Living Can Be Hazardous To Your Good Health

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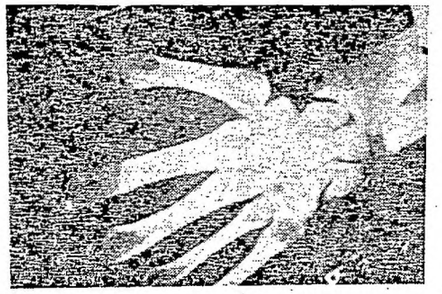

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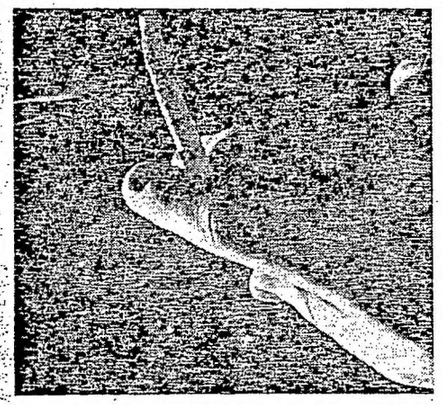
—Richard Wilson



Americans are living longer and healthier than ever before. Yet, every minute of their fruitful lives, some expert or another finds a new hazard in their wonderful world.

A constant chorus warns them of poisons in every pleasure, risks in every convenience, peril in every pastime.

Ominous statistics abound. People are told to beware of nitrites in bacon, saccharine in soft drinks, and lately cancer, perhaps, in the daily ration of Scotch.

What to make of it all? How does one measure risks in a practical way? When does benefit outweigh hazard? How protective should government be?

The trouble with these rational questions is that they're all but unanswerable.

Harvard University physics professor Richard Wilson tallied up some risk statistics to put them in perspective. Each of the following is equal, increasing your chance of death by one-millionth:

Smoking 1.4 cigarettes. Drinking ½ liter of wine. Spending three hours in a coal mine. Living two days in New York or Boston. Drinking Miami tap water for one year. Traveling six minutes by canoe, or ten miles by bicycle, or 300 miles by car, or 1,000 miles by jet.

Or eating 40 tablespoons of peanut butter. Or drinking 30 12-ounce cans of diet soda.

Cigarettes, of course, are associated with cancer and heart disease. Drinking, cirrhosis of the liver. The coal mine, black lung disease and physical injury. It's air pollution in Boston and New York. Accidents by any means of locomotion. And it's cancer from the aflatoxin in peanut butter and the saccharin in diet soda.

More and more, experts are looking at the growing catalogue of risks, looking for a rational compromise between a daredevil life and one in which people are wrapped in cotton, boxed in cardboard, stamped fragile and told which end is up.

Wilson created his list of risks to help himself put risks in some perspective. How much is a millionth of your life worth? And shouldn't you have some choice?

At Purdue University, bionucleonics professor Paul Zeimer seriously measures radiation, but even he has to smile at some of the ironies conjured up by millirems and rads.

Take radioactive potassium 40. It exists in nature. It's absorbed into muscle with ordinary potassium because the body can't tell the difference. And the more muscle you have, the more radioactive you are.

Dr. Zeimer's implicit advice to women on campus: Stay away from men, or at least choose a 97-pound weakling. No football players. No crowded elevators.

Risk statistics are fragile. But risk measurement — relative risk — is a serious problem, and a growing number of people are paying attention to it.

Senior Circuit Judge David L. Bazelon of the U.S. Court of Appeals in Washington put it succinctly in a recent article in the journal "Science."

"Ironically, scientific progress not only creates new risks, but also uncovers previously unknown risks. As our understanding of the world grows exponentially, we are constantly learning that old activities, once thought safe, in fact pose substantial risks. The question is not whether we will have risk at all, but how much risk and from what source. Perhaps even more important, the question is who will decide."

One must measure the cost of avoiding certain risks. One must measure environmental considerations like cleaner air and water against energy shortages, and the balance sheet keeps changing.

Most Americans accept the risks involved in driving automobiles. And some experts who measure those risks are quick to point out that the root of accidents is in human error, the failing attention span.

Highway safety Prof. Harold Michael of Purdue says: "Most of the problems that result in traffic accidents are associated with the absence of human capacity. We can minimize it by education, by training, by scare. But most of it is still human error."

Recently, Dr. William Barclay, editor of the American Medical Association Journal, cited inequities in the measurement of everything from artificial sweeteners to nuclear plants.

"Tests that form the basis of these reports are often conducted with dosages that exceed any to which man could be exposed, are administered for periods that equal the natural life span of the test animals, and are given by inappropriate routes, and are finally evaluated by persons of questionable expertise ..."

It is the job of Dr. Joseph Rodricks of the Food and Drug Administration to deal with risk. In the past two decades, he says, we have become more sensitive to risks. That was prompted by the tremendous spread of synthetic chemicals, especially since World War II. Of course those chemicals protect against bugs, package food, color hair and in other minor ways enhance life. But they are new in our environment.

So, the question arose: Are these chemicals which we come in daily contact with through food, air, water, responsible for human disease?

There are several ways of testing risky chemicals. First, it is fairly easy to discover if chemicals injure cells or parts of cells including the genetic material. Second, there are occupational data, not always easy to come by, which may indicate that workers exposed to chemicals are hurt in the long run. Then there are animals.

The most useful animal models are the rodents because of their biological similarities to humans. But animals don't live as long as humans, and they are exposed to chemicals in ways humans might not encounter them.

