

**Rocket-Fuel Chemical Found in Breast Milk; Perchlorate is found in almost all samples tested, a study finds, raising concerns about the substance's effect on the thyroid and brain**

**By MARLA CONE**  
*Los Angeles Times*  
23 February 2005

Scientists on Tuesday reported that perchlorate, a toxic component of rocket fuel, was contaminating virtually all samples of women's breast milk and its levels were found to be, on average, five times greater than in cow's milk.

The contaminant, which originates mostly at defense industry plants, previously had been detected in various food and water supplies around the country. But the study by Texas Tech University's Institute of Environmental and Human Health was the first to investigate breast milk.

The findings concern health experts because infants and fetuses are the most vulnerable to the thyroid-impairing effects of the chemical.

Breast milk from 36 women in 18 states, including California, was sampled, and all contained traces of perchlorate.

Perchlorate blocks the nutrient iodide and inhibits thyroid hormones, which are necessary for brain development and cellular growth of a fetus or infant. A baby with impaired thyroid development may have neurological defects that result in lower IQ or learning disabilities.

The researchers recommended that pregnant and nursing women block the effects of perchlorate by taking iodine supplements as a precaution.

At the levels they found in breast milk, the scientists reported that 1-month-old infants would take in enough perchlorate to exceed a safe level, called a reference dose, that was established last month by a panel of the National Academy of Sciences.

"It is obvious that the NAS safe dose ... will be exceeded for the majority of infants," the report published in the journal *Environmental Science and Technology* says. Some infants would ingest so much that they would exceed levels that altered the brain structure of animals in laboratory tests.

The findings come as the U.S. Environmental Protection Agency is developing an enforceable limit on the amount of perchlorate in drinking water based on the recommendations of the National Academy of Sciences panel. Currently there is no national standard.

"This is not just another study," said Renee Sharp, a senior analyst at the Environmental Working Group, which advocated a strict national standard. "It ends the questions about whether women are passing along perchlorate to their kids through breast milk, and the sky-high levels the scientists found put more than half the kids over the safe levels the NAS now recommends."

Environmentalists have urged the EPA to set its standard based on the body weight and perchlorate intake of an infant rather than an adult. Toxicologists said that would probably mean a standard of a few parts per billion. Pentagon officials have said that would shut down many water systems across the country and cost the military and its contractors billions of dollars in cleanup costs. They have instead lobbied for a standard of about 200 parts per billion based on thyroid studies of adults.

The new findings "will practically force EPA officials to write a drinking water standard that protects infants -- not just healthy adults," Sharp said.

California has set its own public health goal of 6 parts per billion but it is not an enforceable limit.

The Texas Tech researchers, led by Andrea Kirk, reported that the perchlorate in breast milk was not linked to the water the mothers drank. Instead, the main source was probably food, which apparently was tainted by irrigation water.

The finding that perchlorate is pervasive in breast milk and reaches high levels is somewhat of a surprise to toxicologists, because, unlike many other industrial chemicals, it does not build up in tissues over time.

Instead, it appears that the amount passed on to the infant in breast milk is determined by what the mother has just eaten.

Perchlorate levels are particularly high in the lower Colorado River, which supplies irrigation water to almost 2 million acres of cropland. The river, government officials believe, has been tainted by leaks from a Kerr-McGee plant near Lake Mead.

The highest perchlorate levels, one reaching 92 parts per billion, were found in the breast milk of two women from New Jersey. The average was 10.5 parts per billion, compared to 2 parts per billion in cow's milk. Forty-six of 47 samples of dairy milk purchased in 11 states, including California, contained perchlorate.

Sujatha Jahagirdar, clean-water advocate at Environment California, an advocacy group, said it was "absolutely appalling" that a component of rocket fuel was found in mother's milk.

**By BETSY BLANEY**  
***Associated Press***  
**23 February 2005**

A toxic chemical used in rocket fuel was found in virtually every sample taken in a new study of nursing mothers' milk, but researchers said it is too early to know whether the perchlorate levels are dangerous.

The multistate study by Texas Tech University researchers, published this week, found that perchlorate levels in breast milk samples were on average five times higher than those detected in dairy milk pulled from grocery stores.

Perchlorate has been linked to thyroid ailments, and is considered particularly dangerous to children. It has been found in drinking water supplies in 35 states and also in vegetables. While the chemical occurs naturally, the National Academy of Sciences has said most of the contamination is from its use in rocket fuels, fireworks and explosives.

Contamination is especially widespread in California because of the many current and former defense and space program sites in the state.

According to public health advocates, perchlorate is in the water that supplies more than 16 million Californians. It has also been found in the Colorado River, the major source of drinking water and irrigation in Southern California and Arizona.

