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Nutrition Action HEALTH LETTER®

SEPTEMBER 2016 $2.50

CENTER FOR SCIENCE IN THE PUBLIC INTEREST

KIDNEY CHECK

How to keep yours going strong

WHAT'S IN YOUR WATER?

Is butter better?

Snacks that *sound* good. Snacks that *are* good.

MEMO FROM MFJ

Seeing Red

I remember the shock waves that San Francisco allergist Ben Feingold sent through the country in the mid-1970s when he charged that artificial food dyes cause hyperactivity in some people.

Feingold's contention was based on observing his patients, not a study. The food industry, of course, denied that dyes cause harm. But Feingold's claims led to a flurry of research.

In the UK, the syrup in a McDonald's Strawberry Sundae gets its color from strawberries. Here, the berries get a boost from Red 40 dye.

Photos: mcdonalds.co.uk (left sundae), Jorge Bach/CSPI (right sundae).

Between 1975 and 2000, investigators conducted some 30 clinical trials, mostly on children with behavioral disorders like ADHD or food sensitivities. They typically gave kids either a placebo or dye-filled capsules or cookies, or they eliminated certain foods from the diet to see if symptoms abated. Most of the studies found that the dyes affected some children.

Since 2000, nine major reviews of the evidence have concluded that dyes do, indeed, worsen some children's behavior.

The mounting evidence led the Center for Science in the Public Interest, *Nutrition Action*'s publisher, to petition the FDA in 2008 to ban the use of dyes. We pointed out that dyes affect behavior, are unnecessary, and deceive consumers by simulating the presence of fruits or other natural ingredients.

In 2011, in response to our petition, the FDA commissioned an expert advisory committee. The agency acknowledged that dyes may aggravate the behavior of *sensitive* children, but asked the committee whether the studies had established a "causal" relationship between dyes and children in the *general population*. The committee recommended more research.

Meanwhile, we continue to press companies to voluntarily stop using dyes. Kudos to General Mills, Kellogg, Mars, Nestlé, and several others for replacing dyes with natural colorings in some of their foods.

Behavior isn't the only concern about dyes. In the 1990s, the FDA banned some uses of Red 3 because it caused cancer in animals. In addition, the agency discovered illegally high levels of a cancer-causing contaminant in two of the most widely used dyes, Yellow 5 and Yellow 6. But it never pulled those dyes from the market.

It's high time that the FDA banned dyes... or at least required warning labels on dyed foods, as they do in Europe. You can find more information in our report, *Seeing Red*, at cspinet.org/seeingred.

Michael F. Jacobson, Ph.D., President
Center for Science in the Public Interest

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CENTER FOR Science IN THE Public Interest

KIDNEY CHECK

How to keep yours going strong

BY BONNIE LIEBMAN

One out of ten adults have chronic kidney disease. Most don't know it because early on, kidney disease has no symptoms. And because the risk rises as you age, roughly one out of two people aged 30 to 64 are likely to get the disease during their lives. Here's how to find out if your kidneys are healthy...and how to keep them that way.

"I didn't know that I had end-stage renal disease until I was admitted to the hospital in 2009," says David White, who was then in his mid-40s. "A few days later, I stopped producing urine."

Doctors told White that he had crashed. "It was scary," he says. "I went from 'Something may be wrong' to 'Oh my god am I going to die?' to 'I have to spend the rest of my life on dialysis.'"

And with four hours of dialysis three times a week, he never felt great.

"People call it the dialysis hangover," says White, from Temple Hills, Maryland.

"You're so tired that you want to sleep all day after dialysis and most of the following day. And then you gear up for the next treatment."

And White struggled with his one-quart-a-day limit on fluids. "When you drink too much, moving isn't comfortable, laying down isn't comfortable," he says. "It's hard to breathe."

For Gail Rae-Garwood, the news about her kidneys came when she switched to a new doctor closer to her home in Glendale, Arizona.

"She decided that as a new patient, I should have all new tests," says Rae-Garwood, now 69. "When the results came in, she got me an appointment with a nephrologist the next day. When you get an appointment with a specialist the next day, you know something is not right."

Rae-Garwood had chronic kidney disease. "My GFR was down to 39, and apparently had been low for quite a while," she says. (Your GFR, or glomerular filtration rate, is the rate at which your kidneys filter your blood.)

"'What is chronic kidney disease and how did I get it?' I demanded," recalls Rae-Garwood.

Every 30 minutes, your kidneys filter all the blood in your body. Without at least one, you need dialysis or a transplant. Yet most people have no idea how well their kidneys are working.

"It's very common for people to have no idea that they have early chronic kidney disease," says Alex Chang, a nephrologist at Geisinger Health System in Danville, Pennsylvania.

A routine blood test sent to a major lab—like Quest or LabCorp—typically includes your GFR. If it doesn't, your doctor can calculate it.

"A GFR is pretty routine for anyone who has blood work done," says Chang. "But if you have very mild kidney disease, and especially if you're older, a doctor might not mention it since kidney function tends to decline as you age."

Gail Rae-Garwood found out she had kidney disease when she switched doctors.

Doctors also look for kidney disease by testing your urine for a protein called albumin (see p. 4). "That's usually only done if you have high blood pressure or diabetes or some risk factor for kidney disease other than age," says Chang.

Rae-Garwood's previous doctor missed that memo. "I had been on medication for high blood pressure for decades," she explains. "I wonder how much more of my kidney function I could have preserved if I'd known about it earlier."

What Raises Risk

Millions of people have the biggest risk factors for kidney disease:

■ **Age.** "There's some debate about whether a small decline in kidney function is part of normal aging or whether

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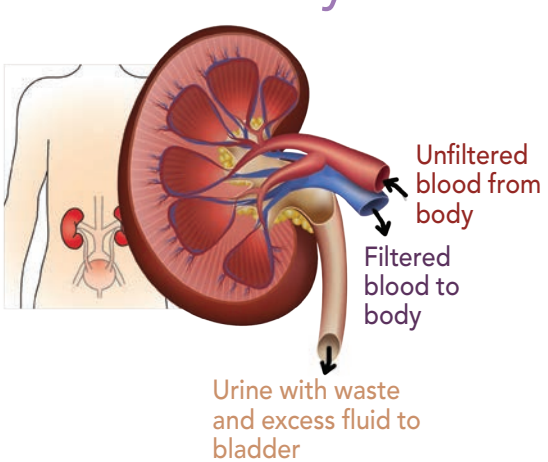
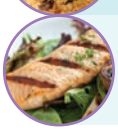
How Kidneys Work



Illustrations: LogotypeVector/shutterstock.com (top), National Institute of Diabetes and Digestive and Kidney Diseases (torso), © reineg/fotolia.com (kidney). Photo: Gail Rae-Garwood.

