

Lead intake via tap water

Executive summary

Health Council of the Netherlands



Exposure to lead is harmful to health. Exposure to lead in the Netherlands has decreased sharply in recent decades, primarily due to the use of lead-free petrol. Around the turn of the century, drinking water companies replaced the outdoor lead service lines on a large-scale, as a result of which the concentration of lead in tap water also decreased. In general, tap water in the Netherlands is of a high quality and safe to drink. However, a limited section of the population still faces high lead intake via the tap water from indoor lead pipes and is therefore subject to health risks. In the advice presented here, the *Committee for Monitoring Health and the Environment* of the Health Council describes where the biggest risks lie and recommends measures.

Harmful effects possible at lower concentrations

There are strong indications that a low exposure to lead is more harmful than previously thought. In young children, lead can result in a lower IQ, and in adults it can increase the risk of cardiovascular diseases and chronic kidney disease.

The European Food Safety Authority has established so-called “reference points” for the risk assessment of lead: concentrations that are associated with adverse effects that can occur in case of long-term exposure to low lead concentrations and that are relevant to health. The reference point for a decrease of 1 IQ point in children is seven times lower (tighter) than the maximum allowable intake set by the World Health Organisation in 1986, which forms the basis for the European and Dutch drinking water standard of 10 microgram per litre ($\mu\text{g/l}$).

Small group subject to high exposure

In general, the lead concentration in drinking water in the Netherlands is low, approximately 1 $\mu\text{g/l}$. In recent decades, the frequency with which the 10 $\mu\text{g/l}$ standard has been exceeded has decreased. In 2016, only about 1% of the water samples taken had concentrations that exceeded the standard. However, high concentrations continue to exist in houses with lead indoor pipes, where lead concentrations in the tap water are about 35 $\mu\text{g/l}$. The committee

estimates that there may still be one hundred to two hundred thousand houses with lead water pipes. Similarly high concentrations of lead in tap water can also occur in houses with new pipes or taps due to the temporary release of lead from new materials.

Recent intake calculations by the National Institute for Public Health and the Environment (RIVM) indicate that the high exposure in houses with lead pipes creates risks in particular for formula-fed infants, young children up to around the age of seven, and unborn children (via the mother). Infants are especially vulnerable, as their intestines absorb lead more easily and their brains are rapidly developing. In houses with lead pipes, the lead intake for these vulnerable groups exceeds the reference point, on average, by a factor of three (young children) to thirteen (formula-fed infants). This can result in a decrease of 2 to 5 IQ points. In houses with new pipes and taps, a temporarily increased exposure to lead can take place, which creates risks in particular for formula-fed infants and unborn children if the pipes have not been



adequately flushed. The total size of the risk group in question here is estimated at a few tens of thousands of young children and a few thousand pregnant women who can be exposed to undesirably high concentrations of lead via tap water. As tap water can contribute up to 80% of the total exposure to lead in these situations, the committee concludes that measures aimed at reducing the lead concentration in tap water can be effective in reducing the exposure to lead as well as the associated adverse effects on the IQ in such cases.

Focusing on source-based measures The committee recommends focusing primarily on source-based measures: eliminating the remaining lead pipes, enforcing national product requirements for new piping materials and taps, and the promotion of European product requirements. The committee recommends advocating a reduction of the drinking water standard to a maximum of 5 µg/l within the context of the European discussion on the revision of the