California Sens. Dianne Feinstein and Barbara Boxer said the study underscored concerns about the chemical. Boxer sent a letter to state and federal health officials asking them to determine whether mothers should have their breast milk tested before breast-feeding.

"We've got to come to grips with the perchlorate situation quickly," Feinstein said in a statement. "And EPA has to move quickly to set a national drinking water standard that protects the health and safety of all Americans."

However, the milk study shouldn't raise "undue alarm" because the seriousness of its findings is unclear, said Ed Urbansky, a former Environmental Protection Agency chemist who has published several papers on perchlorate. He was not involved with the study.

"It's very difficult to determine what the findings might be other than to know it might be in so many milk samples," he said. "It's important not to raise undue alarm over the significance of the finding."

"We shouldn't be running through the streets screaming and not drinking milk because of this."

For the study, conducted over a two-year period, researchers obtained milk from more than 20 women selected at random and from stores in 23 states. It was funded out of researchers' pockets and published online Tuesday in the journal *Environmental Science and Technology*.

The average reading in the study was 10.5 parts per billion, less than half of the EPA's newly established safe exposure level of 24.5 parts per billion in drinking water.

The highest reading among the mothers in the Tech study was 92 parts per billion. In dairy milk, all but one of 47 samples had detectable levels of the chemical. No samples were above 11 parts per billion.

Pernendu Dasgupta, a Tech chemistry professor who led the study, said it "raises more questions than answers" but hopes it helps people become more aware.

**Avery: Scare tactics targeting breast-feeding moms**  
By Dennis T. Avery, THE HUDSON INSTITUTE  
*AUSTIN AMERICAN-STATESMAN*  
21 March 2005

Scare-mongering is an ugly practice — especially when the scare-mongers are willing to risk babies' health to falsely indict modern science and technology.

The latest scare is that women are picking up a chemical called perchlorate — used as primary ingredient in rocket fuel — and transmitting it to their infants through their breast milk. Even the milk samples of cows from across the country, the scare-mongers charge, were mostly "contaminated" with perchlorate.

No mother wants her little baby to explode from drinking rocket fuel. So should she stop breast feeding her infant? Should she replace mother's milk with cows' milk? Way too dangerous, say the eco-activists, who came up with this latest exercise in public relations panic. So what to do? Give them synthetic formula instead?

In reality, perchlorate is a natural compound, found all over the world in certain types of rock deposits. This was the first scientific search for traces of perchlorate in milk, and the broad "contamination" of both breast milk and cows' milk across the country probably means that most milk has carried traces of perchlorate since before the Stone Age.

Fortunately, perchlorate is not a poison. At normal exposures, perchlorate poses no health risk. At extremely high doses, perchlorate can limit our uptake of iodide. This could be harmful because iodide is necessary for child development and for proper thyroid functioning in adults. However, high-dose iodide shortage can be remedied if breast-feeding mothers take nutritional supplements, use iodized salt and eat more seafood.

The problem with switching babies from breast feeding to formula is that all the studies say breast-fed babies are healthier than formula fed babies.

Dr. Jack Newman, a Fellow of Canada's Royal College of Physicians, says all milk is full of dozens of natural toxins. Yet breast-fed babies do better on cognitive and neurological tests than formula-fed babies in virtually every test. And, says Newman, breast-fed babies have more mature immune systems.

One of the activists calling for tougher limit on perchlorate is Renee Sharp, a biologist with the Environmental Working Group, an activist organization in Washington.

As it happens, the EWG gets donations from the Trial Lawyers Association. EWG scares helped Erin Brockovich get millions of dollars by claiming that her town's water was poisoned by a corporation — even though the townspeople had no identifiable symptoms of poisoning.

Perchlorate traces are even found in bottled water. That means there's no way to get perchlorate-free water with which to mix formula

That's how ridiculous the perchlorate scare campaign is. Use iodized salt — always a good idea — and forget about this latest attempt to set the stage for yet another enrichment of already wealthy personal injury lawyers.

Avery is a former State Department agriculture analyst and a senior fellow at The Hudson Institute, a nonpartisan think-tank.

### **Study Finds High Level of Toxic Chemical in Breast Milk of New Jersey Moms**

**Jen Maxfield**

**WABC Online (New York, NY)**

**10 March 2005**

An alarming find in New Jersey to tell you about tonight. A dangerous toxic chemical has been found in two local women, and it was discovered as part of a nationwide test of breast milk. New Jersey reporter Jen Maxfield reports.

