

Rocket Fuel Chemical Found in Powdered Infant Formula

ATLANTA, Georgia, April 3, 2009 (ENS) - All 15 brands of powdered infant formula tested by scientists with the federal government's Centers for Disease Control were found to be contaminated with perchlorate, a component of solid rocket fuel, flares, fireworks and some fertilizers. The chemical has been detected in drinking water in 28 states and territories and at low levels in food supplies.

The CDC researchers tested four different types of infant formulas - those made from cow's milk containing lactose, cow's milk-based but lactose-free, soy-based, and elemental formulas, typically consisting of synthetic amino acids.

Perchlorate was a contaminant of all commercially available powdered infant formula tested. Bovine milk-based powdered infant formula with lactose had a significantly higher perchlorate concentration perchlorate than soy, lactose-free, and elemental formulas.

Exposure to perchlorate has been shown to reduce thyroid hormone production and inhibit the uptake of iodide, which is required for healthy function of the thyroid gland. The thyroid controls human metabolism, growth and development - too little thyroid hormone, called hypothyroidism, leads to weight gain, low heart rate, water retention, poor muscle tone, and fatigue.

The National Academies of Science have identified the fetuses of pregnant women who have hypothyroidism or iodide deficiency as the subpopulation most sensitive to the effects of perchlorate exposure.

When powdered formula is reconstituted with water that is also contaminated with perchlorate, the infant may be ingesting more of the chemical than the so-called reference dose set by the U.S. Environmental Protection Agency, the researchers warned.

The two most contaminated brands, made from cow's milk, accounted for 87 percent of the U.S. powdered formula market in 2000, the scientists said, although they did not identify the formula brands tested.

The study, published in the current edition of the "Journal of Exposure Science and Environmental Epidemiology," raise fresh concerns about perchlorate contamination.

Led by Dr. Joshua Schier with the CDC's Division of Environmental Hazards and Health Effects, the researchers conclude that perchlorate exposure may be higher in infants on powdered formula compared with older persons because infants consume more of the substance for their weight than older persons.



All 15 powdered formulas tested contained perchlorate. (Photo credit unknown)

"Perchlorate contamination of drinking water is a very serious concern, particularly for infants," said Anila Jacob, M.D., M.P.H., a senior scientist with the nonprofit Environmental Working Group.

"As this unprecedented study demonstrates, infants fed cow's milk-based powdered formula could be exposed to perchlorate from two sources - tap water and formula," said Jacob. "That suggests that millions of American babies are potentially at risk."

The CDC scientists pointed out that the Food and Drug Administration requires infant formula to be supplemented with iodine, a nutrient that can counter the adverse effects of perchlorate on the thyroid gland. The range of required iodine concentrations in formula is between five and 75 micrograms per 100kcal of energy.

Iodine supplements at higher levels may offer some protection from the effects of perchlorate, but the scientists warn that even adequate iodine intake among formula-fed infants is not guaranteed to prevent "perchlorate-induced thyroid dysfunction."

The Environmental Working Group is calling on U.S. EPA Administrator Lisa Jackson to "scrap Bush era perchlorate policies that shielded defense contractors and other big polluters from the costs of cleaning up perchlorate-contaminated water by setting a legally enforceable safe drinking water level that protects pregnant women, infants and others who are most vulnerable to the effects of this harmful chemical."

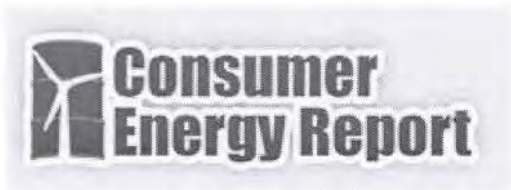
At her confirmation hearing before the Senate Environment and Public Works Committee, Jackson promised chair Senator Barbara Boxer of California that she would act "immediately" to reduce perchlorate contamination in drinking water. Boxer has repeatedly introduced legislation to protect the public from perchlorate exposure.

To date, Jackson has not announced any nationwide action to limit perchlorate exposure.

However, on March 17, the U.S. EPA joined the City of Pasadena, California and the National Aeronautics and Space Administration at the groundbreaking for a facility that will remove perchlorate and other chemicals from the groundwater near the NASA Jet Propulsion Laboratory Superfund site.

"The EPA is pleased to support the Monk Hill water treatment plant, which will bring clean water to the people of Pasadena and prevent further migration of perchlorate in the groundwater basin," said Keith Takata, the U.S. EPA's Superfund director for the Pacific Southwest Region.

Surrounding Pasadena water wells have been shut down due to perchlorate contamination. NASA is funding construction and operating costs and the City of Pasadena will own and operate the plant. Completion is scheduled for 2010.



