

GH INVESTIGATES ARE NON-STICK PANS REALLY SAFE? P. 121

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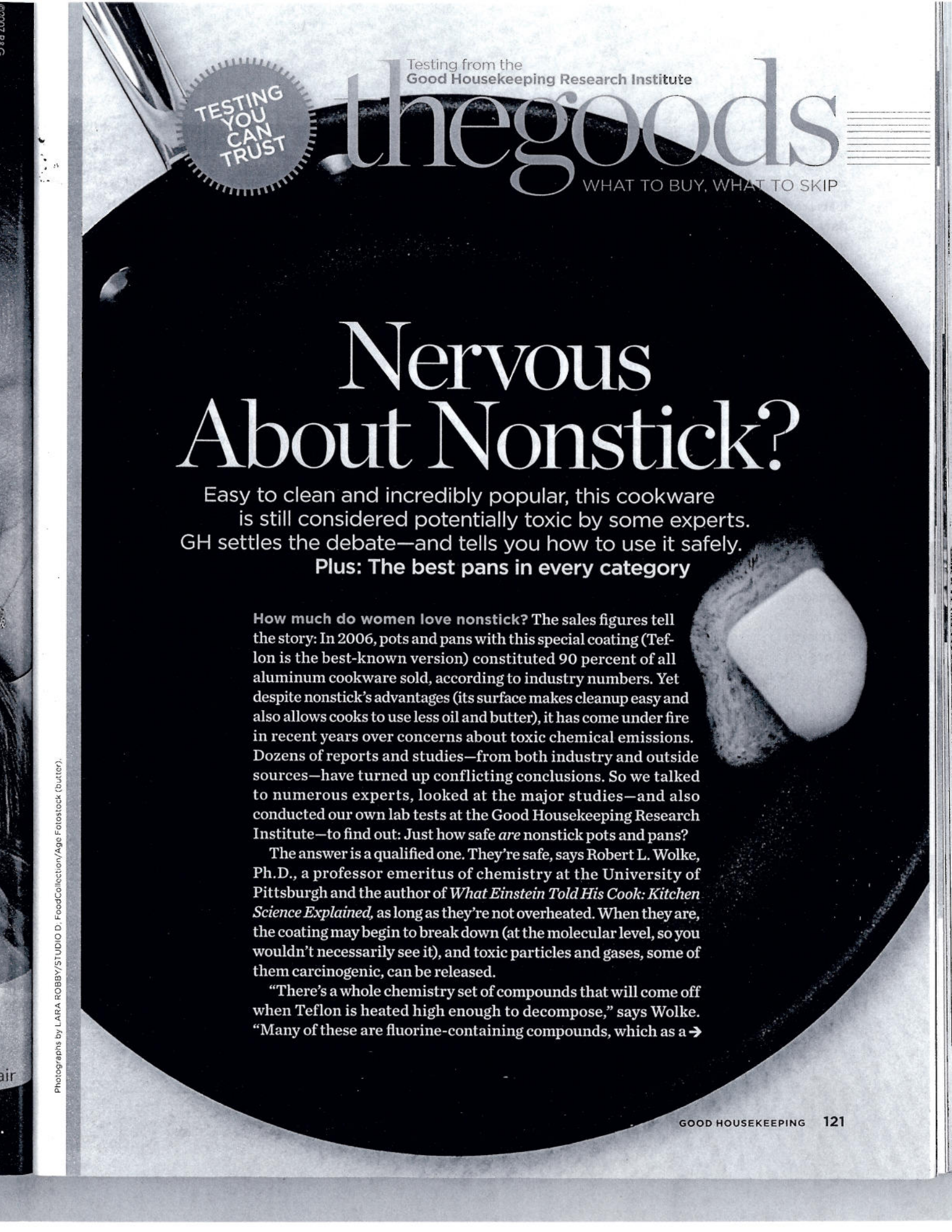
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WHAT TO BUY, WHAT TO SKIP

Nervous About Nonstick?

Easy to clean and incredibly popular, this cookware is still considered potentially toxic by some experts. GH settles the debate—and tells you how to use it safely.

Plus: The best pans in every category

How much do women love nonstick? The sales figures tell the story: In 2006, pots and pans with this special coating (Teflon is the best-known version) constituted 90 percent of all aluminum cookware sold, according to industry numbers. Yet despite nonstick's advantages (its surface makes cleanup easy and also allows cooks to use less oil and butter), it has come under fire in recent years over concerns about toxic chemical emissions. Dozens of reports and studies—from both industry and outside sources—have turned up conflicting conclusions. So we talked to numerous experts, looked at the major studies—and also conducted our own lab tests at the Good Housekeeping Research Institute—to find out: Just how safe *are* nonstick pots and pans?

The answer is a qualified one. They're safe, says Robert L. Wolke, Ph.D., a professor emeritus of chemistry at the University of Pittsburgh and the author of *What Einstein Told His Cook: Kitchen Science Explained*, as long as they're not overheated. When they are, the coating may begin to break down (at the molecular level, so you wouldn't necessarily see it), and toxic particles and gases, some of them carcinogenic, can be released.