Dish Up Some DASH

A DASH-like diet can help lower your risk of stroke, heart attack, heart failure, and maybe kidney disease. Here's a 2,100-calorie version.

	Daily Servings
 **VEGETABLES & FRUIT** *1 serving: ½ cup (or 1 cup greens) or 1 piece fruit*	11
 **GRAINS** *1 serving: ½ cup pasta or rice or cereal or 1 slice bread*	4
 **LOW-FAT DAIRY** *1 serving: 1 cup milk or yogurt or 1½ oz. cheese*	2
 **LEGUMES & NUTS** *1 serving: ½ cup beans or ¼ cup nuts or 4 oz. tofu*	2
 **POULTRY, FISH, LEAN MEAT** *1 serving: ¼ lb. cooked*	1
 **OILS & FATS** *1 serving: 1 Tbs.*	2
 **DESSERTS & SWEETS** *1 serving: 1 tsp. sugar or 1 small cookie*	2
 **WILD CARD** *Poultry, Fish, Meat or Oils & Fats or Grains or Desserts & Sweets*	1

it's a pathologic loss of kidney function," says Geoffrey Block, associate clinical professor in medicine at the University of Colorado Health Sciences Center.

A normal GFR is 90 or above, but some doctors consider 60 or above normal for older people.

"Age is a very good predictor of risk," notes Block. "There's no stronger risk factor for kidney disease than age."

■ **Diabetes.** "Diabetes is the second biggest risk factor," says Block, not only for getting kidney disease but for its consequences—heart attacks, strokes, heart failure, and further kidney damage.

One in three adults with diabetes have chronic kidney disease.[1] And people with diabetes make up nearly 44 percent of new cases of kidney failure. That's when you need dialysis or a kidney transplant to survive.

And it's not just diabetes. "Some studies show that prediabetes can increase the risk of kidney damage later," says Chang.

■ **Hypertension.** One in five adults with high blood pressure also have chronic kidney disease.

■ **Race.** "We know that African-Americans are more at risk for developing kidney disease and more at risk to have their kidney disease progress," says Block.

What Lowers Risk

What's the best strategy to keep your kidneys in good working order?

"If tests show that you have mild kidney disease, I'd say you're lucky you caught it early," says Chang.

The good news: "Controlling your blood pressure and blood sugar might make the albuminuria go away," he says.

For example, medications like ACE inhibitors, which lower blood pressure, may keep your kidneys from leaking albumin into your urine.

And whether your kidneys are in tip-top shape or starting to decline, a healthy lifestyle can protect them.

"If you're smoking, quitting can help," says Chang. Smoking slows blood flow to the kidneys.

"If you're obese," he adds, "losing weight could reduce the albumin in your urine and improve your blood pressure and diabetes." And it's not just *how much* but *what* you eat that matters.

In a study that tracked roughly 3,700 people with chronic kidney disease for seven years, those who consumed the most salt had a higher risk of stroke and heart failure than those who consumed the least.[2] And it wasn't just because sodium raises blood pressure.

"A high-sodium intake may have an independent effect on the kidney," says Chang. "Focusing on salt is a good target because it's so prevalent and most people eat too much."

Eating healthy foods may also protect your kidneys. Chang and his colleagues tracked roughly 2,300 adults aged 28 to 40 in the CARDIA study for 15 years.[3] "We wanted to find the early risk factors for kidney disease," he explains.

"We found that being obese and eating an unhealthy diet were strongly associated with albumin in the urine."

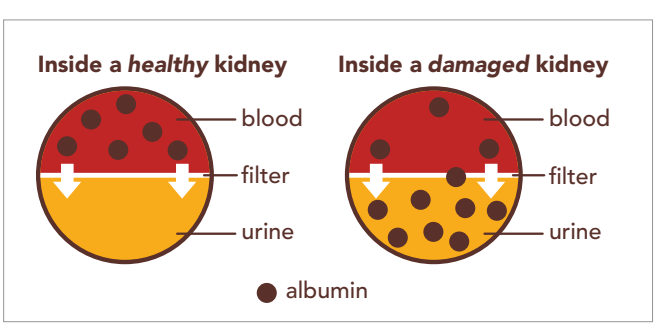
An "unhealthy" diet was one with few features of the DASH (Dietary Approaches to Stop Hypertension) diet. (See "Dish Up Some DASH.")

Similarly, when researchers tracked roughly 3,000 women in the Nurses' Health Study for 11 years, those who ate a DASH-like diet were 45 percent less likely to have a rapid drop in GFR.[4] In both studies, a DASH diet meant:

● **MORE** fruits, vegetables, nuts and legumes, low-fat dairy products, and whole grains, and

● **LESS** salt, sugar-sweetened drinks, and red and processed meats.

"Following a DASH-type diet has the



Healthy kidneys allow little or no albumin to leak into urine.

potential to improve kidney function," notes Chang. "And it affects other cardiovascular risk factors, too."

And that's critical, because only a small fraction of people with kidney disease end up with kidney failure.

"You are four to five times more likely to die of a cardiovascular event like a heart attack or stroke than to reach dialysis," says Block.

Phosphorus

Obesity, hypertension, diabetes, smoking. All are known threats to kidneys. Now a number of scientists are worried that the list may also include the phosphorus in our food.

Phosphorus occurs naturally in meat, poultry, grains, dairy, and many other foods. But in recent decades, companies have started adding phosphorus-containing compounds—like sodium phosphate and phosphoric acid—to thousands of foods. In a 2010 survey of roughly 2,400 branded grocery items, 44 percent had added phosphorus.[5]

"Phosphates have so many different functions—homogenizing, smoothing, water retention, a leavening agent, and more," says Mona Calvo, a nutrition scientist formerly at the Food and Drug Administration.

Too much phosphorus is clearly a problem for people with kidney disease.

"We've known for a couple of decades now that people with chronic kidney disease tend to retain phosphorus, and that leads to cardiovascular disease and worse kidney function," says Jaime Uribarri, professor of nephrology at Mount Sinai Hospital in New York.

What about people with normal kidneys?

"The picture is not perfectly clear, but several pieces of evidence suggest harm," says Block.