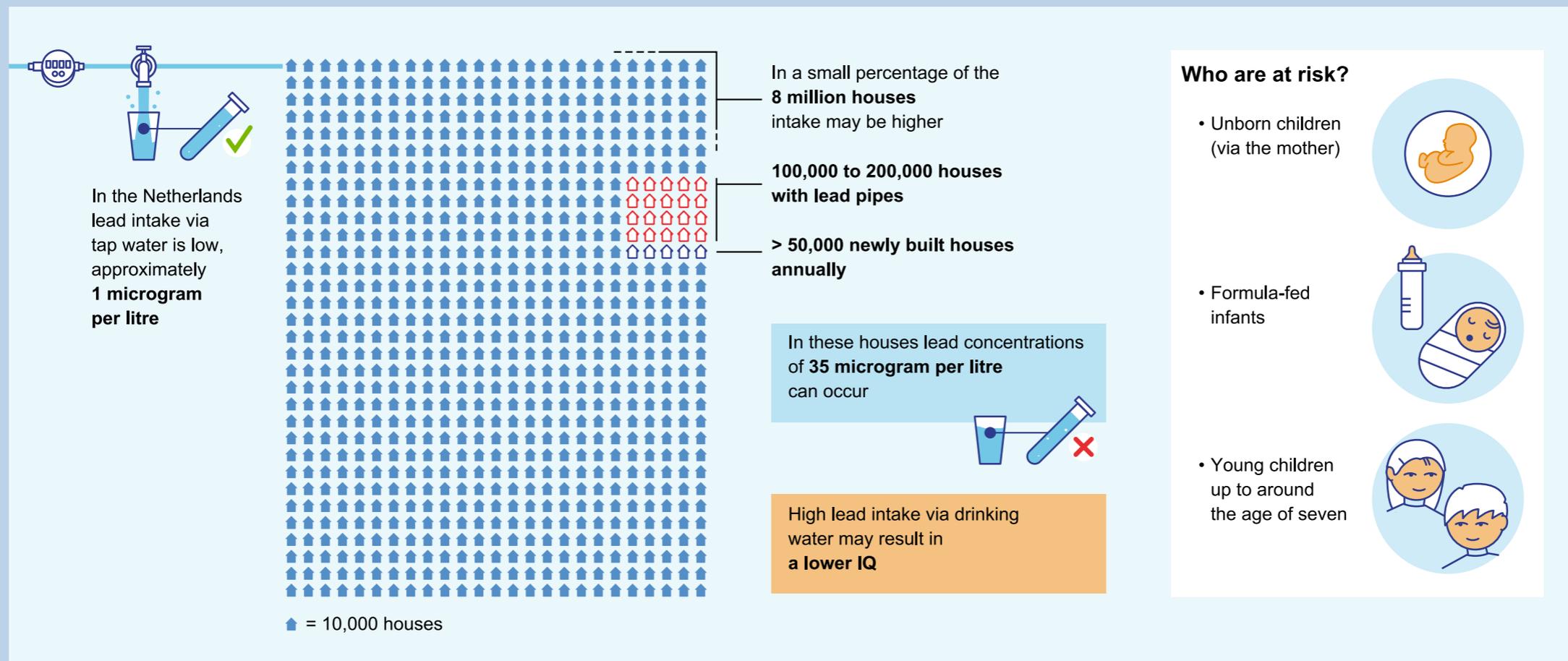
European Drinking Water Guideline. This maximum can then be used in the Netherlands as an action value in measurement programs aimed at proactively identifying the presence of lead pipes. The committee sees opportunities for replacing lead pipes within the context of the plans for a more sustainable housing stock. After all, that is when more far-reaching replacements of technical installations and building materials can be carried out. Until these lead pipes have been replaced, the committee advises residents of such buildings to use bottled water instead of tap water for formula-fed infants, young children up to around the age of seven, and pregnant women. During the first months after new pipes or taps have been installed, the committee advises young families to flush the tap if it has not been used for a few hours. For that purpose, the recommendations provided by RIVM and GGD (municipal health services) should be brought to the attention more widely. In case of doubt, the committee recommends that measurements be carried out. The committee recommends that all the parties

concerned enter into a dialogue aimed at formulating a clear and consistent communication strategy on reducing high exposure, while seeking to build further on existing initiatives.



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Overview of risk groups and possible measures



What measures can be taken?

By the government



Strategy for replacing lead pipes



Reporting requirements for purchase or rental contract



Make sure lead concentrations are measured



Make sure information is provided



Requirements for new piping materials

By yourself



Make sure lead pipes are replaced



In old houses: Use bottled water for pregnant women, infants and young children



In newly built houses: Flush the tap before use



The Health Council of the Netherlands, established in 1902, is an independent scientific advisory body. Its remit is “to advise the government and Parliament on the current level of knowledge with respect to public health issues and health (services) research...” (Section 22, Health Act).

The Health Council receives most requests for advice from the Ministers of Health, Welfare and Sport, Infrastructure and Water Management, Social Affairs and Employment, and Agriculture, Nature and Food Quality. The Council can publish advisory reports on its own initiative. It usually does this in order to ask attention for developments or trends that are thought to be relevant to government policy.

Most Health Council reports are prepared by multidisciplinary committees of Dutch or, sometimes, foreign experts, appointed in a personal capacity. The reports are available to the public.

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