# Nickel

**DISCLAIMER: the following is not meant to treat anyone with advice or tell you what you should do, such as relative to use of medication, exercise, or changing your diet. The information in this handout is merely offering what has been published in the research literature, as well as based on my professional experience. Talk to a doctor or other appropriate professionals as to what is best for your own specific needs.**

**It should also be appreciated that everyone has their own perspective on how to improve health. Nutritionists do it through food. Physicians do it through medicine. Psychologists do it through changing thoughts, feelings, and behaviors. Consequently, what is offered here is a reflection of my own bias and perspective.**

Almost everyone doesn't give a nickel's worth of attention to this metal beyond the 5 cent coin. Maybe we should think about it more.

There is a need for nickel and it is found mainly in the skin, bone marrow, and various enzymes.

It is the most common metal allergen, and it is estimated that about 8.6% of people worldwide have an allergy to it. Such an allergy is especially prevalent in young females as about 17% have this condition. It is also common in those with Hashimoto's, and it might play a role in the development of thyroid nodules and autoimmune diseases. People with atopic dermatitis seem especially vulnerable to nickel allergy. In 2008 nickel was named 'Allergen of the Year.'

The metal is known for its strength and resistance to heat and corrosion. It is also in food in small amounts such as some grains, fruits, vegetables, chocolate, and tea to name some sources. There is also something known as systemic nickel allergy syndrome (SNAS) which is what can happen to some people who are sensitive to the metal and absorb it into the body causing symptoms like headache, stomachache, and respiratory problems. Doctors link this sensitivity to symptoms of fibromyalgia, chronic fatigue, and other chronic diseases.

There are different types of allergies. One is a contact dermatitis, due to exposure to the skin. The most common form of nickel allergy is eczema at the point of contact, with itching, redness, and watery blisters. With increasing levels of sensitivity, eczema can occur elsewhere on the body in more distant locations. And in especially severe cases it can occur all over the skin. With high sensitivity to nickel people who eat nickel-containing foods can trigger eczema on body parts, especially the eyelids, elbows, neck, and hands. The ear canal can also be impacted, along with an itchy head, hair loss, joint pain, along with migraine and fatigue.

Another type of allergic reaction is systemic contact dermatitis where a person who is sensitized to a substance through skin contact is exposed to it systemically such as through food. e.g. People who are allergic to nickel in jewelry may develop a rash after eating foods that contain nickel resulting in rashes, itchy bumps on the elbows, hives, eczema, and itching.

There is also systemic nickel allergy syndrome which can include symptoms like headaches, migraines, asthma, IBS, joint swelling and pain, colitis, stomachache, and tinnitus. This is often experienced in conditions like fibromyalgia and chronic fatigue. A diagnosis is typically made from symptoms or an elimination diet.

It is a commonly used heavy metal that can cause serious health problems. It is found in most homes such as in cell phones, jewelry, electrical equipment, batteries (NiCd), eyewear, credit cards, clothing hardware (bra hooks, zippers, belts), lotions (containing shea butter, oats or cocoa butter). It is in some shampoos, and many hair perm and dye products, along with vegetarian fake meat products. It can also be in IUDs, dental crowns and bridges, and orthodontic appliances, tobacco, and tap water. And then there is cutlery, along with pots and pans such as being part of stainless steel. Small amounts of it can leach from such utensils into your food, mouth and water over time and can accumulate which might make you sick. Research offers that such leaching is relatively brief when it is new. (Journal of Agricultural & Food Chemistry, "Stainless steel leaches nickel and chromium into foods during cooking" Kristin Kamerud et al, Sept. 2013). It is stored in body fat – which means that it is attracted to places like the brain which is largely comprised of fat. And being fat soluble it can interfere with vitamins A, D, E, and K.

How much nickel is in food depends on the plant species and how much is in the soil. For seafood, it depends on the water. But some foods are known to contain more nickel than others. Some foods that are said to be high in nickel include:

- Flours and grains such as
  - wheat flour
  - oats
  - buckwheat
  - pearl barley
  - millet
  - wheat germ
  - multigrain breads and cereals
  - unpolished brown rice
- Seeds
  - almonds
  - hazelnuts
  - sunflower
  - sesame
  - alfalfa
  - oil derived from nuts or seeds
- Seafood
  - bass
  - carp
  - kelp
  - oysters

- shrimp
- trout
- mussels
- crawfish

- Legumes
  - beans
  - chickpeas
  - lentils
  - dried mung beans
  - peanuts
  - red kidney beans
  - peas
  - soybeans (and other soy products like tofu)
- Vegetables
  - bean sprouts
  - cabbage
  - leeks
  - kale
  - lettuce
  - spinach
- Fruit
  - avocado
  - dates
  - figs
  - oranges
  - pineapple
  - prunes
  - raspberries
- Chocolate and cocoa
- Canned food such as
  - beer
  - carbonated drinks
  - nuts
  - pickles
  - tomato paste
- Other sources such as
  - cigarette smoking
  - imitation whipped cream
  - hydrogenated peanut butter (where there's no 'oil on top')
  - hydrogenated fats and vegetable oils (e.g. margarine)
  - rooibos tea and any red tea
  - vegetable shortening
  - cosmetics
  - electroplating, welding