This chemical, called perchlorate, is found in rocket fuel. It's also found fertilizer, which explains why the level found was so high here. The well is right next to a greenhouse. But researchers in Texas for the first time tested breast milk for this chemical, and found two mothers here had levels 10 to 20 times the recommended level.

The study suggested that levels of perchlorate in mother's milk are higher here than at any other state in the nation.

We get it from drinking certain well water and from eating fruits and vegetables grown near rocket fuel manufacturers. When the level of perchlorate in our bodies goes up, the iodide level goes down. Scientist David Kerry explains that could lead to thyroid problem or worse.

"What they are looking at is that it will interfere with the development of the brain in the fetus."

Scientists consider four parts per billion to be a safe dose. Well water in Woodcliff Lake contained more than seven times that. Breast milk from one New Jersey mother in the study had 20 times the acceptable dose.

Still, Dr. Joseph Sison says nursing mothers should not panic. They certainly should not stop breastfeeding.

Dr. Joseph Sison, Engelwood Hospital: "The benefits of breast feeding still outweighs all of the complications mentioned."

The Texas study is so small, fewer than 40 women nationwide, that Doctor Sison doesn't give it much credit. After all, he says, there is no research to show that more babies in New Jersey have thyroid or brain problems than babies born elsewhere. He question whether the high levels of perchlorate are having any effect whatsoever.

Mothers who watch the story and are still concerned can certainly have their thyroid hormones checked to make sure the perchlorate issue is not impacting them. But again, all of the doctors we talked to today say this is a such a small, small study that women who are breast feeding should not stop on the account of this study.

#### **Rocket fuel contaminant found in women's breast milk**

**By Jane Kay**

***The San Francisco Chronicle***

**23 February 2005**

A team of Texas Tech University researchers has found a contaminant from rocket fuel in women's breast milk at five times the average level found in dairy milk.

This first study in breast milk of perchlorate, a chemical that interferes with the thyroid, indicates that the majority of breast-feeding infants would be exceeding the safe daily dose set by the National Academy of Sciences.

The peer-reviewed data published Tuesday in the journal *Environmental Science & Technology* reported perchlorate in 36 milk samples from women in 18 states and in all but one of 47 cow milk samples from 11 states.

The average level in breast milk was 10.5 parts per billion, with a high of 92 ppb, while the average in cow's milk was 2 ppb with a high of 11 ppb.

Other studies of cow's milk -- including by Texas Tech and by the Food and Drug Administration - have found perchlorate in cow's milk from 5 to 6 ppb. The levels vary depending on the cow's diet at different times of the year.

Perchlorate, a salt, can impair a person's ability to take up iodide, a form of iodine and the building block of thyroid hormones that control brain development. High levels of perchlorate in the body also may reduce the amount of iodide in breast milk.

"Perchlorate is not a toxic metal like mercury or lead," said chemist Purnendu K. Dasgupta, an author. "Its only effect is to deprive the human body of iodide."

The need for iodide is particularly important for infants, Dasgupta said. "The infant has only a 24-hour store of iodide, compared to an adult, who has enough to make thyroid hormone for months.

If you inhibit an infant's iodide in a significant manner for any significant length of time, you're going to cause problems."

The nutritional importance of iodine for pregnant and nursing women is well documented. Physicians recommend certain levels in supplements and such foods as iodized salt, kelp, seaweed and crustaceans and other seafood.

Last week, the U.S. Environmental Protection Agency adopted a safety dose for perchlorate set by the National Academy of Sciences - - then approved a "drinking water equivalent level" of 24 ppb.

That, however, is not an enforceable standard, and some environmental groups criticized the agency's number, saying it was geared to protect a 156-pound person drinking 2 liters of water a day -- and not to protect infants and children. Also, the number considers exposure to perchlorate only from drinking water and doesn't take into account exposure from food.

The EPA and the state of California have not set enforceable drinking-water standards for perchlorate. California set a public health goal of 6 ppb last year, which the state Department of Health Services will consider when developing a drinking-water standard within the year.

Environmentalists immediately responded to the new study by saying it should force the federal EPA to adopt a drinking-water standard for perchlorate -- and one that is strict enough to protect infants. They want a standard of 1 ppb.

Renee Sharp, a biologist in Oakland with Environmental Working Group, which does research into contaminants in consumer products and food, called the study "highly significant because it shows that perchlorate is pervasive in women's breast milk, often at high levels."

The federal and state regulators saw the study results for the first time Tuesday.

Rich Hood, director of the EPA's national press office in Washington, D.C., said, "We're not going to be able to comment on the Texas Tech study. The EPA scientists and researchers are looking at the study. They want to determine what our appropriate response ought to be."

