



# Magnesium

## General Information

### Key Points

- magnesium is a silvery white metal that is insoluble in cold water
- magnesium is present in all living things where it has a number of important biological functions
- it is also used to make a number of medicines and lightweight metal alloys
- it is the eighth most common element in the Earth's crust
- burning of fuel and metal industry may emit magnesium into the environment
- sources of exposure include the diet, supplements and medicines
- ingestion of too much magnesium may result in nausea, vomiting, diarrhoea and stomach upset

## Public Health Questions

### What is magnesium?

Magnesium is a silvery white metal that is insoluble in cold water. When combined with certain other elements magnesium can form “magnesium salts” (e.g. magnesium sulphate). The term magnesium here will be used to refer to both metallic magnesium and magnesium salts unless otherwise specified.

### What is magnesium used for?

Magnesium is naturally present in all living things. In the human body it has many functions, one of the most important being to help convert food into energy.

Magnesium is used to make a number of medicines including antacids and laxatives. It is also used to make lightweight metal alloys for use in aircraft, vehicles and machinery.

### How does magnesium get into the environment?

Magnesium is the eighth most common element in the Earth’s crust, it is found in rocks and mineral deposits. It is also naturally present in sea water, salt deposits and fresh water. Fresh water contains magnesium salts, the level of which varies depending on the geographical region.

Activities such as fuel burning and production of magnesium products and materials may emit magnesium into the environment.

### How might I be exposed to magnesium?

Magnesium is found naturally in various foods including green leafy vegetables, nuts, grains, fish and dairy products. It is also used as a food additive and is present in some dietary supplements and medicines including antacids and laxatives. Drinking water may also contain low levels of magnesium. Low level exposure from a normal diet and from the correct use of magnesium containing dietary supplements or medicines would not be expected to cause adverse health effects.

Occupational exposure to magnesium may occur during mining, processing and production of magnesium alloys. However, safe limits are enforced to protect the employees. Such levels are below those that are thought to cause harmful effects.

### If I am exposed to magnesium how might it affect my health?

The level of exposure to magnesium as would be expected from a normal diet and proper use of medications and supplements is not a concern for health.

Ingestion of large amounts of magnesium may result in nausea, vomiting, diarrhoea and stomach upset.

Repeatedly consuming too much magnesium (such as regularly taking too much of a magnesium containing laxative) can result in long term diarrhoea and a dangerous loss of fluid and electrolytes from the body.

If metallic magnesium is inhaled (such as in the workplace) it can cause metal fume fever. This may result in cough, sore throat, chest tightness, headache, breathing problems, muscle pain and fever.

### Can magnesium cause cancer?

Magnesium is not thought to be a cancer causing chemical.

### Does magnesium affect pregnancy or the unborn child?

Magnesium is not considered to be a chemical that causes harm to the unborn child. However, if the exposure to magnesium causes the mother to become unwell this may affect the unborn child.

### How might magnesium affect children?

Children exposed to magnesium would be expected to display similar symptoms to those seen in exposed adults.

Magnesium containing products and medicines stored at home should be kept in an appropriate container and kept out the reach of children.

### Are certain groups more vulnerable to the harmful effects of magnesium?

People with kidney disease may be more sensitive to the effects of ingestion of large amounts of manganese because their kidneys may not be able to remove the magnesium from the body.

### What should I do if I am exposed to magnesium?

It is very unlikely that the general population will be exposed to a level of magnesium high enough to cause adverse health effects. However, if you have any health concerns regarding over exposure to magnesium seek guidance from your GP or contact NHS 111.

### Additional sources of information

NHS Choices- Vitamins and minerals <https://www.nhs.uk/conditions/vitamins-and-minerals/others/>

UKTIS. Best Use of Medicines in Pregnancy <http://www.medicinesinpregnancy.org/>

This document from the PHE Centre for Radiation, Chemical and Environmental Hazards reflects understanding and evaluation of the current scientific evidence as presented and referenced here.

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