



Nickel, Cadmium and Lead in Jewellery

Jewellery and other metallic products with prolonged skin contact, such as buttons or watches, must comply with the requirements of the Swiss food legislation. Since the beginning of 2014 these requirements include rules for lead, along with the older ones for nickel and cadmium. Companies and people dealing with jewellery are obliged by law to ensure they only sell compliant articles.

Compliance testing by the authorities frequently reveals high levels of nickel release and cadmium contents of several per cent. This may not only endanger consumers but can lead to fees for the companies, seizure of goods and individuals being charged for offences under food law.

Nickel



Nickel allergy is the most prevalent contact allergy in industrialised countries. In Switzerland about 15 % of the population is afflicted. Particularly the female population is at risk of the condition. One in four women has skin reactions to nickel. The allergy to nickel may develop by prolonged exposure to nickel releasing objects. Symptoms include stinging or itching sensation, formation of blisters, swelling and eczema. Once the allergy has developed, it usually is a life-long condition. Metal objects that come in contact with the skin for a prolonged period of time must not release more than 0.5 µg nickel per week per cm² in order to prevent sensitisation. In many cases it is simple for anyone to check whether an object releases too much nickel by using a rapid nickel test. For pieces of jewellery intended to be inserted into pierced body parts the rapid nickel test is not adequate as the maximal permissible release is only 0.2 µg nickel per week per cm². In these cases a more sensitive method must be used.

Cadmium

Cadmium is a toxic heavy metal and, once resorbed, remains in our body for a very long time. As the unavoidable background exposure of the population to this metal via the environment and food consumption is already very high, it is necessary to avoid the use and distribution of cadmium wherever it is possible. Therefore, metal parts of jewellery and other object that are in contact with the skin over a prolonged period of time may not contain more than 0.01 % cadmium. Jewellery with a very high cadmium content may even release enough cadmium to be considered a health risk. Unlike nickel release cadmium content cannot be measured so easily. However, contract laboratories are able to help.

Lead

Lead in jewellery or similar items may endanger people's health if more than 0.09 µg are released per cm² per hour. Therefore, a new restriction for lead in jewellery was introduced in 2014. However, the restriction was imposed on the lead content which may not exceed 0.05 %. It is assumed that a lead content below the new limit cannot lead to lead release above the threshold of 0.09 µg per cm² per hour. As with the cadmium, the lead content can be analysed by a contract laboratory. The additional effort to measure lead, when the cadmium content is determined is very small.



Companies must check compliance of their products

Companies dealing with jewellery and similar items are required – by law – to ensure and check the compliance of their goods. A suitable system must be in place to ensure that only safe and compliant products are sold. Such a system may contain the following aspects:

- **Make contracts with suppliers:** These should make your suppliers certify and possibly prove with test reports that the goods comply with the relevant Swiss legislation.
- **Use rapid nickel test:** With the rapid nickel test the surface of a metallic object is wiped with a treated and prepared test strip or cotton wool bud for a few seconds. The formation of a pink dye indicates the release of nickel. In Switzerland these test (e.g. Squarix) can be bought at the pharmacy.
- **Spot checks with a contract laboratory:** A variety of contract laboratories (www.swisstestinglabs.ch) are able to test nickel release according to European Norms (e.g. EN 1811) sensitively as well as to determine cadmium and lead contents. These analyses are spot checks and are most wisely done for new suppliers or very popular articles, i.e. after a risk analysis.
- **Keep written records:** All information on the goods such as producer, supplier, certificates and your own analyses and their results must be documented. Obviously, the documentation must also include measures you have taken due to finding non-compliant items (e.g. disposal).



Legal background

The obligation for checking your own goods is one of the principal duties for business operators set out in art. 26 of the “Bundesgesetz über Lebensmittel und Gebrauchsgegenstände” (Lebensmittelgesetz LMG, SR 817.0). Article 61 of the “Lebensmittel- und Gebrauchsgegenständeverordnung” (LGV, SR 817.02) states that jewellery may only release substances that do not endanger health. The limit for nickel release for jewellery is set out in art 2 of the “Verordnung des EDI über Gegenstände für den Schleimhaut-, Haut- und Haarkontakt sowie über Kerzen, Streichhölzer, Feuerzeuge und Scherzartikel“ (Verordnung über Gegenstände für den Humankontakt, HKV, SR 817.023.41). Art. 2a and 2b of the aforementioned regulation set out the limits for cadmium and lead contents respectively. The limits for jewellery mentioned in this leaflet are identical for Switzerland and the European Union.

Further information

Contact details for the food safety authorities responsible for each canton can be found at www.kantonschemiker.ch.