For example, among roughly 2,270 participants without kidney disease in the Framingham Heart Study, people with blood phosphorus levels of 4 mg/dL or higher—which is the higher end of the normal range—were twice as likely to be diagnosed with chronic kidney disease over the next 25 years.[6]

And several studies report a higher risk of arterial stiffness, heart failure, or death from cardiovascular disease in people with higher blood phosphorus levels (and, in most cases, no kidney disease).[7-9]

"Those findings are by no means universal," says Block. "But they're seen in a large body of evidence."

Several years ago, Alex Chang and colleagues at Johns Hopkins University also looked at how much phosphorus people in the National Health and Nutrition Examination Survey ate.[10]

"Above 1,400 milligrams of phosphorus a day or so, we started seeing an increased risk of dying over the next 15 years," says Chang. One out of three participants ate more than 1,400 mg a day—that's double the Recommended Dietary Allowance.

How might phosphorus harm the heart or kidneys?

"This field exploded when we learned that as you raise blood phosphorus to levels seen in kidney disease, you push the balance of hormones toward calcifying your arteries," says Block.

"Phosphate turns certain cells in your blood vessels into cells that act as if they are mineralizing bone. And as you calcify your arterial system, you increase the demand on the heart."

That's because it takes more work to pump blood through calcified arteries.

What's more, when you consume phosphorus, blood levels temporarily rise, triggering the release of hormones that tell the kidney to excrete more phosphorus. One is fibroblast growth factor 23 (FGF23).

"FGF23 is toxic to heart cells," says Block. In animal experiments, it leads to left ventricular hypertrophy, a weakening of the chamber of the heart that pumps blood throughout most of the body.

Excess phosphorus may also calcify the kidneys. "As more phosphate goes through the kidney, it accelerates microcalcification of the kidney's tubules," Block explains.

Is the evidence strong enough to say

How to Protect Your Kidneys

Keep blood sugar under control.

Reduce salt intake.

Keep a lid on blood pressure with diet, exercise, and meds.

Stop smoking.

Exercise daily, and lose excess weight.

Eat a DASH-like diet rich in fruits and vegetables.

Basketful of Phosphates?

Companies add phosphates to these foods and thousands more without providing evidence that phosphates are safe for kidneys, arteries, and the heart.

that high phosphorus levels *cause* heart and kidney damage?

"We have pretty universal agreement that phosphates added to foods could cause harm," says Block. "But you're not going to stand up and pound your fist on the table that the data is conclusive."

To get good answers, scientists have to see if people without kidney disease who consume more phosphorus are at greater risk.

But knowing how much phosphorus people eat is nearly impossible.

In most studies, says Uribarri, "dietitians ask, 'What did you eat today?' And then they go to databases to look up phosphorus levels."

But the databases don't take into account that we absorb more phosphorus from some sources than from others.

"The naturally occurring phosphate in plants is less well absorbed than phosphate in animal protein," says Uribarri. "And the phosphate added in food processing is much better and rapidly absorbed than the phosphate in its natural state. So just asking people what they eat may not give you the best picture."

What's more, phosphate levels vary widely from brand to brand, and phosphorus shows up in unexpected foods.

"A Revive Fruit Punch Vitaminwater has a ridiculous amount of phosphate—about 260 milligrams—whereas a Focus Kiwi-Strawberry Vitaminwater has virtually none," says Block, referring to a 2013 analysis.[11] "And food manufacturers keep changing their ingredients."

He and others want Nutrition Facts labels to say how much phosphorus a food contains. That's crucial for people with kidney disease, many of whom have to limit phosphorus.

Without food labeling, "it's impossible for people to restrict their phosphate intake to a certain level," says Block. "Honestly, there is no way a human being can figure it out."

A more basic question: Why does the Food and Drug Administration allow companies to add phosphates to foods without showing that levels in the food supply are safe?

"We're exposing people to a possible risk for decades without doing anything," says Block. "The onus should be on companies to show that the phosphates added to foods don't cause harm."

David White didn't know that he had kidney disease until his kidneys failed.

In the meantime, millions of people with kidney disease are on their own.

David White had a kidney transplant in 2015. "It's given me my life back," he says. "No more dialysis."

He takes anti-rejection drugs and steroids, and, like Rae-Garwood, he gets exercise and has to watch what he eats.

"I've changed my diet radically," says Rae-Garwood. "I have to limit the three P's—protein, potassium, and phosphorus. I'm restricted to 5 ounces of protein a day. We have no red meat in the house. Any product above 7 or 8 percent of a day's worth of sodium I don't buy.

"And you know what? It's fine. It's been nine years now, and I've been able to keep my GFR around 50."

Both patients are now advocates for preventing kidney disease. "I've written four books and almost 400 weekly blogs, and I post a daily fact about chronic kidney disease on Facebook," says Rae-Garwood. White chairs the Mid-Atlantic Renal Coalition's patient advisory committee, among other things.

"Get tested," urges Rae-Garwood. "Millions of people have chronic kidney disease and don't even know it. All it takes is a blood and urine test."

1 cdc.gov/diabetes/programs/initiatives/kidney.html.
2 *JAMA 315*: 2200, 2016.
3 *Am. J. Kidney Dis. 62*: 267, 2013.
4 *Am. J. Kidney Dis. 57*: 245, 2011.
5 *J. Ren. Nutr. 23*: 265, 2013.
6 *Nephrol. Dial. Transplant. 26*: 2885, 2011.
7 *Am. J. Cardiol. 106*: 564, 2010.
8 *Eur. J. Heart Fail. 12*: 812, 2010.
9 *Am. J. Kidney Dis. 64*: 567, 2014.
10 *Am. J. Clin. Nutr. 99*: 320, 2014.
11 *Am. J. Kidney Dis. 65*: 967, 2015.

Photos: Leah Ettman/CSPI (top), David White (bottom).

WATER WISE

What's coming out of *your* tap?

BY DAVID SCHARDT

Lead-poisoned drinking water in Flint, Michigan, shocked the nation, is likely to lower the IQs of thousands of the city's children, and will cost taxpayers nationwide hundreds of millions of dollars. But our problems with drinking water aren't limited to lead or to Flint. What should you be paying attention to in the water where *you* live?

America's drinking water is in trouble:

■ According to an investigation by *USA Today*, nearly 2,000 (out of 155,000) public water systems in all 50 states delivered water with too much lead to their customers sometime during the past four years. One sample from an elementary school in Ithaca, New York, had enough lead to qualify as "hazardous waste."

