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# The Hard Sell on Salt

By **MICHAEL MOSS**

With salt under attack for its ill effects on the nation's health, the food giant Cargill kicked off a campaign last November to spread its own message.

"Salt is a pretty amazing compound," Alton Brown, a Food Network star, gushes in a Cargill video called Salt 101. "So make sure you have plenty of salt in your kitchen at all times."

The campaign by Cargill, which both produces and uses salt, promotes salt as "life enhancing" and suggests sprinkling it on foods as varied as chocolate [cookies](#), fresh fruit, [ice cream](#) and even coffee. "You might be surprised," Mr. Brown says, "by what foods are enhanced by its briny kiss."

By all appearances, this is a moment of reckoning for salt. [High blood pressure](#) is rising among adults and children. Government health experts estimate that deep cuts in salt consumption could save 150,000 lives a year.

Since processed foods account for most of the salt in the American [diet](#), national health officials, Mayor [Michael R. Bloomberg](#) of New York and [Michelle Obama](#) are urging food companies to greatly reduce their use of salt. Last month, the [Institute of Medicine](#) went further, urging the government to force companies to do so.

But the industry is working overtly and behind the scenes to fend off these attacks, using a shifting set of tactics that have defeated similar efforts for 30 years, records and interviews show. Industry insiders call the strategy "delay and divert" and say companies have a powerful incentive to fight back: they crave salt as a low-cost way to create tastes and textures. Doing without it risks losing customers, and replacing it with more expensive ingredients risks losing profits.

When health advocates first petitioned the federal government to regulate salt in 1978, food companies sponsored research aimed at casting doubt on the link between salt and hypertension. Two decades later, when federal officials tried to cut the salt in products

labeled “healthy,” companies argued that foods already low in sugar and fat would not sell with less salt.

Now, the industry is blaming consumers for resisting efforts to reduce salt in all foods, pointing to, as Kellogg put it in a letter to a federal nutrition advisory committee, “the virtually intractable nature of the appetite for salt.”

The federal committee is finishing up recommendations on nutrient issues including salt. While its work is overseen by the Department of Agriculture, records released to The New York Times show that the industry nominated a majority of its members and has presented the panel with its own research. It includes two studies commissioned by [ConAgra](#) suggesting that the country could save billions of dollars more in health care and lost productivity costs by simply nudging Americans to eat a little less food, rather than less salty food.

Even as it was moving from one line of defense to another, the processed food industry’s own dependence on salt deepened, interviews with company scientists show. Beyond its own taste, salt also masks bitter flavors and counters a side effect of processed food production called “warmed-over flavor,” which, the scientists said, can make meat taste like “cardboard” or “damp dog hair.”

Salt also works in tandem with fat and sugar to achieve flavors that grip the consumer and do not let go — an allure the industry has recognized for decades. “Once a preference is acquired,” a top scientist at Frito-Lay wrote in a 1979 internal memorandum, “most people do not change it, but simply obey it.”

In recent months, food companies, including Kellogg, have said they were redoubling efforts to reduce salt. But they say they can go only so far, so fast without compromising tastes consumers have come to relish or salt’s ability to preserve food. “We have to earn the consumer’s trust every day,” said George Dowdie, a senior vice president of [Campbell Soup](#). “And if you disappoint the consumer, there is no guarantee they will come back.”

### **Case Study: The Cheez-It**

The power that salt holds over processed foods can be seen in an American snack icon, the Cheez-It.

At the company’s laboratories in Battle Creek, Mich., a Kellogg vice president and food scientist, John Kepplinger, ticked off the ways salt makes its little square cracker work.

Salt sprinkled on top gives the tongue a quick buzz. More salt in the cheese adds crunch. Still more in the dough blocks the tang that develops during fermentation. In all, a generous cup of Cheez-Its delivers one-third of the daily amount of sodium recommended for most Americans.

As a demonstration, Kellogg prepared some of its biggest sellers with most of the salt removed. The Cheez-It fell apart in surprising ways. The golden yellow hue faded. The crackers became sticky when chewed, and the mash packed onto the teeth. The taste was not merely bland but medicinal.

“I really get the bitter on that,” the company’s spokeswoman, J. Adaire Putnam, said with a wince as she watched Mr. Kepplinger struggle to swallow.

They moved on to Corn Flakes. Without salt the cereal tasted metallic. The Eggo waffles evoked stale straw. The butter flavor in the Keebler Light Buttery Crackers, which have no actual butter, simply disappeared.

“Salt really changes the way that your tongue will taste the product,” Mr. Kepplinger said. “You make one little change and something that was a complementary flavor now starts to stand out and become objectionable.”

Salt started out more than 5,000 years ago as a simple preservative. But salt and dozens of compounds containing sodium — the element in salt linked to hypertension — have become omnipresent in processed foods from one end of the grocery store to the other.

