

Why is nickel limited in food? The certification rationale

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<https://heavymetalcertified.com/why-we-limit/nickel>. Retrieved 2026-09-27.

THE RATIONALE

CERTIFICATION RATIONALE · HEAVY METAL CERTIFIED · AUGUST 2026

HMTc limits nickel because EFSA's 2020 reassessment set a chronic tolerable daily intake of 13 µg/kg body weight per day on a reproductive-developmental endpoint that mean dietary intake already exceeds, the most-exposed young children exceed it further, and nickel-sensitized people react to oral doses well below it — and the contamination is largely controllable through sourcing.

In brief

Nickel is limited in food because exposure has already overtaken the guidance value. When EFSA reassessed nickel in 2020 it set a chronic tolerable daily intake of 13 µg/kg body weight per day, and found that average European dietary intake already exceeds it, with the most-exposed young children exceeding it by more. A separate acute concern applies to the substantial fraction of people who are nickel-sensitized, who can react to oral doses far below the chronic value. Because nickel enters food mainly through plant uptake and is controllable through sourcing and process control, a certification limit that adopts the strictest government ceiling and holds the cleaner part of the market to it is a workable lever.

The health basis for limiting nickel

Nickel's dietary regulation rests on two distinct endpoints. For chronic exposure, EFSA's 2020 CONTAM opinion established a tolerable daily intake of 13 µg nickel/kg body weight per day, anchored on a BMDL10 of 1.3 mg/kg body weight per day for increased post-implantation loss in animal studies — a reproductive and developmental endpoint. The finding that made this a live regulatory concern is the exposure comparison: mean dietary intake in Europe already exceeds the tolerable intake, and the most-exposed young children exceed it further. For acute exposure, EFSA identified eczematous flare-up reactions in nickel-sensitized people — systemic contact dermatitis — as the critical effect, with a reference point (a LOAEL of 4.3 µg/kg body weight) far below the chronic value, which matters because nickel sensitization is common.

Nickel compounds are also classified by IARC as Group 1 and by the US National Toxicology Program as known human carcinogens, on inhalation evidence for lung and nasal cancer — a route distinct from the dietary endpoints. The full agency record is on [the nickel analyte reference](#).

Who the exposure reaches

Two populations are most affected. The first is young children, whose intake per unit of body weight is highest and who therefore sit furthest above the tolerable intake on the chronic endpoint. The second is the large group of nickel-sensitized individuals, for whom an oral dose well under the chronic guidance value can trigger a systemic dermatitis flare. Because a program certifying infant and child foods is aimed squarely at the first group, and because the plant staples that carry nickel recur through a child's diet, keeping the number down is a direct benefit to the eaters the standard is written for.

Where nickel shows up in food

Nickel enters food chiefly through plant uptake, so it concentrates in plant staples: legumes and pulses, whole grains and oats, nuts, soy, and cocoa and chocolate. These are exactly the ingredients that anchor many infant and child foods and plant-forward diets, which is why nickel exposure tracks the diet's reliance on them. A secondary route is leaching from nickel-bearing stainless steel during cooking and processing, which can add to the food's own load.

The per-category occurrence figures and the derivation behind each limit are on the [standards register](#); the complete occurrence corpus is on [the Heavy Metal Index](#)².

Why a certification limit is warranted

When mean intake already exceeds the tolerable value, the useful response is not another safe-dose claim but a push on the controllable sources — and nickel is largely controllable through sourcing and process control. The EU set its first binding nickel maximum levels in food in 2024, a risk-management response to the EFSA exceedance finding, with category limits ranging from 0.10 mg/kg for liquid infant formula to higher values for cereals and seaweed.

HMTc treats nickel as a claim analyte: it adopts the strictest existing government maximum level directly, computing an occurrence value only where no government sets one. Every claim analyte is equal at the gate; a product is certified only at or below its published limit, and above it, on any metal, it is not certified and carries no mark. A regulatory hard-stop blocks certification of any product over an applicable legal limit. How the limit is derived is set out under [how limits are derived](#).

Findings that bear on Nickel

Program analyses that trace how nickel enters specific foods. Each covers a finding from the independent Heavy Metal Index and applies it to the certification question; the underlying occurrence record is on the Index.

Dietary nickel in plant staples

Legumes, whole grains, oats and cocoa carry the bulk of dietary nickel.

Multi-metal bioaccumulation in tea

The tea plant takes up nickel along with several other metals.

Metal leaching from cookware and utensils

Nickel-bearing stainless steel can add to a food's own load.

Frequently asked questions

▼ Why is nickel limited in food now?

Because exposure has overtaken the guidance value. EFSA's 2020 reassessment set a tolerable daily intake of 13 µg/kg body weight per day, and found that mean dietary intake in Europe already exceeds it, with the most-exposed young children exceeding it further. The EU set its first binding nickel food limits in 2024 in response.

▼ Which foods are highest in nickel?

Plant staples: legumes and pulses, whole grains and oats, nuts, soy, and cocoa and chocolate. Nickel enters through plant uptake, so plant-forward and many infant and child foods carry the most. Cooking in nickel-bearing stainless steel can add a further amount.

▼ Why does nickel matter for people with a nickel allergy?

Nickel-sensitized people can experience a systemic contact dermatitis flare from oral nickel at doses well below the chronic tolerable intake. EFSA identified this acute reaction as a separate critical effect, with a reference point far below the chronic value, which matters because nickel sensitization is common.

▼ Is nickel a carcinogen?

Nickel compounds are classified by IARC as Group 1 and by the US National Toxicology Program as known human carcinogens, but on inhalation evidence for lung and nasal cancer — an occupational route distinct from the reproductive-developmental and contact-allergy endpoints that drive its regulation in food.

▼ How does HMTc set its nickel limit?

HMTc treats nickel as a claim analyte: it adopts the strictest existing government maximum level directly, computes an occurrence value only where no government regulates the cell. Every claim analyte is equal at the gate; a product is certified only at or below its published limit. A regulatory hard-stop blocks any product over a legal limit.

Evidence and sources

This page synthesises three surfaces that carry the underlying evidence, and links to them rather than re-hosting them:

The government and expert-body assessments, agency by agency, with the toxicological reference points — [the Nickel analyte reference](#)

REFERENCE

The certification limits in force, and the Method v2.0 derivation behind each — the HMTc standards register	STANDARD
The complete peer-reviewed and regulatory literature and the occurrence corpus — Nickel on the Heavy Metal Index [↗]	INDEX · ONE-WAY

The Heavy Metal Index is an independent literature reference; this certification site cites it one way and applies its evidence to the certification question. The Index never cites back — that is what keeps it a disinterested source.

Cite this page

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