■ This spring, a jury ordered Exxon Mobil to pay $236 million to the state of New Hampshire to help clean up water sources contaminated with MTBE, a chemical the company added to its gasoline.

■ Northern Alabama residents and their local public water system are suing 3M, accusing the company of polluting their drinking water source, the Tennessee River, with PFOA, a chemical used to manufacture nonstick surfaces.

■ About 20 percent of the groundwater used for drinking water in California contains high levels of one or more contaminants like arsenic, uranium, and nitrate, the U.S. Geological Survey recently found.

It's clear that children are the most vulnerable to contaminants in water. But what about adults?

"A contaminant in water may have more of an impact on a growing fetus or child, but there still can be harmful consequences for adults," says Jeffrey Griffiths, of the Tufts University School of Medicine. Griffiths chaired the drinking water committee for the Environmental Protection Agency's Science Advisory Board.

Take lead. "There's no safe amount, no matter what your age," says Griffiths. "The incidence of high blood pressure is higher in adults who've been exposed to lead, and now there's evidence that exposure in adulthood could accelerate cognitive decline."[1,2]

Even if tap water had a small but legally permissible amount of lead, "there's no way I would drink that water," says Griffiths. "I would not expose my family, my neighbors, or anyone else."

Is your drinking water safe?

The same goes for arsenic. Utilities are allowed to deliver water with up to 10 parts per billion (ppb). "But there's no safe level," says Griffiths. "It's a really clear carcinogen for lots of cancers, and it causes metabolic problems. If my water had any arsenic in it, I wouldn't drink it. End of sentence."

Then there's the unintended damage utilities do when they treat their water. Disinfectants like chlorine can react with organic compounds in the water to produce so-called disinfection byproducts. Some are carcinogens.

"You want to get the optimal balance between the level of disinfection that gets rid of bad bugs and viruses and a minimal exposure to those carcinogens," says Griffiths.

In 2006, when the EPA began to phase in a lower limit for disinfection byproducts, it estimated that the new limit would prevent 280 cases of bladder cancer a year.

What can you do?

■ **Check your Consumer Confidence Report.** "If you get your water from a public utility, find out what's in your town's water," says Griffiths. To see your report, which water utilities are required to issue every year, go to epa.gov/ccr or call the EPA's Safe Drinking Water Hotline at 800-426-4791.

The report will flag any substance that exceeds its maximum contaminant level (MCL). That's the highest concentration allowed in drinking water. It will also tell you what the utility is doing to fix any problems.

■ **Get your water tested.** The Consumer Confidence Report can't tell how much lead is in your water because lead may be coming from pipes in your home (see p. 8). And there's no report for people who draw their water from a private well.

Solution: Get your water tested. For a list of certified labs in your state, call the Safe Drinking Water Hotline or go to epa.gov/dwlabcert and click on "Contact information for certification programs and certified laboratories."

■ **Get a filter.** If your water is high in any contaminant, "I would get a filter," says Griffiths. Ditto if you don't want to deal with testing or reports or the environmental cost of bottled water. What to buy? See page 10.

1 *Environ. Health Perspect. 117*: 574, 2009.
2 *Am. J. Physiol. Heart Circ. Physiol. 295*: H454, 2008.

LEAD

What is it? A metal used in plumbing.

How does it get into drinking water? If your home was built before 1986, the service line—which brings water in from the street—could be made from lead. And no matter when your home was built, "there could be lead in your indoor plumbing," says Tufts University's Jeffrey Griffiths.

What's more, "Congress, in its infinite wisdom, used to say that fixtures with up to 8 percent lead could be sold as lead-free," adds Griffiths. (Now it's only a quarter of 1 percent.) So if you have a faucet that was purchased before 2014, it could be leaching lead.

"If you take that first glass in the morning, the water that was up against the fixture all night may give you a big slug of lead," says Griffiths. That's why, if you don't have a filter, "you should run your cold water in the morning."

How do you know if it's in your water? Only by testing your home's water.

How can it harm you? No level of lead is safe. It accumulates in our bodies, damaging the brain, kidneys, and other organs, and leading to lower IQ, cognitive decline, and high blood pressure.[1,2] At greatest risk: children and pregnant women.

"Where you have the opportunity to minimize your exposure to lead, you should take it," says Susan Korrick, an environmental epidemiologist at Brigham and Women's Hospital and the Harvard T.H. Chan School of Public Health.

[1] *Environ. Health Perspect. 117*: 574, 2009.
[2] *Am. J. Physiol. Heart Circ. Physiol. 295*: H454, 2008.

DISINFECTION BYPRODUCTS

What are they? Hundreds of mostly chlorine-containing compounds.

How do they get into drinking water? Public water systems typically treat their water with disinfectants like chlorine, chloramine, and ozone. Those chemicals can combine with microscopic residues in the water (from decomposed leaves, for example) to form DBPs.

How do you know if they're in your water? Look for "Total Trihalomethanes" in your Consumer Confidence Report. They shouldn't exceed 80 ppb (parts per billion).

How can they harm you? DBPs may slightly increase the risk of bladder cancer, which is why the Environmental Protection Agency limits their levels in public water systems.[1]

[1] nepis.epa.gov/Exe/ZyPDF.cgi/2000E99D.PDF?Dockey=2000E99D.pdf.

Rx DRUGS

What are they? Antibiotics, antidepressants, and other prescription drugs.

How do they get into drinking water? Drug residues that people excrete are flushed down toilets. The EPA recently tested wastewater effluent from 50 of the biggest water utilities. (That's treated sewage, which is released into rivers and lakes that may be used as sources of drinking water.) Traces of at least one prescription drug turned up in every sample.[1]

How can they harm you? They probably don't, says the EPA's Mitch Kostich. The amounts are so minuscule "that you would have to drink two quarts of wastewater every day for decades, usually for an entire lifetime, before you would be exposed to even one therapeutic dose," he says.

How do you know if they're in your water? You don't. Water utilities aren't required to include prescription drugs in the Consumer Confidence Report.

[1] *Environ. Pollut. 184*: 354, 2014.

PFOA

What is it? A chemical used to manufacture nonstick pans, stain-resistant carpets, and other consumer goods. It is no longer being produced, but persists in the environment.

How does it get into drinking water? Traces are everywhere (but there's not enough in nonstick pans to worry about). The highest levels are in areas—like West Virginia and upstate New York—where factories that used PFOA discharged it into waterways.