- rooibos tea

Symptoms of nickel toxicity include:

- abdominal pain
- allergic reactions
- breast pain
- cancer (it is sometimes called 'the cancer mineral' and is associated with many types of it)
- deficiency of fat soluble vitamins and essential fatty acids
- depression
- dermatitis (redness, irritation, inflammation, or rashes on the skin)
- dizziness
- encephalopathy (brain disease or damage)
- fibromyalgia
- headaches
- heart palpitations
- infertility
- kidney damage/dysfunction
- low blood pressure
- male pattern baldness
- myocarditis (inflammation of the heart)
- nasopharyngeal tumors (cancer of the head and neck)
- prostate problems including cancer
- pulmonary fibrosis (scarring of the lungs)
- reduced sperm count
- skin rashes
- vertigo
- visual disturbances
- vitamin A deficiency (mouth ulcers, poor night vision, acne, frequent colds or infections, dry flaky skin, dandruff, thrush, diarrhea)
- vitamin D deficiency (joint pain or stiffness, backache, tooth decay, muscle cramps, hair loss)
- vitamin E deficiency (lack of sex drive, exhaustion after light exercise, easy bruising, slow wound healing, varicose veins, loss of muscle tone, infertility)
- vitamin K deficiency (easy bleeding, lack of good bacteria in the GI tract, overgrowth of bad bacteria)
- essential fatty acid deficiency (omega 3, 6, 9, EPA, DHA.) Some of the problems that can result include: dry skin, eczema, dry hair or dandruff, excessive thirst, excessive sweating, poor memory or learning, inflammatory problems such as arthritis, high blood lipids, depression, PMS, breast pain, water retention, hair loss, itchy skin, stiff painful joints, craving for fatty foods
- histidine deficiency (an amino acid). Poor recovery from illness and injury, allergy reactions, inflamed muscles, painful muscles, fibromyalgia, high blood pressure, anemia, kidney failure)

According to the government (Dietary Reference Intakes for Vitamin A, K, arsenic, boron, chromium, copper, iodine, iron, manganese, molybdenum, nickel, silicon, vanadium, and zinc, 2001) "there is no evidence in humans of adverse effects associated with exposure to nickel through consumption of a normal diet." Others suggest that water with nickel concentrations of 250 ppm can cause problems with the kidneys and blood.

One way to determine if you are toxic with nickel is through a hair mineral analysis. Another is through a patch but it can have false positives or negatives. A urine test is another means in that it is the major route for excretion of nickel.

Symptoms of deficiency

- hyperglycemia (high blood sugar)
- low blood pressure
- depression
- liver disease
- anemia
- low stomach acid
- sinus congestion
- fatigue
- low adrenals

An Adequate Intake for nickel has not been set. The only source of intake should be from food. The Upper Limit is said to be 1 mg which is based on rat research. For people with nickel hypersensitivity and kidney dysfunction they may not be protected by the Upper Limit for the general population.

According to FDA research from 1984, the mean nickel consumption was

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| Infants and children | 69-90 mcg/day |
| Adolescents | 71-97 mcg/day |
| Adults | 74-100 mcg/day |
| Elderly | 80-97 mcg/day |

The European Food Safety Authority says food is the main source of nickel intake. Their tolerable daily intake from all sources is 13 mcg/kg of body weight. It is thought to be 'likely safe' for most people with levels of:

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|---|---|
| 1-3 years | 0.2 mg/day |
| 4-8 years | 0.3 mg/day |
| 9-13 years | 0.6 mg/day |
| Adults | 1 mg/day |

adults up to 1 mg/day. More than 1 mg/day is 'possibly unsafe.' High doses are poisonous.

What to do if you are having toxicity includes avoiding the types of foods mentioned above. Another step to consider is avoiding stainless steel that is graded 18/8 or 18/10 (or what some countries call 304 and 316). The numbers mean 18% chromium and either 8 or 10% nickel. Instead, look for 18/0 (or 440) meaning it contains 0% nickel. Faucet taps may contain nickel so running the water for a minute when it has been sitting a while such as overnight can be done. Use of a good water filter is another approach. Ask your doctor if the IUD being recommended contains nickel. Some supplements like multivitamins may contain nickel so check the label. Implants such as for hip and knee joint replacement, along with cochlear and cardiac implants may contain small amounts of nickel too.

Vitamin C, iron and zinc can decrease the amount of nickel that is absorbed as they compete for the same receptors and displace the metal. Nutrients that might defend against absorbing and retaining nickel include riboflavin (vitamin B2), selenium, vitamin E and curcumin. Garlic and cilantro may help detox from nickel, along with DMSA and DMPS.

Another approach that has some research behind it is sweating through use of a steam or infrared sauna. Such sweating was found to be good in helping to eliminate heavy metals including lead, cadmium, and aluminum, along with others such as nickel (Archives of Environmental Contamination & Toxicology, "Blood, urine and sweat (BUS) study: monitoring and elimination of bioaccumulated toxic elements" Stephen Genius, et al, Nov. 2010). You should have appropriate cardiovascular health before making use of a sauna and should talk to your doctor if you are unsure about this issue. You need to drink water before or after sauna use as to dehydration as well as consider replenishing electrolytes that are lost to sweating too.