In Sacramento, Allan Hirsch, a spokesman for the state EPA, said, "We need to sit down and look at it."

The strictness of future standards could force cleanups at toxic sites nationwide. Sources of perchlorate include rocket fuel from military and industrial plants, some nitrate fertilizers and natural rock deposits.

Perchlorate has been found in the Colorado River and other water bodies, drinking-water supplies, cow's milk, bottled water, and lettuce and other vegetables nationwide by Texas Tech, the FDA and the Environmental Working Group. Women probably get perchlorate in their bodies from consuming contaminated food and water.

Cows have lower levels of perchlorate in their milk than women because they produce six times more milk for the food they eat. The amount of milk dilutes the contaminant, scientists say.

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**Study finds chemical used in rocket fuel present in milk**

## **Breast milk toxin studied; PERCHLORATE TRACES RAISE CONCERNS**

**By Barbara Feder Ostrov**

*Mercury News*

**24 February 2005**

A small study that found a rocket fuel chemical in breast milk drew quick reaction from California's U.S. senators Wednesday, with one calling for environmental reform and the other questioning whether all breast-feeding women should take supplements or have their milk tested.

The chemical, perchlorate, is used to make rocket fuel and explosives. Locally, it has been found in wells around Morgan Hill, near the site of a former highway flare plant. It has been linked to thyroid disorders because it inhibits the body's ability to absorb iodine -- which is critical for infants' brain development.

The study released this week suggested that the government should consider increasing the recommended daily allowance of iodine to protect against any harmful effects of perchlorate.

Sen. Barbara Boxer asked federal and California health officials to look into whether they should advise women to have their breast milk tested or take iodine supplements. A spokeswoman for Sandra Shewry, the director of the California Department of Health Services, said the agency would examine the issue. Sen. Dianne Feinstein also issued a statement calling on the government to clean up perchlorate contamination.

The study tested the breast milk of 36 women in 18 states and found perchlorate in all of them. The authors said the study, while small, suggests that perchlorate contamination may be more widespread than previously thought.

Three-quarters of the women had low levels -- less than 6 parts per billion, the level California has said is safe in drinking water. Only six were above 20 parts per billion, the level recently recommended as safe by a National Academy of Sciences panel.

Local health experts warned that far more study is needed before anyone issues sweeping changes such as universal testing or iodine supplements for pregnant or nursing women.

"To jump to the conclusion that women should measure this one chemical in their breast milk is extreme," said Dr. Ruth Shaber, director of women's health services for Kaiser Permanente-Northern California. "On the other hand, there's more and more concern about environmental exposures to toxins, not just for pregnant women and nursing babies but women with breast cancer."

Dr. Wayneab Truneh, an obstetrician-gynecologist with the Camino Medical Group, pointed out that iodine, a naturally occurring element important in maintaining thyroid function, can actually be dangerous for pregnant women at high levels.

"It's definitely not something you'd recommend as a blanket policy for women in pregnancy or who are lactating," Truneh said.

Scientists still debate what level of perchlorate is safe for humans. Of about 1,600 wells tested from Morgan Hill to Gilroy, more than 80 percent had perchlorate levels below 6 parts per billion. About 250 other wells range from 7 parts per billion to above 100 parts.

The breast milk study was conducted by researchers at Texas Tech University in Lubbock and published in the American Chemical Society's online journal *Environmental Science and Technology*. The researchers found some of the samples were low in iodide, an iodine compound, causing them to worry that infant brain development could be affected. The small size of the study makes it important to conduct more research before changing recommendations for pregnant and breast-feeding women, Truneh said.

### **Breaking News: Tainted Breast Milk?**

***CNN: American Morning***

**24 February 2005**

O'BRIEN: Is a toxic component found in rocket fuel contaminating women's breast milk? A new study says that may, in fact, be the case. It contends that the component for chlorate was found in the breast milk of dozens of women in 18 states. How much of it should concern mothers who are nursing?

Dr. Steven Goldstein is professor of OB-GYN at NYU Medical Center right here in New York City.

Nice to see you. This is really scary stuff for anybody who is nursing mother or recently has been a nursing mother, like myself. So, where does this come from, this perchlorate.

DR. STEVEN GOLDSTEIN, OBGYN PROF., NYU MEDICAL CTR.: Well, it occurs naturally, but it's also in rocket fuel. It's in fertilizer. It's in explosives. And apparently it's getting into the water table as well as the food system.

O'BRIEN: How much of a risk is it? First, let's talk about the mother herself, the moms.

GOLDSTEIN: Well, perchlorate inhibits your take-up of iodide, which is a form of iodine, which is necessary to make thyroid hormone. Thyroid, as you know, controls metabolism in adults. It also controls metabolism in infants. But for infants, it's also involved for brain development.