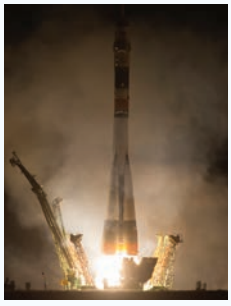
How do you know if it's in your water? You don't. Utilities monitor its presence, but don't have to report levels to their customers.

How can it harm you? There is "suggestive evidence" that high levels of PFOA cause cancer, especially kidney and testicular cancer, says the EPA.[1] About one out of every 100 smaller public water utilities exceeds the level that the EPA recommends.

[1] epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf.

OTHER CONTAMINANTS

MTBE. It's a gasoline additive that reduces carbon monoxide and ozone levels in car emissions. It has largely been replaced by ethanol. While MTBE that leaked from gasoline pipelines and storage tanks into the soil can take years to degrade, "it is not clear if exposure to MTBE causes long-lasting health effects," says the American Cancer Society.[1] Water utilities aren't required to include MTBE in the Consumer Confidence Report.



Perchlorate. It occurs naturally in rock. It's also used in rocket fuel and explosives, which is why it's more likely to be found in drinking water in areas near military facilities. Perchlorate interferes with the uptake of iodine into the thyroid gland, which can lead to an underactive thyroid.[2] The EPA doesn't require water utilities to include perchlorate in the Consumer Confidence Report, but that may soon change.

[1] cancer.org/cancer/cancercauses/othercarcinogens/pollution/mtbe.
[2] atsdr.cdc.gov/toxfaqs/tf.asp?id=893&tid=181.

ARSENIC

What is it? A toxic element that's found naturally in rocks, soil, water, and air.

How does it get into drinking water? Naturally occurring arsenic can leach into water sources. So can arsenic that's used in pesticides and in manufacturing.

How do you know if it's in your water? Arsenic levels are listed in the Consumer Confidence Report. Your water shouldn't have more than 10 ppb. That's a compromise between what's safe and what's practical.

What's safe? There is no safe level of arsenic, says the Environmental Protection Agency. Yet according to a 2009 survey, the arsenic in 7 percent of the private wells in the United States exceeded 10 ppb.

How can it harm you? Arsenic can cause bladder cancer. Its presence in wells in New England may explain why that region has a 20 percent higher incidence of bladder cancer than the national average.[1]

Arsenic may also affect your brain, say several studies that are troubling but can't prove cause and effect:

Elementary school children in Maine who lived most of their lives in homes where the well water contained 5 ppb or more of arsenic scored about 5 points lower on IQ tests than children whose well water averaged less.[2]

And in two rural Texas counties where the arsenic in groundwater averaged about 6 ppb, the more arsenic in their tap water, the lower adults scored on tests of language, executive function, and memory.[3]

[1] *J. Natl. Cancer Inst. 108*: djw099, 2016.
[2] *Environ. Health 13*: 23, 2014.
[3] *Int. J. Environ. Res. Public Health 8*: 861, 2011.

WORKING ON WATER

BY LINDSAY MOYER

Most filters will make your water taste better. The best way to tell whether they also get rid of the contaminants you're concerned about is to check their certification with NSF International (formerly the National Sanitation Foundation). That's easier said than done.

The NSF's website (nsf.org) is difficult to navigate. So we've compiled a list showing whether some widely available filters remove four contaminants—lead, arsenic, MTBE, and VOCs. (VOCs, or volatile organic compounds, include disinfection byproducts and some pesticides and industrial pollutants.)

Of course, these and other filters also remove other contaminants. (For example, the Brita pitcher removes mercury, cadmium, and copper.) For a complete list of what each filter is certified to remove, try info.nsf.org/Certified/DWTU. For more information on water filters by brand and model, see the April 2016 issue of *Consumer Reports*.

Keep in mind that many brands use the same filter in more than one model.

Photos (top to bottom): Brita, Culligan, Aquasana, Aqua-Pure.

Brand & Model	Lead	Arsenic	MTBE	VOCs	Price	Cost to Replace Filter	Cost per Gal.
Pitchers & Dispensers. *Water drips through a filter into a container that can be refrigerated.*							
Aquasana Powered Water Filtration System	■		■	■	$150	$30 every 320 gal.	9¢
Brita Everyday Pitcher					$21	$6 every 40 gal.	15¢
PUR Classic 11-Cup Water Filter Pitcher with LED					$22	$7 every 40 gal.	18¢
Whirlpool EveryDrop PopOut Filter & Pitcher					$20	$9 every 60 gal.	15¢
ZeroWater 23-Cup Dispenser	■				$39	$12 every 15 gal.	80¢
Faucet-Mounted. *Attaches to the faucet and forces water through a filter.*							
Brita Basic Faucet Filtration System	■			■	$17	$13 every 100 gal.	13¢
Culligan Chrome Faucet Mount Filter FM-25	■				$23	$13 every 200 gal.	7¢
Culligan White Finish Faucet Mount Filter FM-15A	■				$22	$13 every 200 gal.	7¢
PUR Advanced Faucet Water Filter	■			■	$25	$13 every 100 gal.	13¢
Countertop. *Attaches to the faucet and diverts water to a filter on the counter.*							
Amway eSpring UV Water Purifier Above Counter Unit	■		■	■	$1,061	$217 every 1,320 gal.	16¢
Aquasana Countertop Water Filter	■		■	■	$58	$60 every 450 gal.	13¢
Multipure Aquadome	■		■	■	$273	$76 every 750 gal.	10¢
Shaklee BestWater MTS 2000 Countertop	■			■	$259	$107 every 1,000 gal.	11¢
Under Sink. *Water passes through a filter that is plumbed in beneath the sink before reaching the tap.*							
Aqua-Pure AP-DWS1000	■		■	■	$250	$105 every 625 gal.	17¢
Culligan Premium Under Sink Filter System US-EZ-4	■		■	■	$71	$42 every 500 gal.	8¢
GE Reverse Osmosis Filtration System GXRM10RBL	■	■			$150	$14 every 900 gal.	2¢
Multipure Aquaperform with In-Line Connector	■	■	■	■	$503	$130 every 600 gal.	22¢
Multipure Aquaversa with In-Line Connector	■		■	■	$373	$76 every 750 gal.	10¢

Note: Prices are from amazon.com and may vary. Prices for Amway and Shaklee are from the manufacturers' websites.

■ Eliminates or reduces the contaminant.

Butter Ain't Back

"The case for eating butter just got stronger," declared *Time* magazine in June. "A new study found no link between eating butter and heart disease."

Not so fast.

