

THE REAL COST OF YOUR BURGER

By Mark Bittman

When you're eating at Burger King or McDonald's, you're probably not worrying about where the meat in your burger came from or what was involved in its production.

And for the buck or two it cost, you probably figure that your burger was a pretty good deal.

You wouldn't be alone: Due in part to the enormous growth of the fast-food industry—and rising standards of living around the globe—the world consumes more than twice as much beef per capita as it did 40 years ago.

The problem is, all that meat we're eating comes with hidden costs that have a major impact on the environment.

Most of us don't think much about where our meat comes from or how it traveled from cow to supermarket. And if we do think about it, we probably picture a cow grazing in a field in the countryside somewhere. For hundreds of years that image was pretty accurate, but it's not anymore.

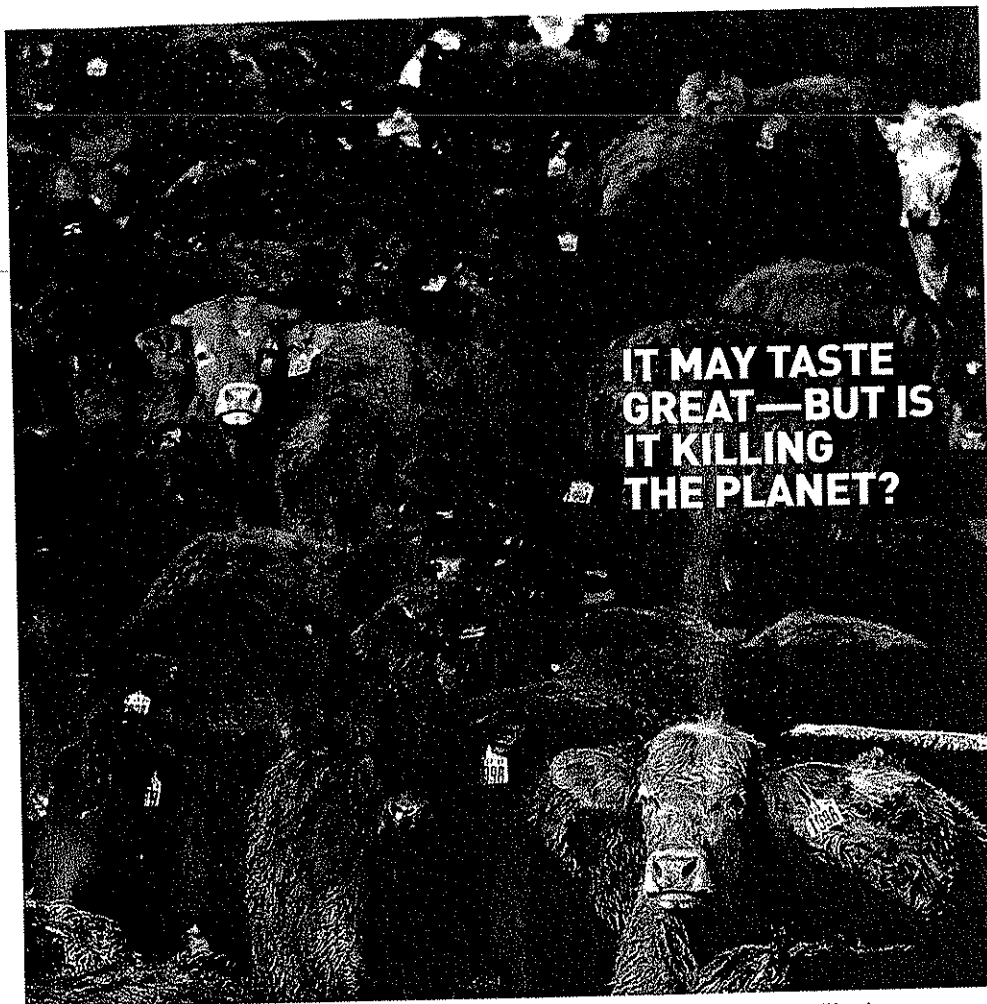
Today, there's a good chance your burger comes from meat produced in an industrial feedlot like the one in Garden City, Kansas, where 37,000 cows are packed into an enormous grid of steel-fenced pens. Each pen holds 150 cows standing up or lying down in their own manure.