"There's a whole chemistry set of compounds that will come off when Teflon is heated high enough to decompose," says Wolke. "Many of these are fluorine-containing compounds, which as a →

class are generally toxic." But fluoropolymers, the chemicals from which these toxic compounds come, are a big part of the coating formula—and the very reason that foods don't stick to nonstick.

If the danger begins when pans overheat, then how hot is too hot? "At temperatures above 500°F, the breakdown begins and smaller chemical fragments are released," explains Kurunthachalam Kannan, Ph.D., an environmental toxicologist at the New York State Department of Health's Wadsworth Center. DuPont, inventor and manufacturer of Teflon, agrees that 500 degrees is the recommended maximum for cooking. (How fast does nonstick cookware reach that heat level? To find out, GHRI tested pans in three categories: light-weight, medium weight, and heavy. For our results, see "Sticking Point," below.)

At very high temperatures—660°F and above—pans may more significantly decompose, emitting fumes strong enough to cause polymer-fume fever, a temporary flu-like condition marked by chills, headache, and fever. (The fumes won't kill you—but they *can* kill pet birds, whose respiratory systems are more fragile.) At 680°F, Teflon releases at least six toxic gases, including two carcinogens, according to a study by the Environmental Working Group, a nonprofit watchdog organization. "However, even if those gases are formed, the odds that

you're going to breathe enough of them to be sick are low," says Wolke, a point corroborated by several of the experts we interviewed. What no one has yet researched is whether overheating these pans regularly for a prolonged period might have long-term effects.

outdated fears

If cookware is flaking, you might accidentally swallow a chip—but don't be concerned, says Paul Honigfort, Ph.D., a consumer safety officer with the Food and Drug Administration. "A small particle would most likely just pass through the body, without being absorbed and without having any ill effect on the person's health," he says.

Also of less concern than previously believed: the danger of nonstick pans exposing the family to PFOA (perfluorooctanoic acid). A chemical used to manufacture the fluoropolymers that make up nonstick cookware's coating, PFOA is associated with tumors and developmental problems in animals, and experts are concerned about its possible effects on humans. In 2004, DuPont agreed to pay up to \$343 million to settle a lawsuit alleging that PFOA, used in the manufacture of Teflon at a certain plant, had contaminated drinking water nearby. This year, a study at Johns Hopkins Bloomberg School of Public Health found an association between PFOA exposure and small decreases in head →

GHRI INVESTIGATES

STICKING POINT

How fast will a nonstick pan reach 500°F, the point at which its coating can start to decompose? The Good Housekeeping Research Institute put three pieces of nonstick cookware to the test: a cheap, lightweight pan (weighing just 1 lb., 3 oz.); a midweight pan (2 lbs., 1 oz.); and a high-end, heavier pan (2 lbs., 9 oz.). We cooked five dishes at different temperatures on a burner that's typical in most homes. The results: Even we were surprised by how quickly some of the pans got way too hot. Check out the details, *right*.

SAFE

Scrambled eggs
Cooked on medium for 3 minutes in a lightweight pan

218°F

Chicken-and-pepper stir-fry
Cooked on high for 5¼ minutes in a lightweight pan

318°F

Bacon
Cooked on high for 5½ minutes in a medium-weight pan

465°F



RISKY

Empty pan, preheated
Heated on high for 1¾ minutes in a lightweight pan

507°F

Pan preheated with 2 Tbsp. oil
Heated on high for 2½ minutes in a lightweight pan

514°F

Hamburgers
Cooked on high for 8½ minutes in a heavyweight pan

577°F

Steak
Cooked on high for 10 minutes in a lightweight pan

656°F

GHRI'S PICKS

BEST OF NONSTICK

In our tests (see "Sticking Point," page 122), a lightweight pan quickly overheated. All the pots and pans recommended below are medium- to heavyweight.

BARGAIN BEAUTY

Farberware Affiniti (\$25 for a 12-inch skillet; \$130 for a 12-piece set) comes in several sparkling finishes, including black, red, copper, bronze, purple, and gray. But this brand isn't just a pretty face: The pan lets you scramble eggs with no sticking and simmer sauce without stirring.

KITCHEN WORKHORSE

Heavyweight Infinite Circulon (\$20 for an 8-inch skillet; \$300 for a 10-piece set) has nonstick finishes inside and out, so scrubbing is minimal. Are frittatas a specialty at your house? Pop the skillet right into a hot oven.

TROPHY COOKWARE

If you want seriously professional-looking cookware, splurge on All-Clad Brushed Stainless Steel Nonstick (\$100 for an 8-inch fry pan; \$1,399.50 for a 15-piece set). It was among the best we tested at browning evenly and keeping sauces at a steady bubble.