In the new report, researchers looked at four studies on roughly 175,000 (mostly) Europeans to assess butter's impact on cardiovascular disease. After 10 to 16 years, those who reported eating more butter had no higher (or lower) risk of a heart attack or other cardiovascular event than those who said they ate less.

But the studies asked people what they typically ate only once—when the studies began—which could have obscured butter's impact (since someone who later switched to another fat would still count as a butter eater). What's more, two of the four studies masked the impact of butter on cardiovascular disease by "adjusting" for blood cholesterol levels. And it's not clear why a single food like butter *would* affect risk, since people who eat butter don't necessarily eat an overall diet that's high in saturated fat.

A better study, which tracked 126,000 people for 26 to 32 years (with diet updates every four years), reported that those who ate more saturated fats had a higher risk of dying than those who ate more unsaturated fats.

What to do: Replace saturated fats (like butter, red meat, and cheese) with unsaturated fats (like oils, salad dressing, nuts, and fatty fish).

PLoS One 2016. doi:10.1371/journal.pone.0158118.
JAMA Intern. Med. 2016. doi:10.1001/jamainternmed.2016.2417.

Go with the (Whole) Grain

Wondering why you should eat whole rather than refined breads, cereals, and other grains? How does a lower risk of dying of heart disease, stroke, and cancer sound?

Researchers looked at 45 studies that tracked 245,000 to 705,000 people for 3 to 26 years. The results: People who typically consumed three servings of whole grains—say, two slices of bread and one bowl of cereal—a day had about a 20 percent lower risk of dying of heart disease and a 15 percent lower risk of dying of stroke or cancer than those who consumed no whole grains.

The researchers found no higher risk of any chronic disease in people who ate more white bread, white rice, or other refined grains.

A second meta-analysis (of 14 studies) reported that each daily serving of whole grains was linked to a 9 percent lower risk of dying of cardiovascular disease and a 5 percent lower risk of dying of cancer.

What to do: Go for whole grains. These kinds of studies can't prove that whole grains prevent disease, but what do you have to lose?

BMJ 2016. doi:10.1136/bmj.i2716. *Circ.* 133: 2370, 2016.

Take the High *or* Low Load

Lifting heavy weights builds more muscle than lifting light weights, says the conventional wisdom. Maybe not.

Scientists assigned 49 young men to strength training with either:

- **lighter weights** (30 to 50 percent of the maximum they could lift) for 20 to 25 repetitions per set, or
- **heavier weights** (75 to 90 percent of their max) for 8 to 12 reps per set.

Each group lifted the weights until they could do no more.

After three months, muscle strength and size increased equally in the two groups, though the group using heavier weights did better on bench presses.

What to do: It's not clear if these results also apply to older people, but it looks like you may be able to build muscle with lighter weights as long as you lift them until your muscles are exhausted.

J. Appl. Physiol. 2016. doi:10.1152/japplphysiol.00154.2016.

Pour First or Last?

What you pour first into your bowl or glass may matter.

Researchers asked 155 college students to pour themselves a drink of apple juice mixed with sparkling water. Those who were told to start with the apple juice poured 25 percent more juice than those who poured the water first.

In a second study, researchers asked 77 students to pour first milk and then cereal (muesli or corn flakes) into a bowl or vice versa. When they started with the milk, they poured about 10 percent more milk and 10 percent more cereal than when they poured the cereal first.

What to do: Pay attention when you pour food or drinks into your glass or bowl.

Appetite 2016. doi:10.1016/j.appet.2016.07.011.

Supper in 30

BY KATE SHERWOOD

Add a tossed salad or some sautéed greens, and dinner is on the table in a half hour, max.

Got a question or suggestion? Write to Kate at healthycook@cspinet.org.

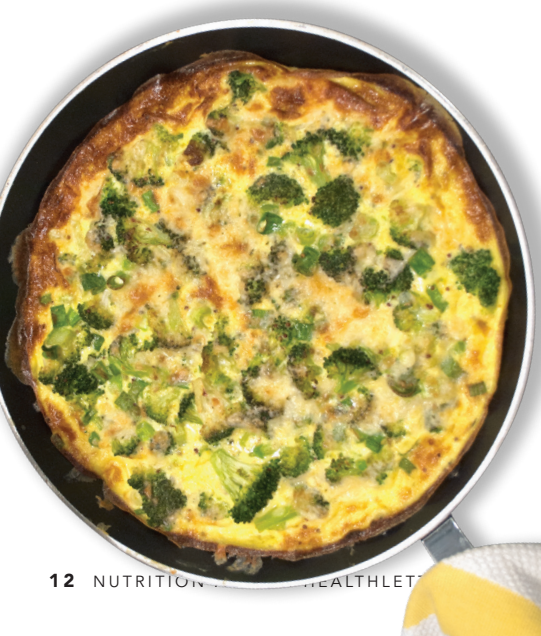
Riche Quiche

Broccoli and luxurious in the same pan.

- 3 eggs
- 1 cup egg whites
- ¼ cup milk
- 1 Tbs. whole-grain mustard
- 3 cups chopped broccoli
- 2 Tbs. extra-virgin olive oil
- 6 scallions, chopped
- ½ cup shredded sharp cheddar, divided

Lightly beat the eggs, egg whites, milk, and mustard. • In a 10-inch oven-safe nonstick pan, sauté the broccoli in the oil over medium heat until bright green and still crisp, about 2 minutes. Stir in the scallions and cook for 30 seconds. • Pour the egg mixture and half the cheese into the pan. Tilt the pan to distribute the mixture. • When the edges are cooked, sprinkle the remaining cheese over the top. Place under a broiler on high to lightly brown the top and finish cooking the eggs, 7-10 minutes. • Serves 4.

Per serving (¼ quiche): calories 250 | total fat 16 g | sat fat 5 g | cholesterol 155 mg | carbs 8 g | fiber 2 g | protein 18 g | sodium 350 mg



Photos: Kate Sherwood/CSPI.

Best. Sesame. Noodles.

Craving Chinese?

- 4 oz. whole wheat spaghetti
- 4 cups bean sprouts
- 2 cups thinly sliced snow peas
- 2 Tbs. toasted sesame oil
- ¼ cup unsalted peanut butter
- 2 Tbs. reduced-sodium soy sauce
- 1 Tbs. rice or cider vinegar
- 1 tsp. brown sugar
- 1 scallion, minced
- 1 Tbs. finely minced ginger
- 1 clove garlic, finely minced
- 2 tsp. Asian chili sauce
- 1 cup grated carrot

Cook the spaghetti according to the package instructions. Just before it's done, add the bean sprouts and snow peas to the pot. Cook for 30 seconds, then drain everything well. Return the pasta, sprouts, and snow peas to the pot and toss with the sesame oil. • In a large bowl, whisk the peanut butter, soy sauce, vinegar, sugar, scallion, ginger, garlic, and chili sauce with 2 Tbs. of water. • Toss the spaghetti, sprouts, snow peas, and carrots with the peanut butter mixture. • Serves 4.