This kind of huge animal feedlot operation has made the cost of beef low enough that McDonald's can sell you a cheeseburger for \$1 and still make a profit.

But scientists say the environmental consequences from the industrial production of meat are enormous.

"When you look at environmental problems in the U.S.," says Gidon Eshel, a geophysicist at Bard College, "nearly all of them have their source in food production and, in particular, meat production."

According to the United Nations Food and Agriculture Organization, about 30 percent of the earth's ice-free land is directly or indirectly involved in livestock production, which generates nearly a fifth of the world's greenhouse gases—even more than cars.



ODDS ARE your burger started out in a feedlot like this one in Coalinga, California.

It also takes a tremendous amount of energy to produce meat on an industrial scale. To put it in practical terms, Eshel and another geophysicist, Pamela A. Martin, calculated that if Americans reduced their meat consumption by 20 percent, it would save as much energy as if every American switched from driving a standard sedan—a Camry, say—to an ultra-efficient Prius.

RAIN FORESTS & RIVERS

One of the most important ways the feedlot system impacts the environment, if indirectly, is that it creates a huge demand for cattle feed, especially corn and soy, which the cows eat instead of the grass they'd munch on if they were grazing.

In fact, most of the corn and soy grown today goes to feed cattle, pigs, and chickens—not people. The increased demand for corn and soy has not only sent their prices soaring, it's also encouraged the destruction of huge swaths of the world's tropical rain forests to make space to grow it, particularly in Brazil. And all that grain requires vast quanti-

ties of chemical fertilizer, which in turn takes vast quantities of oil—1.2 gallons for every bushel.

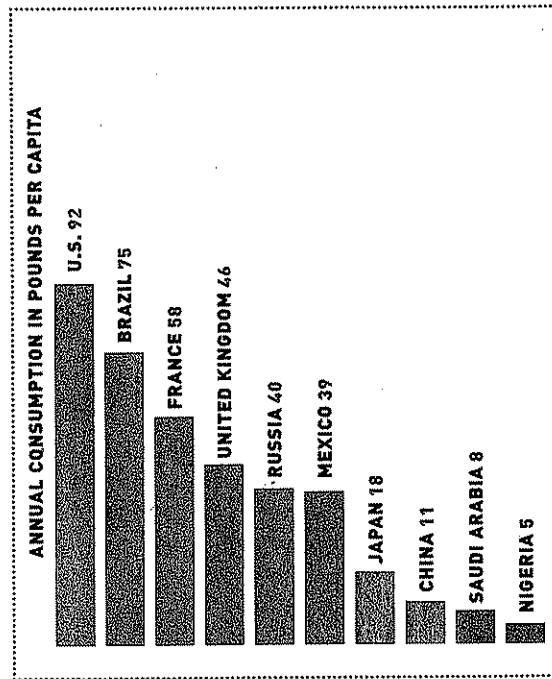
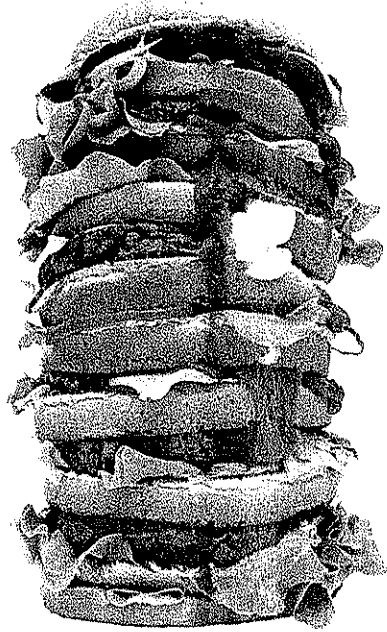
In the U.S., where much of the grain production goes to feed cattle, agriculture contributes to nearly three quarters of all water-quality problems in the nation's rivers and streams, according to the Environmental Protection Agency.