In typical animal experiments, rats are tested at about three dosage levels. The highest dosage is just short of toxic. If a chemical produces cancer in five percent of the animals above what normally occurs in a control group, it is considered fairly damning evidence that the chemical will cause cancer in humans.

There are about 30 chemical s stances that appear to cause cance humans and do cause cancer in anim

In the Delaney amendment, Cong made a policy decision that can roughly stated this way: Since we d know how to find a zero risk leve any chemical that causes cancer in mals, then we will ban any chemica does, only in the convenience area food additives, such as food colors, p ervatives, stabilizers, including nitri and saccharine.

Few people object to a food co being banned, but when it came do to nitrites and saccharine, there considerable uproar.

Many other alien substances are fou in food — natural toxins, pesticide r dues, contaminants. The absolutist D ney amendment does not apply to th and therefore the FDA can establish erance levels, limiting the amount th reaches the public.

In the case of corn and peanuts, the is a toxin called aflatoxin, the produc a common mold, which is a proven a strong cause of liver cancer.

"To get rid of it entirely would me we'd have to get rid of a food," Rodric explains. "And nobody is going to b corn and peanuts." Instead the FD limits the amount that can be present products such as peanut butter.

The fact is that poisons occur natur ly in everyday food.

"If we look at foods the way we lo at some of the things we intentiona add to them, we are going to find a l of substances that look dangerous, Rodricks says.

And in fact they do. The Nation Academy of Sciences has published book discussing naturally occurring p sons in food. Potatoes and spinach co tain a natural chemical that deni

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Living Can Be Hazardous To Keeping Good Health

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calcium to the bones. Cabbage, cauliflower, mustard and collard greens and brussel sprouts deny the thyroid iodine, and can produce goiters. There are traces of cancer-causing chemicals in cabbage, lettuce, spinach, leeks and tea. There are chemicals related to cyanide in lima beans, sweet potatoes, yams, peas, cherries and apricots.

But in natural chemicals, control is far more difficult. Rodricks wonders what would happen if something was found in coffee or some other American favorite.

The thrust of control is aimed at synthetic chemicals, the reasoning being that we've lived long enough with the others, and we're still healthy, but the synthetics are new.

An article in "Science" charged that federal agencies are slow to control even the synthetics. It said, of 1,500 ingredients in registered pesticides, one-third are toxic, one-fourth are cancer-causing. While the Environmental Protection Agency has established pesticide limits in food, only five have been restricted specifically, the article said.

But the very numbers are overwhelming. The article also said 20 percent of the 70,000 chemicals in commercial use examined by EPA are suspected carcinogens. It added that of 28,000 chemicals listed as toxic by the National Institute of Occupational Safety and Health, 2,200 were suspected carcinogens.

Few had been seriously restricted, which could indicate the questionability of such labels, or the political pressure brought against restrictions. Scientists, legislators, regulators, even the courts ponder the dichotomy between risk-taking and avoidance.

Judge Bazelon notes that scientists question leaving such decisions to the public, which tolerates 50,000 automobile deaths a year, yet worries about suspected cancer-causing agents.

The public, one observer says, can be better informed.

Richard Wilson, in compiling his list of risks, found that it was equally hazardous to have one chest X-ray, live two months with a cigarette smoker, eat 100 charcoal broiled steaks, live 20 years near a polyvinyl chloride plant or live 150 years within 20 miles of a nuclear power plant.

"I find these comparisons help me evaluate risks, and I imagine that they may help others as well," Wilson says. "But the important use of these comparisons must be to help the decisions we make, as a nation, to improve our health and reduce our accident rate."

To give yet another measure of risk, Bernard L. Cohen and I-Sing Lee of the University of Pittsburgh translated various states of risk into the number of days of life expectancy lost.

By far the riskiest condition, they found, was being an unmarried male, which costs a person 3,500 days of life expectancy. Although they didn't say why, it is presumed that unmarried males are generally excessive in their lifestyles.

Second on the list — male cigarette smoking. Cost 2,250 days. Third — heart disease. Cost 2,100 days.

Being 30 percent overweight costs 1,300 days. Being a coal miner costs 1,100 days. Serving in the Army in Vietnam cost 400 days. Motor vehicle accidents cost 207 days. Average alcohol intake costs 130 days. Home accidents cost 95 days. Drinking coffee costs six days and taking oral contraceptives costs five.

Diet drinks cost two days as do nuclear accidents, presuming all U.S. power came from nuclear sources.

But you can make up for the bad news. Having a PAP test adds four days to your life expectancy. Driving with an air bag adds 50. Mobile coronary care units add 125, and all of the safety improvements from 1966 to 1976 add 110.

Why did Cohen and Lee perform this mathematical exercise?

"The public is constantly harangued about all sorts of risks," they wrote in "Health Physics" journal, "and its perception of risks plays an important role in governmental decision making. The risks of radiation have especially been emphasized in the popular press. This creates a very serious problem since the public does not understand risk. It gets highly excited about radiation risks which are almost never fatal, whereas it largely ignores other risks which claim thousands of lives every year."

Very little in the risk game is absolute.

Even people who work with risks find a gap between their professional responsibilities and their personal behavior. Dr. Rodricks worries about nitrites in bacon and hot dogs professionally, but personally:

"I appreciate the risks in cigarettes very well. I know absolutely. There's no question. One of the few certainties of our times. But I still smoke occasionally. I know it's wrong in a health sense, but obviously it gives me some other satisfaction. I know I take other kinds of risks when I drive or do a little mountain climbing...

"What I don't like is the hidden risks. When I know there is a risk, I have a choice. I'm not a zero risk person. Hell, why avoid all risks anyway?

You can't.

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