Per serving (1½ cups): calories 320 | total fat 16 g | sat fat 2.5 g | carbs 38 g | fiber 8 g | protein 13 g | sodium 370 mg

Chicken Cacciatore

Cacciatore means hunter in Italian. But we won't tell if you buy your chicken.

- 1 lb. boneless, skinless chicken breasts, cut into ½-inch strips
- 3 Tbs. extra-virgin olive oil
- 1 small onion, finely chopped
- 1 green pepper, finely chopped
- 3 cloves garlic, minced
- ½ tsp. dried oregano
- ½ cup dry white wine
- 1 15 oz. can no-salt-added diced tomatoes
- ½ tsp. kosher salt
- freshly ground black pepper
- ¼ cup shredded parmesan

In a large skillet, sauté the chicken in the oil over medium heat until browned on one side and just cooked through, 2-3 minutes. Remove onto a plate. • Sauté the onion and pepper until they start to brown, 2-3 minutes. Stir in the garlic and oregano and cook for 30 seconds. Add the wine and cook until reduced by half, about 3 minutes. Add the tomatoes and simmer until slightly thickened, about 5 minutes. Season with salt and pepper. • Return the chicken to the skillet and stir to coat with the sauce. Serve with the parmesan. • Serves 4.

Per serving (1 cup): calories 290 | total fat 14 g | sat fat 3 g | carbs 10 g | fiber 3 g | protein 28 g | sodium 410 mg

A CASE OF THE MUNCHIES

BY LINDSAY MOYER & BONNIE LIEBMAN

More than 9 out of 10 American adults snack at least once a day, 8 out of 10 snack at least twice a day, and 6 out of 10 snack three or more times a day. Snacks are hot...but not necessarily healthy. Here are 5 that are overrated and 8 grab-and-go winners.

The information for this article was compiled by Leah Ettman.

SNACKS THAT *SOUND* GOOD

Quin-whoa

"Good source of protein," claimed bags of **Simply 7 Sea Salt Quinoa Chips** until last spring. Hmm. You'd need about 65 grams of quinoa to supply the 9 grams of protein the label said was in each 28-gram serving. And the chips also contain potato starch, cornstarch, oil, corn flour, sugar, and salt.

That might explain why Simply 7's new label lists the protein at just 1 gram. The company says it switched farmers, and that "the new quinoa has less protein."

Our guess: It didn't recognize (or choose to recognize) what any nutritionist would: that its original lab analysis was probably wrong.

TIP: Want a little more protein? Look for our fave bean chips (p. 15).

Whey Bother?

"7 g protein per 1 oz. serving," boasts the **Nut Harvest Salted Caramel Crunchy Protein Peanuts** package.

The peanuts are "coated with soy & whey protein," but ounce for ounce they deliver no more protein than uncoated peanuts. That's because Nut Harvest also adds sugar, rice flour, and oil (plus food dyes, sucralose, and more).

And if you eat the whole (2¾ oz.) bag, you get 430 calories, 560 milligrams of sodium, and 2½ teaspoons of sugar. Oops.

TIP: Stick with plain or lightly salted roasted peanuts.

Good Gimmick

"No artificial colors. No artificial flavors. No cholesterol. No partially hydrogenated oils. No high fructose corn syrup."

That's what makes **Nabisco Good Thins** so good, says the box.

But Original Triscuits, Multigrain Wheat Thins, and plenty of others could make those same "No..." claims. (Heck. So could Lay's Classic Potato Chips.) And *their* labels are honest, unlike Good Thins':

- **The Potato One Sweet Potato** variety has more (white) potato flour and cornstarch than sweet potato powder.
- **The Potato One Spinach & Garlic** has more potato flour, cornstarch, oil, and white flour than dried spinach.
- **The Chickpea One Garlic & Herb** has more white flour and oil than chickpea powder.

Maybe Nabisco—The Tricky One—meant good *gimmick*, not good for *you*.

TIP: Go for 100% whole-grain crackers instead.

Photos: Leah Ettman/CSPI.

Crafty

"This is true snack craftsmanship," says **Hillshire Snacking**'s website. "Bite into inspired snacking."

Really? It sure seems like the **Wine-Infused Salame with Natural White Cheddar Cheese & Toasted Rounds** is just salami, cheese, and bread.

Think of it as a Lunchable for grownups...a 300-calorie "snack" that comes with 870 milligrams of sodium and 9 grams of saturated fat—half a day's worth of each. Bonus: your "premium air-dried" and "wine-infused" salami is also nitrite-infused.

TIP: Tote your own cheese or chicken and fruit in a reusable container. Need a shortcut? Try ready-to-eat **Trader Joe's Just Chicken** (cooked, chopped breast meat with no added salt) or **Applegate Naturals Grilled Chicken Breast Strips** (with 290 mg of sodium in a 3 oz. serving).

Too Snackable?

"**barkTHINS** are thin slivers of snackable dark chocolate packed with amazingly simple and real ingredients," says the **Dark Chocolate Pumpkin Seed with Sea Salt** package.

"They're craveable, shareable, and breakable, so you can enjoy whenever (or whyever) you want."

Yup. That's the problem. You get 230 calories, 7 grams of saturated fat, and 3½ teaspoons of sugar in each (1.4 oz.) serving. But with all that enjoying whenever and whyever, it's hard to tell when you've polished off that much (about a third of the bag).

TIP: Take a sliver or two and put the bag (far) away.

SNACKS THAT *ARE* GOOD

Say Cheese

Each 1 oz. package of **BelGioioso Fresh Mozzarella Snacking Cheese** holds three cherry-sized balls that supply 5 grams of protein and 15 percent of a day's calcium but only 3 grams of saturated fat and 85 milligrams of sodium (both low for cheese). And it's just 70 calories.

Delizioso!

It's Bean Great

"Go ahead…spill the beans," says the bag of **Enlightened Sea Salt Roasted Broad Beans**.

They taste more like crackers or chips than beans, thanks to oil and some salt. So what? It's hard to beat 7 grams of protein and 3 grams of fiber in every 100-calorie serving.

