

**Bureau of Environmental Health
and Radiation Protection**

**"Protect and improve the health of all Ohioans by
preventing disease, promoting good health and
assuring access to quality care."**

PERCHLORATE

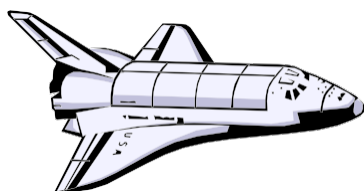
Answers to Frequently Asked Health Questions

What is perchlorate?

Perchlorates are both man-made and naturally occurring inorganic salts. Perchlorate salts are commonly found as ammonium, potassium and sodium perchlorate. Perchlorate salts do not adhere (stick) to mineral surfaces such as rocks and sand or organic materials such as plants and grass. These salts are highly soluble (quickly dissolve) in water so they move around freely in surface water and easily into the groundwater (underground drinking water).

How is perchlorate used?

Perchlorates are mainly used as oxygen-adding components in solid rocket fuels, missiles, explosives, munitions, pyrotechnics, highway safety flares, fireworks, matches and in electroplating. More than 90% of all the perchlorate salts produced in United States have been used in the solid rocket fuel for military missiles and the NASA space shuttle.



How does perchlorate get into the environment?

Wastes from the manufacture and improper disposal of perchlorate are increasingly being discovered in groundwater (underground drinking water) in private wells and public drinking water well fields. Just like table salt, perchlorate salts dissolve easily in water and will remain in the water a long time. Perchlorate has been found in the groundwater of more than 20 states.

How does perchlorate get into your body?

Perchlorate gets into the body by ingesting

(drinking) contaminated water. Perchlorate is easily absorbed into the bloodstream but is very quickly removed. Bathing and showering are not a health concern because perchlorate does not absorb well through the skin and it is not readily inhaled as a vapor.

How can perchlorate affect human health?

The main health effect of perchlorate exposure is on the thyroid gland. Perchlorate can interfere with the thyroid taking in (uptaking) its needed nutrient, iodide. Iodide is important in the production of thyroid hormones. Perchlorate is what scientists refer to as an endocrine disrupter because it can alter hormone levels.

Short-term fluctuations in thyroid hormone levels are normal and the body has a certain capacity to cope and adjust for these small changes. In adults, the thyroid helps to regulate metabolism. In children, the thyroid plays a major role in proper development in addition to regulating metabolism. Impairment of thyroid function in expectant mothers may harm the fetus and newborn and result in effects including delayed development and decreased learning capability.

Does perchlorate cause cancer?

Currently the U.S. Environmental Protection Agency (EPA) does not have enough data to classify perchlorate as a carcinogen (known to cause cancer).

Is there a drinking water standard for perchlorate?

In October of 2008, the U.S. EPA published Preliminary Regulatory Determination for Perchlorate, a public comment notice

placed in the Federal Register. In this document, EPA found that perchlorate will not be regulated under the Safe Drinking Water Act as it does not present “a meaningful opportunity for health risk reduction for persons served by public water systems.”

On August 19, 2009, EPA sought comment on additional approaches to considering exposure to different life stages and sensitive populations including pregnant women and children.

In February of 2011 EPA supported regulating perchlorate under the Safe Drinking Water Act (SDWA). EPA will consult with the Science Advisory Board and the National Drinking Water Advisory Council to evaluate the feasibility and affordability of treatment technologies to remove perchlorate and will examine the costs and benefits of potential standards.

US EPA perchlorate timeline

- In 1992, the U.S. EPA published a temporary standard for perchlorate exposure that would not be expected to pose a health threat. This value was equivalent to a drinking water concentration of 4 to 18 parts per billion (ppb).
- In 1998, the U.S. EPA placed perchlorate on its Contaminant Candidate List for possible regulation.
- In 1999, the U.S. EPA required drinking water monitoring for perchlorate under the Unregulated Contaminant Monitoring Rule.
- In 2002, the U.S. EPA released a revised draft drinking water standards action level to 4 ppb in drinking water.
- Using the best available science, a panel of leading scientific experts met in October 2003 to review available perchlorate health studies and basic science issues regarding perchlorate and possible health effects.
- In October of 2008, the U.S. EPA published *Preliminary Regulatory Determination for Perchlorate*, a public comment notice in the *Federal Register*. The document reported that

perchlorate will not be regulated under the Safe Drinking Water Act.

- On August 19, 2009, EPA sought comment on additional approaches to analyzing data beyond those discussed in the preliminary regulatory determination for perchlorate.

In February 2011, EPA decided to regulate perchlorate under the Safe Drinking Water Act (SDWA). This decision reverses a 2008 preliminary determination. EPA intends to publish the proposed regulation and analyses for public review and comment within 24 months. EPA will consider the public comments and expects to enact final regulation within 18 months of the proposal.

References:

U.S. EPA. Ground Water and Drinking Water. Perchlorate. 2004

Department of Defense. PERCHLORATE UPDATE Vol. 1; October 20, 2003

California Department of Health Services, Division of Drinking Water and Environmental Management. Perchlorate in California Drinking Water. 2002

California Office of Environmental Health Hazard Assessment (OEHHA). Frequently Asked Questions (FAQs) About the Public Health Goal for Perchlorate. March 11, 2004

U.S. EPA. Final Regulatory Determination for Perchlorate, Web accessed 2012

Where can I get more information?

U.S. EPA. Ground Water and Drinking Water. Perchlorate.
2012 <http://water.epa.gov/drink/contaminants/unregulated/perchlorate.cfm>

U.S. EPA ***Fact Sheet: Final Regulatory Determination for Perchlorate*** 2012
<http://water.epa.gov/drink/cont>

[aminants/unregulated/upload/FactSheet_PerchlorateDetermination.pdf](#)

www.oehha.ca.gov/water/phg/pdf/finalperchlorate31204.pdf

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