

**Administrative considerations for setting a limit value for lead in drinking water.**

Due to new information on lead in among others the EFSA (2010) opinion on lead, a review and update of the Danish EPA report on lead from 2004 has been performed¹. The update concludes that no toxicological threshold for neurotoxic effects could be determined for lead, and recommend that the concentrations of lead and its inorganic and soluble salts in drinking water should be as low as possible.

EFSA states, that human exposure to lead (Pb) is mainly via food and water with some via air, dust and soil (EFSA (2010)). In order to reduce the exposure and the background concentration of lead and thus the content of lead in food and beverage, the sources of lead in our surroundings have already been restricted and limited in Denmark. This includes a general ban on import and marketing of products containing lead compounds, and of certain products containing metallic lead². Some specific products are subject to regulations on the use of lead, e.g. regulations on petrol, batteries and accumulators, firearms and ammunition, slag and fly ash, waste products, packaging, medical devices, ceramic items intended for contact with foodstuffs, and electrical and electronic products. These restrictions have been in force during the last 5 – 15 years, and the effect is visible.

Thus, non-dietary exposure is considered to be of minor importance. Furthermore, compared to the exposure from the sum of all food sources, tap water only has a limited contribution to the overall exposure from food and beverages. However, seen on a source by source basis, the tap water contributes to the lead exposure on the same level as many other individual sources.

In Denmark, the limit value for lead in drinking water at the entrance to the building continues to be 5µg/l, and 10µg/l at the tap as an administrative limit value. Administrative limit values are established by authorities for practical use. Though administrative limit values are primarily based on the health based quality criterion, other issues as technical and economical considerations and the background concentration are relevant as well, as

¹ Evaluation of health hazards by exposure to Lead, inorganic and soluble salts, and proposals of a health-based quality criterion for drinking water. Division of Toxicology and Risk Assessment. National Food Institute, Technical University of Denmark. July 2012.

² Statutory Order on prohibiting the import and sale of products containing lead, No. 1082 of September 13th 2007.

laid down in the Danish EPA guidance document for the setting of health based quality criteria for chemical substances in relation to soil, ambient air and drinking water. ³

In the EU, the drinking water standard for Pb is 10 µg/l. However the Drinking water Directive⁴ allows the Member States to have a limit value for Pb on 25 µg/l until end of 2013, which many Member States have used. Recently (2011), the Commission stated as a result from a hearing, that they would not take the initiative to change this limit.

Lead from drinking water installations.

The present evaluation report states that background or natural levels of lead in surface and ground water are generally low. Thus lead is primarily present in tap water as a result of migration from the drinking water installations. In order to assure that the concentration of lead and its inorganic and soluble salts in drinking water remains as low as possible, the migration of lead from drinking water installations is therefore important to consider. From the reservoir to the consumer's faucet, the water may come into contact with several types of materials that may affect and change the quality of the water.

For this reason, an approval system applying to construction materials connected to or contained in drinking water installations is established in Denmark. This ensures among others, that the water is not adversely affected with migrated lead during treatment and transportation.

According to The Danish Building Regulations domestic water-supply installations shall be constructed in accordance with the Danish Code of Practice for Domestic Water-Supply Installations, which among others includes that substances harmful to human health or affecting the taste or smell of the drinking water will not be liberated from the installation.

Conclusion:

Overall it is acknowledged by the steering committee for setting quality criteria that a health based quality criterion for lead should be as low as possible. Based on this and taking the background concentration and the technical and economical possibilities into consideration the current limit values of 5 µg/l at the entrance into the building, and of 10 µg/l in the water taken at the tap are maintained as the administrative limit value for lead in drinking water.

³ Metoder til fastsættelse af kvalitetskriterier for kemiske stoffer i jord, luft og drikkevand med henblik på at beskytte sundheden. Miljøstyrelsens vejledning nr. 5, 2006. (in Danish only).

⁴ Council Directive 98/83/EC of 3. November 1998 on the quality of water intended for human consumption.