For example, salt makes 10 appearances on the label for the Hungry-Man roasted turkey dinner, made by the Pinnacle Foods Group, with nine additional references to sodium compounds. The label for Roasted Chicken Monterey, a ConAgra Healthy Choice product, has five references to salt. It makes its most surprising cameo in the accompanying peach dessert, which is flavored with whiskey mixed with salt.

“Without adding the salt, we would be required to carry a [liquor](#) license,” explained a ConAgra spokeswoman, Teresa Paulsen.

The food industry releases some 10,000 new products a year, the Department of Agriculture has reported, and processed foods, along with restaurant meals, now account for roughly 80 percent of the salt in the American diet. The rest comes from the kitchen salt shaker or occurs naturally in food. In promoting cooking with salt, Cargill and its star chef, Mr. Brown, said they recognized the health concerns and recommended “smarter salting.”

Making deep cuts in salt can require more expensive ingredients that can hurt sales. Companies that make low-salt [pasta](#) sauces improve the taste with vine-ripened [tomatoes](#) and fresh herbs that cost more than dried spices and lower grade tomatoes.

Food companies say that reducing salt by 10 percent or so is easy, but that going further is difficult.

Take smoked ham sold by [Kraft Foods](#) under its Oscar Mayer label. Three slices have 820 milligrams of sodium, more than half of the daily intake recommended for most Americans. Kraft said it was releasing a version with 37 percent less sodium, but when it tried to eliminate an additional 3 percent, consumer testers failed it on flavor, texture and aroma. “We often fall off a cliff, and that’s what we did here,” said Russell Moroz, a Kraft vice president.

Campbell says it has reduced salt in over 100 soups through a variety of changes, including using a sea salt with half the normal sodium. But some soups present bigger challenges.

“It feels unfinished,” Dr. Dowdie, the Campbell vice president and scientist, said while tasting vegetable beef soup that the company prepared with less sodium for The Times. “The sweetness of the carrots isn’t pronounced. The broth, you don’t get an explosion of flavors.”

Chicken noodle soup has been especially vexing, he said. With only 150 [calories](#), a single can of the condensed soup has more than a whole day’s recommended sodium for most Americans.

“It’s a very unique recipe,” Dr. Dowdie said. “Consumers of chicken noodle, they love it and they know it and they have a strong bond with it. And any slight change they will recognize.”

Dr. Howard Moskowitz, a food scientist and consultant to major food manufacturers, said companies had not shown the same zeal in reducing salt as they had with sugars and fat. While low-calorie sweeteners opened a huge market of people eager to look better by losing weight, he said, salt is only a health concern, which does not have the same market potential.

“If all of a sudden people would demand lower salt because low salt makes them look younger, this problem would be solved overnight,” he said.

### **Diversions Tactics**

In 1978, Michael F. Jacobson, an [M.I.T.](#)-trained microbiologist, was studying [food additives](#) when he noticed the growing research linking sodium to hypertension. “I realized that

conventional ingredients like salt were probably far more harmful,” said Dr. Jacobson, who directs the [Center for Science in the Public Interest](#), a consumer group.

He petitioned the [Food and Drug Administration](#) to reclassify salt from an ingredient like pepper or vinegar posing no health concerns to a food additive that the agency could regulate by mandating limits or warning labels.

The broadside on the food industry was taken seriously by the F.D.A. and touched off a scramble by producers to head off regulation, confidential company records and interviews show.

Robert I-San Lin, who was then overseeing research and development at Frito-Lay, said in an interview that he had been caught between corporate and public interests.

“The public’s concern over high sodium intake is justifiable,” Dr. Lin wrote in a 1978 memo. A handwritten memo titled “Salt Strategy” shows that his staff worked on ways to reduce sodium, including adjusting the fat in potato chips as a way of lowering the need for salt and using a finer salt crystal.

But the company adopted few of his recommendations and joined the industry’s resistance.

Scientists testifying for the snack industry at a government hearing warned that lower salt consumption could pose certain health risks to children and pregnant women. The food industry also challenged the link between salt and hypertension, emphasizing studies that found no significant correlation.

In what Dr. Lin says was an attempt to divert attention from salt, records show, Frito-Lay also financed research on whether [calcium](#) might negate the harmful effects of salt, even though Dr. Lin said he doubted it would really absolve salt. “An effective promotion of ‘Calcium Antihypertension Theory’ may release the pressure on sodium for the time being,” Dr. Lin wrote in a memo at the time.

In 1982, Campbell sponsored an [American Heart Association](#) symposium that included a study on calcium, which is now seen as having only a small role in reducing hypertension, and another that asserted that only some people were susceptible to hypertension from salt.

That same year, the F.D.A. finally responded to Dr. Jacobson’s petition. An advisory panel had concluded that salt should no longer have a blanket designation as safe, which “would normally trigger F.D.A. action,” Michael R. Taylor, a current deputy commissioner at the agency wrote last year in analyzing salt regulation. But the agency decided to rely on consumer education and voluntary efforts by companies.