TOPS OVERALL

For perfectly browned pancakes and virtually no cleanup, all at a very reasonable price, you can't beat WearEver Excellence Porcelain (\$90 for a 10-piece set). Neatest feature: soft silicone handles that are comfy to hold.

circumference and body weight in infants (except those born by cesarean section). Last year, an independent review panel advised the EPA to classify PFOA a "likely" human carcinogen. The EPA has not yet adopted the recommendation, which is disputed by DuPont. In the meantime, the EPA has reached an agreement with eight companies, including DuPont, to phase out the use of PFOA completely by 2015.

But while PFOA is still a concern, it's unlikely that we get most of our exposure from the use of nonstick pans. Sources of PFOA are everywhere: in microwave-popcorn bags, fast-food packaging, shampoo, carpeting, and clothing. Studies show that most of us have PFOA in our bloodstreams, and babies show trace amounts at birth. The FDA has tested nonstick pans to evaluate the danger of PFOA exposure to humans. "What we found was that the manufacturing process used to make those pans drives off the PFOA," says Honigfort, meaning that the chemical evaporates. "The risk to consumers is considered negligible."

cook-smart precautions

You can use nonstick safely, as long as you use it properly. Any food that cooks quickly on low or medium heat and coats most of the pan's surface (which brings down the pan's temperature) is unlikely to cause problems; that includes foods like scrambled eggs, pancakes, or warmed-up leftovers. And many other kinds of cooking are safe as well: In GHRI's tests, the only food prep that yielded a nonstick pan temperature exceeding 600°F in less than 10 minutes was steak in a lightweight pan. But to be cautious, keep these tips in mind.

1 Never preheat an empty pan In GHRI's tests, each of the three empty nonstick pans we heated on high reached temperatures above 500 degrees in less than five minutes—and the cheapest, most lightweight pan got there in under two minutes. Even pans with oil in them can be problematic; our cheapest pan zoomed to more than 500 degrees in two and a half minutes.

2 Don't cook on high heat Most nonstick manufacturers, including DuPont, now advise consumers not to go above medium. (DuPont maintains, however, that Teflon does not pose any health risks, →

GHRI'S PICKS

TOP TRADITIONALISTS

These pieces, made with copper, aluminum, enamel, and other classic materials, aren't as easy-clean as nonstick, but have none of its safety concerns.

ON THE MARK

Le Creuset Stainless Steel (\$80 for an 8-inch omelet pan; \$400 for an eight-piece set) has a core of aluminum, for distributing heat, covered in stainless steel (to prevent the aluminum from discoloring food). Our fave feature: Measuring marks inside the saucepans make filling pots with just the right amount practically foolproof.

PURE PERFORMANCE

Chantal Copper Fusion (\$50 for an 8-inch fry pan; \$529 for a nine-piece set) gives you the incomparably even heat that copper is known for—and none of its polishing nightmares. And in our tests, it was easier to clean than stainless steel.

ELECTRIC CHARGE

Gotta love the potbellied shape of Tools of the Trade Belgique (\$15 for an 8-inch frying pan; \$250 for a 14-piece set). Stainless steel with a heavy aluminum base, this brand is a champ on electric ranges, because of the almost seamless contact between its perfectly flat bottom and the flat heating surface.

GREAT VALUE

Thanks to a layer of copper in the bottom of Revere Copper Advantage (\$20 for an 8-inch skillet; \$130 for a nine-piece set), you get fewer hot and cold spots. One quibble: If you're super-finicky about finishes, you'll need to polish the thin band of copper regularly.

and that its guideline is simply meant to maximize the life of the product.)

Do people still cook on high, despite manufacturers' instructions? "There's no statistical answer to that question," says the FDA's Honigfort. But you know if you're doing it, and if you are, the consensus is clear: It would be safer if you stopped. (Since some people won't switch to medium, or will over-heat accidentally if distracted, says Jane Houlihan, vice president for research at

the Environmental Working Group, "we recommend that people simply phase out the use of nonstick pans.") To play it safe, set your knob to medium or low and don't place your nonstick cookware over so-called power burners (anything above 12,000 BTUs on a gas stove or 2,400 watts on an electric range); those burners, seen more often in recent years, are intended for tasks like boiling a large pot of water quickly.

3 Ventilate your kitchen When cooking, turn on the exhaust fan to help clear away any fumes.

4 Don't broil or sear meats Those techniques require temperatures above what nonstick can usually handle.

5 Choose a heavier nonstick pan Lightweight pans generally heat up fastest, so invest in heavier-weight cookware—it's worth the extra money.

6 Avoid chipping or damaging the pan We've all been told not to use metal utensils on nonstick pans. Newer products may be harder to chip, "because the adhesion between the pan and the nonstick coating is better," says Honigfort. Still, if pans do chip or flake, they may be more likely to release toxic compounds, says Kannan of the New York State Department of Health. To prevent scratching, use wooden spoons to stir food, avoid steel wool, and don't stack these pans. (If you do, put a paper towel liner between them.)

How long can you expect your nonstick cookware to last? DuPont's estimate, based on moderate usage, is three to five years. Some experts, like Kannan, advise replacing your nonstick cookware every couple of years. What should you do if the pan does become damaged? A clear answer, from Kannan: Throw it out. —Amanda Schaffer