Industrial meat production also has an impact on the health of the cows—and by extension on the health of the people who eat those cows. Because the stomachs of cattle are meant to digest grass, not grain, cattle raised industrially require routine antibiotics to keep them from getting sick. Those antibiotics—and the growth hormone used to speed up the cows' weight gain—remain in the meat once the animals are slaughtered. There are also a number of infections that are common among grain-fed cows that don't affect grass-fed cows. (The *E. coli* that contaminated spinach in

Mark Bittman writes about food for The New York Times. Additional reporting by Michael Pollan for The Times.

BEEF EATERS

How much beef people in various countries typically eat each year



SOURCE: FOOD AND AGRICULTURAL ORGANIZATION OF THE U.N. (2003 NUMBERS, ROUNDED)

2006 and killed three people and sickened 200 was traced back to cow manure from a feedlot operation.)

So why do we raise beef this way? Because cows raised industrially on grains and protein supplements can be grown to slaughter-weight in just 14 months, as opposed to several years for those grazing on grass. That change has helped transform beef from a luxury item to an inexpensive fast-food staple for millions of Americans.

Americans eat about eight ounces of meat a day, roughly twice the global average (see graph, above). Americans are about 5 percent of the world's population, but we "process" (that is, grow and kill) nearly 10 billion animals a year, more than 15 percent of the world's total.

BEYOND 'THE JUNGLE'

The meat industry says that the scale of U.S. production offers great benefits to a public eager to eat beef.

"Our meat supply is among the safest, most abundant, and certainly the most affordable anywhere in the world," says J. Patrick Boyle, president of the American Meat

Institute, a group that represents the meatpacking industry.

Of course, this isn't the first time Americans have been concerned about our meat supply. Upton Sinclair focused on the meat-packing industry in his 1906 book *The Jungle*. Though Sinclair was more concerned with the plight of slaughterhouse workers than with the meat they produced, the public paid less attention to the workers and more to the meat it was eating. Reforms to correct unsanitary conditions followed, including the establishment of the Food and Drug Administration to monitor food safety.

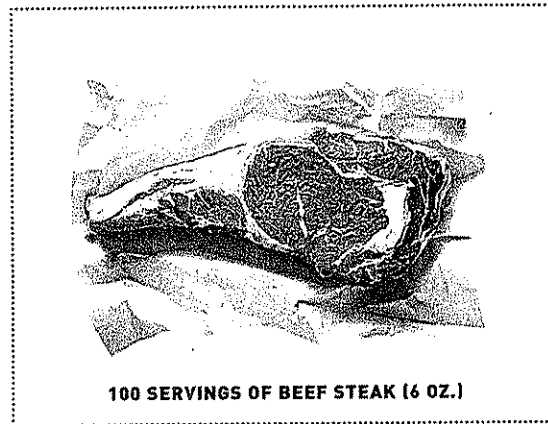
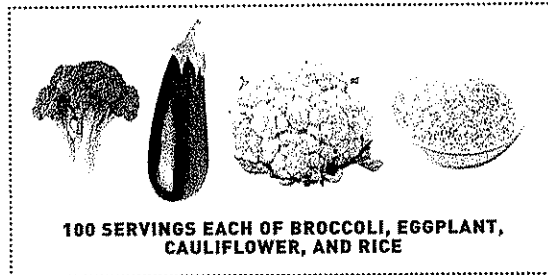
So what can be done today about the environmental effects of industrial meat production? There's no simple answer. Better waste management is one possibility. (Animal waste from cattle feedlots often contaminates nearby streams and groundwater.) Israel and South Korea are among the countries experimenting with using animal waste to generate electricity. Some of the biggest hog operations in the U.S. are working, with some success, to turn manure into fuel.