Or try **The Good Bean Crispy Crunchy Chickpeas** or **Seapoint Farms Dry Roasted Edamame**.

Bean there, done that!

Fruits & Veggies

Can't beat 'em. They fill you up without filling you out, they're rich in vitamins and intact fiber, and they're delish. A few of our faves (with calories per cup):

- **Sugar snap peas.** Munch away on sweet and crunchy pods. (25)
- **Mini sweet peppers.** Get your vitamins A & C! (25)
- **Jicama.** Peel, slice into sticks, and splash with lime juice. (45)
- **Grape tomatoes.** Packed with fiber, potassium, and vitamin C. (50)
- **Blueberries.** Grab a handful of fiber and vitamin C. (80)
- **Frozen grapes.** The perfect icy treat. (100)

Chips Ahoy!

Dried black beans. That's the main ingredient in **Simply Tostitos Sea Salted Black Bean Chips**.

Yes, there's also some rice flour, oil, seasonings, and salt. But the beans explain why each 1 oz. serving has 4 grams of protein and 5 grams of fiber. When you're talking chips, it's hard to find better numbers.

Just remember: Each serving—only 9 chips—delivers 140 calories. It's easy to lose count.

Beanitos also makes chips with more black, white, or pinto beans than any other ingredient. All beat chips like Way Better Black Bean Whole Grain Corn Tortilla Chips, which have more corn and oil than beans.

Kale Yeah!

"Our roasted kale leaves are prepared to have a home-made taste and delicate crunch—as if they're fresh out of your own oven," says **Rhythm Superfoods Organic Sea Salt & Vinegar Roasted Kale**.

Amen. Each serving (mostly kale, oil, seasonings, and salt) has just 50 calories and 150 milligrams of sodium. (Saltier flavors can hit 250 mg.) And it's kale, for heaven's sake. How can you lose?

Hard to Stop

Movie theater popcorn? Not skinny. Smartfood White Cheddar Popcorn? Not skinny.

Skinny Pop Popcorn? Bingo!

Each 100-calorie bag contains nothing but popcorn, oil, and a little salt (45 mg of sodium).

"That's all," says the bag. "Nothing more. Nothing less."

Except terrific taste... which is why a single-serve bag comes in handy.

A Handful or Less

Almonds, walnuts, pistachios, peanuts, and other nuts are rich in good fats, but even a quarter cup has around 150 to 200 calories.

Solution: Try a 100-calorie pack of **Blue Diamond Lightly Salted** or **Whole Natural Almonds** or **Emerald Natural Almonds & Walnuts** or **Natural Almonds**.

There's also **Trader Joe's Just a Handful of Dry Roasted Unsalted Almonds**. Each bag hits 210 calories because it holds just over an ounce (twice as much as the 100-calorie packs).

Better yet, save some packaging by refilling an old Altoids tin or snack baggie with ¼ cup of nuts. (They'll hold more; don't go there.) That way, you won't grab and go overboard.

Go Greek...

Or Icelandic.

A 5 or 6 oz. **plain 0% Greek yogurt** has around 16 grams of protein and just 90 calories. Not too shabby.

Even sweetened Greek flavors squeeze about 12 grams of protein and a nice dose of calcium into a 120-calorie snack. But they come with about 4 teaspoons of sugar.

Want less? Leave some "fruit" on the bottom. Or try **Siggi's 0% Icelandic Yogurt**. Calories stay at 100 to 120, but the sugar drops to roughly 2½ teaspoons. The taste? Mmm.

Photos: Rhythm Superfoods (kale), siggi's dairy (yogurt), Leah Ettman/CSPI (all others).

RIGHT STUFF

Killer Slices

"The best bread in the universe," says the website for **Dave's Killer Bread**.

The universe is pretty big, but if we confine ourselves to the best packaged whole-grain bread *we've* ever tasted, the website is on to something.

If you live in the Pacific Northwest, you may already know the story: Dave Dahl rejoined the family baking business in 2005, after 15 years in prison.

He soon started baking his own line of organic breads, which he sold at the Portland Farmers Market. Dave's compelling personal story, and his breads' knock-your-socks-off taste, were an irresistible combo.

The trouble with Dave's (or anybody's) bread: two slices can easily top 200 calories and 300 milligrams of sodium...before you put anything inside.

Solution: *thin-sliced* breads. And none are as nutty and as satisfying as **Dave's Thin-Sliced 21 Whole Grains and Seeds** and **Thin-Sliced Good Seed**, which are now available in stores nationwide. Each slashes the calories and sodium—but not the fresh-from-the-oven taste—by about a third.

Memo to Dave: Ever thought about a line of pa*rolls*?

daveskillerbread.com—(503) 335-8077

DISH of the month

End-of-Summer Shrimp Salad

In a large bowl, whisk 2 Tbs. lemon juice, 1 Tbs. extra-virgin olive oil, 1 Tbs. chopped dill, and ¼ tsp. kosher salt. Toss with ½ lb. cooked shrimp, 2 cups chopped tomatoes, 1 chopped avocado, corn kernels from 1 ear of corn, and 1 thinly sliced scallion. Serves 2.

FOOD PORN

IHOP Not

"You'll enjoy all the taste of homemade—without all the work," brags the **IHOP** website.

Thank goodness. If you were all set to grill some chicken, pile on the melted cheese and bacon, plop everything down on a big glop of hollandaise sauce (traditionally made with egg yolks and butter), and surround it with a ring of potatoes, you can relax.

Instead, just head to IHOP for an order of **Bacon Crusted Chicken Breast with Potato Hash**.

What a timesaver.

In 15 to 30 minutes—depending on how fast you chew and swallow—you can polish off half a day's calories (920), a full day's saturated fat (21 grams), and nearly 1½ days' worth of sodium (2,160 milligrams) while watching mounds of pancakes whiz by.

Bonus: If you're in one of the "select markets" that serve garlic bread, you can tack on an extra 160 calories' worth of (mostly) white flour and oil.

What else can you expect from a chain with a "Bacon Lovers" section on its online menu?

"Crust lovers, this entrée was made for you!" says IHOP's website.

We can't wait for the Bacon Crusted Bacon.

ihop.com—(866) 444-5144

Photos: Dave's Killer Bread (top left), Leah Ettman/CSPI (top right), Sara Sellers/CSPI (bottom).

quick tip

Your sink's garbage disposal need freshening up? Toss in a chopped lime or lemon and a couple of ice cubes, then run the disposal with cold running water until emptied.