected populations namely infants and young children under six years of age when moving into LNTKE, pregnant women and lactating mothers residing in LNTKE, they may join the voluntary surveillance for blood test for lead. The Department of Health (DH) has set up a hotline (2125 1122) to answer questions on the effect of lead on health, to provide health tips and to arrange appointment for blood test for these individuals. The hotline will operate from 9:00 am to 9:00 pm daily.

In responding to this incident, a management protocol for persons with raised blood lead levels has been developed and promulgated. It remains of critical importance to remove the source of lead contamination while allowing time for lead to be excreted over time. The key feature of the care plan is to make reference to the blood lead levels detected, and stratify management actions according to assessment of health risk. In sum –

- if the blood lead level is normal, there is no significant health risk and no follow-up is required;
- if the blood lead level is at borderline raised level, there is a potential health risk, hence health evaluation and follow-up is required;
- if the blood lead level is at significantly raised level, there is risk of lead poisoning, hence medical assessment and follow-up is required.

An updated factsheet on health effects of lead is attached for your reference.

Thank you for your attention.

Yours faithfully,



(Dr. Regina Ching)
Consultant Community Medicine
(Non-Communicable Disease)
Centre for Health Protection
Department of Health

Health factsheet: Lead content of tap water in Lower Ngau Tau Kok Estate

This fact sheet on lead and its associated health effects has been produced in view of public concern over water supply to Lower Ngau Tau Kok Estate , Kowloon.

What is lead?

Lead is a naturally occurring heavy metal which usually presents in very small amounts in the environment. Lead and its compounds may be found in products such as batteries, lead-based paints, lead-containing ceramics, lead solder and leaded petrol. In everyday life, lead is found everywhere and exposure seems inevitable. Notwithstanding this, it is always good for health to achieve the lowest possible lead level in the body.

What is the recommended limit of lead in drinking water?

The World Health Organization's Guidelines for Drinking-water Quality has set a provisional guideline value of not more than 10 micrograms per litre for lead. Lifetime consumption of water meeting this guideline value does not represent any significant risk to health. Exposure to the level of lead reported in drinking water in Lower Ngau Tau Kok Estate is unlikely to cause acute toxicity.

Sources of exposure

1. Occupational

Industries with particularly high potential exposures include construction work involving welding; cutting, brazing or polishing on lead surfaces and application of lead solder; most smelter operations either as a trace contaminant or as a major product; secondary lead smelters where lead is recovered from batteries; and firing ranges.

2. Non-occupational

Lead may be contaminated with hazardous concentrations in lead paint, cosmetics and herbal medicines. Common exposure sources of lead with very low level for general public include urban dust, contaminated food and contaminated water.

Health effects of lead

Lead can enter the human body by ingestion, inhalation and skin absorption. When lead is absorbed into the body in excessive amount, it is toxic to many organs and

systems. Depending on the lead level inside the body, significant exposure to lead is associated with a wide range of effects, including neurodevelopmental effects, anaemia, high blood pressure, gastrointestinal symptoms, impaired renal function, neurological impairment, impaired fertility and adverse pregnancy outcomes. Infants, young children (especially those under six years of age), pregnant women and lactating mothers are more likely to be affected by its adverse effects.

How can one reduce the risk of lead exposure?

1. Run tap water for a while before drinking or cooking, especially if your plumbing system has not been used for some time, for example, overnight.
2. As hot water increases the amount of lead that may leach from the pipe materials, use only water from the cold-water tap for drinking and cooking
3. Since the absorption of inorganic lead via skin is not effective, use of water from Lower Ngau Tau Kok Estate for any purpose other than ingestion, such as showering, tooth brushing and face washing, should not pose a health threat.
4. It will be preferable for infants and young children who are under six years of age, pregnant women and lactating mothers to use alternative sources of drinking water such as bottled distilled water as an additional precautionary measure.
5. It is safe to use the distilled water to substitute tap water in preparing formula milk, but the same method of preparation including boiling of distilled water should be followed.
6. Mineral water contains levels of mineral which may exceed the requirement of infants and young children, and hence should not be used to prepare formula milk.
7. Avoid exposure to all sources of lead.
8. Some domestic water filters (such as those certified by NSF Standard 53) can reduce the lead level in water. Nevertheless, no filter will give the claimed performance unless it is operated strictly according to the manufacturer's operational conditions with regular maintenance including timely change of core parts. Without proper maintenance, filters may also become an ideal breeding ground for growth of micro-organisms. As chlorine level in water will be reduced by activated charcoal in the filters, the water from filters should be boiled to kill germs before drinking.
9. Do not allow children to chew or mouth painted surfaces of toys or furniture that may have been painted with lead-based paint.
10. Clean the dust in your house regularly if it might be decorated with lead-based paint, especially when the paint is in deteriorating conditions. Wash children's

- hands and faces frequently to remove any lead dusts and soil.
11. Keep all lead contaminated / contained products away from children. Some types of pigments that are used as make-up (e.g. surma or kohl) or hair colouring dye may contain lead.
 12. Seek advice from medical doctor if you suspect having been exposed to high levels of lead or for prolonged periods, or you have relevant symptoms.

Management of a raised blood lead level

Whole blood lead level is the most accurate, reliable and internationally recognized method of screening and diagnosis, for assessing the risk of lead on health. For more easily affected groups including children who are under six years of age, pregnant women and lactating mothers, a blood lead level of equal to or more than 5 microgram/dL requires further assessment. For adults, a blood lead level of equal to or more than 10 microgram/dL requires further assessment. Hair and urine tests for lead are not suitable for screening and diagnosis. They are therefore not advisable.

The most important management is to identify and remove the source of exposure. When exposure stops, lead in the body will be gradually reduced through excretion in urine and bile. It is important to have a balanced diet with adequate amounts of vitamins and minerals, especially calcium and iron, as good nutrition lowers the amount of swallowed lead that passes to the bloodstream. Patients who are symptomatic with high blood levels (i.e. more than 44 micrograms/dL in the more easily affected group and more than 50 micrograms/dL for adults) should be evaluated for further management, including chelation therapy.

Testing of blood lead level

The more easily affected residents in the estate can undergo voluntary blood lead testing in designated clinics under the Hospital Authority (HA) by making appointment through our hotline. In responding to this incident, professional staff of HA and the DH have worked closely to develop a management protocol for persons whose blood lead levels would be found to be abnormal. After detailed review of local and international literature and research by experts, reference value and the care plan have been established. The management team considered it most important for the source of contamination to be eliminated and for lead in the body

to be excreted over time. The key feature of the care plan is to make reference to the blood lead levels detected, and stratify management actions according to assessment of health risk. In sum –

- if the blood lead level is normal, there is no significant health risk and no follow-up required;
- if the blood lead level is at borderline raised level, there is potential health risk, hence health evaluation and follow-up required;
- if the blood lead level is at significantly raised level, there is risk of lead poisoning, hence medical assessment and follow-up required.

Enquiries

The Department of Health has set up a hotline on the incident of Lower Ngau Tau Kok Estate and residents can call the hotline at 2125 1122. The hotline will operate from 9:00 am to 9:00 pm daily.

29 July 2015