We could return to grazing beef, but that isn't practical: It would produce nowhere near as much meat as feedlots do,

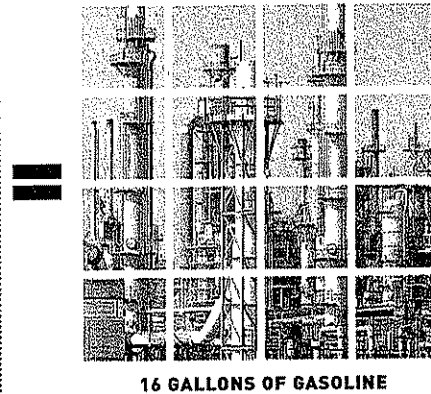
WHAT IT TAKES TO MAKE A STEAK

It takes 16 times more energy to produce a serving of beef than a serving of vegetables and rice.

THE FOOD



THE FUEL IT TAKES TO PRODUCE IT



SOURCES: GIDON ESHEL, BARD COLLEGE; PAMELA A. MARTIN, UNIV. OF CHICAGO (ENERGY CALCULATION). NUMBERS HAVE BEEN ROUNDED.

LEFT: ESTELLE KLAWITZ/FACORBIS; TOP RIGHT: ISTOCKPHOTO.COM (4); BOTTOM RIGHT: THE NEW YORK TIMES GRAPHICS

so the cost of beef would soar and Americans would eat a lot less of it. (Nutritionists say we'd be better off eating less meat anyway. The protein Americans get from meat is also available from fish, beans, and eggs.)

Perhaps the best hope for change lies in consumers' becoming aware of the true costs of mass meat production.

Maybe higher food prices will begin to change our habits. The price of corn is at a record high, driven by demand for ethanol production as well as cattle feed. And when the price of corn goes up, it has ripple effects throughout the food chain: Corn not only feeds the cows that become our meat, it also becomes corn meal and high-fructose corn syrup in sodas and thousands of other food products.

PEOPLE & PLANET ALIGNED?

If higher prices don't change eating habits, perhaps the combination of deforestation, pollution, climate change, heart disease, and animal cruelty will gradually encourage eating more plants and fewer animals.

"I love meat, but I feel so bad that I'm eating an animal,"

says Marina Orth, a 14-year-old ninth-grader in Riverside, Calif. "I try to stay away from it, but it never lasts long."

Many Americans are already buying more environmentally friendly products, choosing meat, eggs, and dairy that are produced in ways that are less harmful to the environment. The number of farmers markets has more than doubled in the last decade, and the organic food market is growing fast. These are products that are more expensive but generally of higher quality, and presumably take less of a toll on the environment.

If such trends continue, meat could go back to being more of a treat rather than a routine—as it was a century ago. Mark W. Rosegrant of the International Food Policy Research Institute in Washington foresees "a stronger public relations campaign in the reduction of meat consumption—one like that around cigarettes—emphasizing personal health, compassion for animals, and doing good for the poor and the planet."

It wouldn't surprise Eshel, the geophysicist, if all of this begins to have a real impact. "The good of people's bodies," he says, "and the good of the planet are more or less perfectly aligned." ☪

1. The article cites connections between the meat industry and environmental issues. Should the meat industry be more regulated to protect the environment? Discuss.
2. Why do you think meat consumption increase *per capita* as living standards improve? How does that relate to the amount of meat that Americans consume?
3. Did any information from this article make you think twice about eating beef? Explain. Would you pay more for “an environment-conscious burger” or a “non-feedlot burger”?

Some facts on Americans' meat consumption: in 2007 the average American ate 66 lbs. of beef, 87 lbs. of chicken, 51 lbs. of pork, and 17 lbs. of turkey. In 1950: 44 lbs. of beef, 21 lbs. of chicken, 65 lbs. of pork, and 3 lbs. of turkey.