O'BRIEN: So, you're less worried when you hear reports like this about the adults, because we're assuming women, probably men as well, have perchlorate.

GOLDSTEIN: But another key factor to his is we have enough iodide to make hormone for several months. Infants need to turn this over every 24 hours. They don't really store their iodide. So, their needs are much, much greater.

O'BRIEN: So, if they're only getting their nutrition from their nursing mother, then they're not probably who has perchlorate in the breast milk. They're probably not getting enough thyroid developing and brain developing.

GOLDSTEIN: Well, let's not scare people. They shouldn't stop nursing. In other words, nursing has a lot of benefits. Nursing will cut down on infections, makes allergies less, and boosts the immune system and may even reduce certain chronic diseases like diabetes.

The American College of OB-GYN and the American Academy of Pediatrics strongly recommend that women nurse for six months. And this report is not a reason for women to be afraid of nursing, because perchlorate, unlike trace elements like mercury or lead, is not stored. It simply inhibits the up-take of this iodide. So, the way to overcome it is to increase the iodine in your diet.

O'BRIEN: How do you do that?



GOLDSTEIN: well, iodized salt.

O'BRIEN: More salt?

GOLDSTEIN: Well, it may, because a lot of processed foods that have salt in them, the salt isn't iodized. Kelp, shell fishes. You know, talk to your doctor about ways to crease iodine in your diet.

O'BRIEN: When one of your patients, when one of your nursing mothers comes in and says, I need you to check out my kid and make sure that there is not some kind of damage going on. I want to know if I, in fact, am passing along this problem to my child. What do you tell them?

GOLDSTEIN: Well, unfortunately, there's no test. It's not like I can take a nursing mom tomorrow, give me a sample of your milk, send it to the lab at NYU, where I work, and get a report on the perchlorate level. So, all that we can really do -- the study that came out was a research study. This is not a commercially-available test. So, the answer here is to make sure that you increase your dietary intake of iodine. O'BRIEN: Is there any kind of supplement you can take to do that, I mean a pill?

GOLDSTEIN: Not that I'm really aware of.

O'BRIEN: Really?

GOLDSTEIN: You know, none of this is all that surprising, though. This isn't that new. Look at the warnings about fish, PCBs and mercury. We're poisoning our air, our land, our waters, our food chain. I mean, 40 years ago, PG&E was dumping hexavale (ph) and chromium into the land in Hinckley, California. This is just another long list in what are we doing to our children.

O'BRIEN: Outside of that big-picture question then, what do you advise people to do?

GOLDSTEIN: Be careful. I mean, moderation has always been what I tell people. When the whole thing came up about what kinds of fish to eat, I think the answer is to moderate your exposure to different things in the environment.

O'BRIEN: It's very scary stuff.

GOLDSTEIN: It sure is.

O'BRIEN: Dr. Steven Goldstein, thank you for talking with us, and thanks for the advice as well for nursing moms. Appreciate that.

GOLDSTEIN: Sure.

O'BRIEN: Bill.

**Rocket-fuel contaminant found in human breast milk; levels in 36 test specimens were much higher than dairy samples**

**By JANE KAY**

**SAN FRANCISCO CHRONICLE**

**24 February 2005**

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The average level in breast milk was 10.5 parts per billion, with a high of 92 ppb, while the average in cow's milk was 2 ppb with a high of 11 ppb. The level in the one Washington state sample was 2.3 ppb in breast milk in the fall of 2003 and 19.2 ppb in a follow-up sample taken from the same woman in the spring of 2004.

Other studies of cow's milk -- including by Texas Tech and by the Food and Drug Administration - have found perchlorate in cow's milk from 5 to 6 ppb. The levels vary depending on the cow's diet at different times of the year.

Perchlorate, a salt, can impair a person's ability to take up iodide, a form of iodine and the building block of thyroid hormones that control brain development. High levels of perchlorate in the body also may reduce the amount of iodide in breast milk.

"Perchlorate is not a toxic metal like mercury or lead," said chemist Purnendu Dasgupta, an author. "Its only effect is to deprive the human body of iodide."

The need for iodide is particularly important for infants, Dasgupta said.

"The infant has only a 24-hour store of iodide, compared to an adult, who has enough to make thyroid hormone for months. If you inhibit an infant's iodide in a significant manner for any significant length of time, you're going to cause problems."

The nutritional importance of iodine for pregnant and nursing women is well documented. Physicians recommend certain levels in supplements and such foods as iodized salt, kelp, seaweed and crustaceans and other seafood.

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