Sanford A. Miller, then director of the F.D.A.'s Center for **Food Safety** and Applied Nutrition, said agency officials had recognized the health effects of salt, but had believed that they did not have enough data to justify mandating sodium levels. "The salt people, especially, were constantly badgering us on that," Dr. Miller said. "There were little tidbits that people could challenge us on."

Dr. Lin, who works for a nutrition supplement producer, said Frito-Lay's response back then was a "macho show of force" by an otherwise responsible company. "I was employed at a time I couldn't do much about it," he said.

A Frito-Lay spokeswoman, Aurora Gonzalez, says the company has aggressively searched for solutions to nutrition issues. In March, its parent company, **PepsiCo**, announced it would cut on average 25 percent of the salt in its products. "We are proactive," Ms. Gonzalez said. One solution it recently embraced takes a page from Dr. Lin's old research: using a finer grade of salt.

Back in the 1980s, some companies began offering low-sodium products, but few sold well. Surveys by the Center for Science in the Public Interest have found little change in salt levels in processed foods.

Sugar and fat had overtaken salt as the major concern in processed foods by the 1990s, fueling the "healthy" foods market. When the F.D.A. pressured companies to reduce salt in those products, the industry said that doing so would ruin the taste of the foods already low in sugar and fat. The government backed off.

"We were trying to balance the public health need with what we understood to be the public acceptability," said William K. Hubbard, a top agency official at the time who now advises an industry-supported advocacy group. "Common sense tells you if you take it down too low and people don't buy, you have not done something good."

### **The Battle Broadens**

On April 26, Mayor Bloomberg stood before a microphone at City Hall to announce an initiative to prod food companies to cut salt in earnest, with an initial target of 25 percent by 2014. The industry's resistance was readily apparent.

After two years of planning, nearly 30 other jurisdictions joined New York, which said it was acting because federal officials had not. But only 16 manufacturers and restaurants had signed on to the initiative, and records released to The Times through the state's Freedom of Information Law reveal a shift in industry strategy.

Rather than challenging salt's link to hypertension, industry representatives, in the private planning meetings with city officials, cited financial objections: the higher cost of other seasonings and the expense of new product labels and retooled production lines. In a Feb. 1 letter to a city health official, the Grocery Manufacturers Association wrote that "aggressive, short-term sodium reduction has the potential to further raise **food prices**."

Companies also warned that reducing salt might force them to increase sugar in foods like peanut butter, meeting minutes show.

Among those declining to join the initiative was Campbell. Chor-San Khoo, its vice president for global nutrition and health, said that the company would continue its own reduction plan, but that the city's pace "was overly aggressive."

In April, the independent Institute of Medicine said food companies were moving too slowly on their own and called on federal officials to set firm salt levels for food.

Dr. **Margaret A. Hamburg**, the F.D.A. commissioner, said in an interview that salt was a serious concern her agency would address in concert with other issues, like **obesity**. "We will use a variety of strategies, including education, voluntary reduction and potentially regulation," she said, adding that "we are really at the beginning of the process of shaping our blueprint for action."

One glaring issue before the F.D.A. concerns nutrient labels, which for years have overstated the amount of salt the government says is safe to consume. In calculating the percent of the daily recommended sodium intake in each serving, companies use the standard for healthy adults below middle age, a teaspoon of salt, or about 2,300 milligrams. But the recommendation for the vast majority of Americans — children, adults of middle age or older, all blacks and anyone with hypertension — is less than 1,500 milligrams a day.

The F.D.A. announced in 2007 that it was aware of that problem, but it has taken no action. The federal Dietary Guidelines Advisory Committee is considering adopting the lower standard for everyone as part of its review of nutrition standards.

The food industry has identified the guidelines as a battleground. The panel needs "to include expertise and perspective related to food product development," the Grocery Manufacturers Association wrote to the Agriculture Department in nominating 7 of the panel's 13 members.

Food companies then peppered the committee with their perspective on salt. In a letter, Kellogg said that lower salt guidelines were "incompatible with a palatable diet."

ConAgra, whose brands include Chef Boyardee and Orville Redenbacher, made a different argument to the panel. It submitted a study it commissioned that asserted that far more savings in health care costs — about \$58 billion — could be generated if people simply cut 100 calories from their daily diets than if they consumed less salt.

The study put the savings from salt reduction at just \$2.3 billion, compared with the \$18 billion to \$24 billion in savings cited by other analysts, including the Rand Corporation, the research giant. One scientist involved in the research, David A. McCarron, a longtime food industry consultant, said ConAgra's lower estimate stemmed from its more judicious use of hypertension data.

How the industry will fare in the fight over nutrition standards will not be clear until they are finalized later this year. But in committee meetings, some members nominated by the industry have voiced concerns about cutting salt.

Joanne L. Slavin, a committee member and nutrition professor at the [University of Minnesota](#), told her colleagues that reducing salt in bread was difficult and warned of unintended consequences. It is an argument also made by food companies.

“Typically, sodium, sugar bounces around,” she said. “So you take sodium down in a product and then sugar a lot of times has to go up just for taste.”