



Water, Water EverywhereWater and Public health

Faculty of Public Health Medicine
RCPI
CME day
Wednesday March 3rd 2010

Lead and water

Dealing with the basics

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- Call from local EHO re excess lead level
 - Routine sample done by EHO on behalf of LA for monitoring
 - Lead level 120 $\mu\text{g/L}$
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Obtained additional information

- Small newsagent shop with apartment above the shop
 - Owner the only occupant
 - Drank bottled water
 - Internal water pipe-work had been replaced in the recent past
 - Water mains was not lead
 - Pipe-work from mains to building was not lead
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- Internal pipe-work from boundary wall to sink/new water pipe-work was lead and had not been replaced
 - Owner arranged for this to be replaced
 - Follow-up tests normal
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Topics covered

- Lead levels
 - Pipe-work
 - Follow up action
 - Health advice
 - Sampling processes
 - Legal position
 - Remedial action
 - Further information
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Lead levels

- Now 25 μ g/L
- In 2013 will reduce to 10 μ g/L



Sampling processes

- Random daytime
 - Stagnation
 - Fully flushed
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Random Daytime Sampling

- The sample is taken directly from the tap normally used for drinking without flushing the tap.
 - Taken at a random time during the day
 - The first litre of water from the tap.
 - Similar to how people consume water during the day (i.e. at random times without flushing the tap).
 - Used for **compliance monitoring** as the regulations require that the sample be representative of the weekly average ingested by consumers and that takes account of the occurrence of peak levels that may cause adverse effects on human health.
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Stagnation Sampling

- Water is allowed to stagnate in the pipes prior to sampling for a set period.
 - The water is fully flushed prior to the stagnation period.
 - In general at least 30 minutes but to get the worst-case scenario the sample can be taken first thing in the morning before any taps are used (this is usually accomplished by the sampler leaving sample containers with the occupier of the house the previous day).
 - Gives the worst-case scenario.
 - Used for **lead surveys** to determine where lead pipes are (i.e. results <5 indicate no lead pipes present).
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Fully Flushed Sampling

- The water is fully flushed (run to waste) prior to sampling.
 - Determines the quality of water in the distribution network as the volume of water in the service connection and internal plumbing is run to waste.
 - Used where consumers have been advised to fully flush their taps.
 - Confirms that the levels of lead in the fully flushed water (i.e. what is being consumed) are satisfactory.
 - Where these levels are high it indicates that there may be a long service connection comprised of lead or there may be lead in the distribution main
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Pipe-work

- Street mains – LA responsibility
 - Service pipes to premises – LA responsibility
 - Premises pipe-work – owner responsibility

 - Copper or plastic pipes with lead solder
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Legal position

- EPA guidance DW02/08 Lead in drinking water
 - Lead exceedance – inform and consult with HSE to see if there is a potential danger to human health
 - If Yes:
 - Prohibit or restrict use of water
 - Inform and advise the consumer
 - Inform EPA if a public supply is involved by 11am following morning
 - Assess risk and produce remedial action plan
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Follow up action

- If you are informed of a high lead level:
 - Is it a one off result or a repeat?
 - What type of sample was taken – a flushed sample should have a lower Lead measurement.
 - Repeat the test with a flushed sample.
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Recommendations for lead levels

<10µg/L	10µg/L and ≤ 25µg/L	> 25µg/L plus
OK	OK to use flushed water but suggest remedial work to get to 2013 level of 10µg/L	Do not consume

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- Is this a stand alone premises?
 - Are other premises affected?
 - Is a sample survey required?
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Remedial action

- Replace pipes
 - whose responsibility?
 - Adjust pH levels
 - may be technically difficult
 - Orthophosphate dosing
 - old networks
 - environmental issues
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Health advice

- Lead is a general toxicant that accumulates in bone
 - It is toxic to both the central and peripheral nervous systems (WHO, 2006)
 - Infants, children up to 6 years of age and pregnant women are the most susceptible to its health effects
 - Only takes 100 µg/L blood to get lead poisoning
 - In USA, > 6million children, age six and younger, (1 in 6) have toxic levels of lead in their bodies
 - http://www.hse.ie/eng/Publications/Health_Protection/
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Advice

- If flushing reduces lead levels can consume flushed water
 - If flushing does not reduce lead levels do not consume the water but use other supplies for drinking and food preparation
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Further information

- <http://www.hse.ie/eng/services/Publications/HealthProtection/>
 - Lead FAQ
 - Health advice
 - Drinking water and health review 2008
 - <http://www.EPA.ie>
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