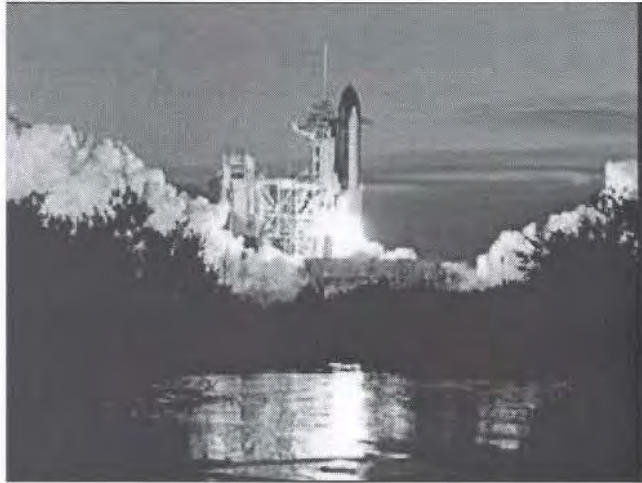
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Would You Feed Your Baby Rocket Fuel?

Tagged with: [dangerous chemical](#), [Environmental Protection Agency](#), [Environmental Working Group](#)

Posted by [Gerri L. Elder](#) on Tuesday, April 7, 2009

Would You Feed Your Baby Rocket Fuel?



Of course you wouldn't feed an infant rocket fuel from a bottle, right? Actually, you might be surprised to find that you probably have.

Government researchers recently found a chemical that is used as the main ingredient in solid rocket fuel present in 15 out of 15 brands of baby formula tested. Don't worry though; the Environmental Protection Agency doesn't have a problem with the contaminated formula.

The chemical, perchlorate, at the levels found in the formula, have been deemed safe by the EPA.

Perchlorate is known to interfere with the production of thyroid hormones. The chemical effectively inhibits the absorption of iodine. But it's okay that it's in your baby's food - because the EPA says so.



Scientists at the Centers for Disease Control and Prevention found formula made with cow's milk contained higher concentrations of perchlorate than soy formulas. Unless a baby has an allergy or digestive problem with cow's milk-based formula, it is what most are fed.

Two brands stood out with the highest levels of perchlorate. Care to guess which ones? The two brands that command 87 percent of the market share for baby formula had more than double the amount of the potentially dangerous chemical than other, less popular brands.

To compound the problem, drinking water in 25 states contains high levels of perchlorate. If powdered baby formula is mixed with this water, parents could unknowingly be poisoning their children.

The Environmental Working Group has said the EPA's recommended limit of perchlorate does not protect public health and downplays the risks.

So, who do you believe? The fact is that baby formulas contain perchlorate - the base ingredient of rocket fuel. Scientist may debate about safe levels, but as a

Environmental Research Web

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Common pollutant could harm infants

Perchlorate - a common industrial pollutant - can concentrate in the breast milk of nursing rats according to work by researchers at the Albert Einstein College of Medicine in the US. Perchlorate is linked with thyroid ailments because it inhibits the sodium/iodide symporter (NIS), a protein that transports iodide into the thyroid and other tissues. Reduced iodide uptake can lead to hypothyroidism, which is especially dangerous in infants because it directly affects their development in many ways.

Iodide is relatively scarce in the environment and tissues that accumulate it - like the thyroid and lactating breast - contain NIS on their cell surfaces to actively "pull" iodide from the bloodstream into cells. Iodide is an essential constituent of the thyroid hormones. As well as being important for the metabolism of the entire organism, these hormones are crucial for the development of the central nervous system, skeletal muscle and lungs in fetuses and newborns.

"Anything that prevents iodide from reaching the thyroid can lead to hypothyroidism at any age, but in the early stages of life, it can impair neural development and even cause mental retardation," team leader Nancy Carrasco told [environmentalresearchweb](#).

Perchlorate is routinely used in various industrial applications, including as an oxidiser in rocket fuel, fireworks and airbag inflation systems. It is also found in chemical fertilisers. Low levels of the chemical have been found in food and water around the US by the Environmental Protection Agency, indicating that it is probably present worldwide.

The new results suggest that if a nursing mother is exposed to high concentrations of perchlorate in water and/or food, she will pass this chemical onto her child via her milk. Perchlorate ingested by the child would then prevent iodide from being concentrated by NIS proteins in the child's thyroid.

For technical reasons, it's difficult to measure directly the concentration of perchlorate in biological systems by conventional methods such as radioisotope-labelling. Instead, Carrasco and colleagues obtained their results by injecting lactating rats with the chemical. The researchers then extracted the animals' breast milk and tested it on cells that express NIS. They found that the milk inhibited iodide transport in NIS-expressing cells, indicating that NIS actively transports perchlorate.

"The same protein - NIS - that actively recruits iodide into the cells does the same thing for perchlorate," explained Carrasco. "In fact, NIS has a higher affinity for perchlorate than it does for iodide, which certainly heightens the risk posed by this contaminant."

The researchers say their work will underscore the importance of efforts aimed at reducing perchlorate pollution of water and food. "This study could focus more attention on the potential health risks of this chemical," said Carrasco.

She adds that nursing mothers should find out whether they live in an area known to have high levels of perchlorate in the water or local food supply. If so, they should avoid consuming this water and food.

As NIS is also expressed in the placenta, the team now plans to analyse the effect of perchlorate exposure during gestation.

The scientists reported their work in **PNAS**.

About the author

Belle Dumé is a contributing editor to **environmentalresearchweb**.