

Peanut Butter, Parsley, Pepper & Other Carcinogens

BY BRUCE N. AMES

The trace of the carcinogen ethylene dibromide (EDB) now allowed in food is insignificant compared with the level and risk of many cancer-causing agents found in every meal, most of which are natural and traditional. These carcinogens come from four main sources.

1. Nature's pesticides. Plants synthesize toxic chemicals in large amounts to defend against insects and other predators. Plants in the human diet are not exception. The variety of these chemicals is enormous and new ones are being discovered constantly. However, little information is available about the toxicology of most of the natural plant toxins in our diet, despite the large doses to which we are exposed. Many, if not most, of these plant toxins may be "new" to humans in the sense that the human diet has changed drastically through human history. By comparison, our knowledge of the toxicological effects of new man-made pesticides is extensive, even as general exposure is exceedingly low.

Recent laboratory studies have uncovered an extraordinary variety of natural mutagens and carcinogens in edible plants. A few of these natural carcinogens are: the main flavor ingredient mustard and horseradish, chemicals in black pepper, hydrazines found in extremely large amounts in edible mushrooms, compounds present in some herbal teas, and others present in celery, parsnips and parsley. The amount of nature's pesticides we are ingesting is at least 10,000 times the level of man-made pesticide. Nature's pesticides, in fact, are found in levels of parts per hundred or parts per thousand, while man-made pesticides are present at levels of parts per million or parts per billion. The man-made pesticide residues currently allowed in our diet don't represent, in my opinion, any significant cancer hazard to the public.

2. Mold carcinogens. Molds make a great variety of mutagens and carcinogens. Some of them, such as aflatoxin, are among the most potent ever discovered. These carcinogens are found in peanut butter, corn products, apple juice and many other foods. For example, aflatoxin is allowed in peanut butter at a level of 15 parts per billion. Aflatoxin is about 1,000 times more potent as a carcinogen in rats than EDB. Why make a big fuss about tiny traces of EDB, when the risk from eating the average peanut butter sandwich comes out as more than eating a rare highly contaminated muffin? (The risk from eating a peanut butter sandwich is so low I don't think twice about eating one.)

(Continued on page 39)

FREE! Aquatic Survey of your Waterways

A Lake Doctors program can control your aquatic weed & algae problems.

Survey Includes:

Full report and cost estimate by certified biologist.

**We Specialize in keeping
your Waterways in**

Excellent Condition

**SERVICING GOLF COURSES
STATEWIDE**

The Lake Doctors, Inc.

3434 N.E. 2nd Ave.
Ft. Lauderdale, Fl. 33334
305/565-7488

718 Savage Ct.
Longwood, Fl. 32750
305/339-5222

ALMAR

Quality

Service

Economy

CHEMICAL CO., INC.

P.O. BOX 18101

TAMPA, FLA. 33679

CALL COLLECT 813-839-3363

(Continued from page 37)

3. When we cook our food we make mutagens and carcinogens, since all burnt and browned material contains them. The burnt and browned material we ingest each day from frying our hamburgers, browning our muffins or roasting our coffee is even more than that inhaled each day by a two-pack-a-day smoker. Both of these sources are also very much greater than the burnt material we inhale from air pollution. It should be emphasized, however, that though there are known carcinogens made by heating protein and cooking our food, we don't yet know the risks, while we do know accurately the enormous risks from smoking.

4. In studies on humans, high fat has been associated with colon and breast cancer and heart disease. Experiments with animals also have pointed to high fat in the diet as being associated with cancer. Though these studies aren't definitive, the National Academy of Sciences Committee on Diet, Nutrition and Cancer suggested that it might be prudent to cut down on fat as well as to drink alcohol in moderation. A high intake of alcohol also has been associated with cancer in a number of studies on humans.

There are other risks arising as a consequence of scaring the public unnecessarily. There is roughly a one-in-a-million risk of death from a car accident in driving a distance of 60 miles. I suspect that the risks to the public are greater if everyone starts driving to the supermarket to return their muffins.

It is also possible that the public health could be endangered by *banning* the use of ethylene dibromide as a fumigant. If we do not use fumigants on grains, there will be much more insect infestation and mold contamination, and the cancer risk from the powerful mold carcinogens may be much greater than the risk from EDB residues. The alternative fumigants are mostly untested for cancer. They could be flammable, toxic or cause cancer.

The most dangerous item available in the supermarket, of course, is not the muffins with EDB residues, the black pepper, the celery, the mustard or the peanut butter. It is cigarettes. Cigarettes are causing 30% of the cancer in the U.S. and 25% of the heart disease; they are known (not hypothesized) to cause cancer in humans. The most sensible action that states can take to protect public health is to encourage reduced smoking (such as by taxing cigarettes). Even a small lowering of cigarette consumption would reduce cancer enormously; it would cut the risk more than would any amount of action taken on the EDB residues.

I don't mean to imply that large amounts of EDB might not be dangerous to humans. As pesticides go, it is a potent carcinogen in rodents. The new standards set for EDB are useful and overdue and should keep industry from getting sloppy. The Ruckelshaus standards seem pretty reasonable while EDB is being phased out.


On the other hand, the risk to workers using EDB could be significant. The government's air standards until

(Continued on page 40) 39

Du Cor Du Cor Du Cor

Du Cor
TURF AND LAWN
MAINTENANCE PRODUCTS

Home of:
DOWN 'N THRU SOIL PENETRANT
EMERGENCY GREEN
TEAM WORK
LIME AID



Du Cor Chemical
Corporation
P.O. Box 13298 · Orlando, Florida 32809
Phone (305) 859-4390

Du Cor Du Cor Du Cor

 **SERVING ALL OF FLORIDA**
with
INSECTICIDES, HERBICIDES, FUNGICIDES
& APPLICATION EQUIPMENT



"DESIGNED
FOR
THE TURF
INDUSTRY!"

**SOUTHERN MILL CREEK
PRODUCTS CO., INC.**

Dade Tampa Office
635-0321 1-800-282-9115

Florida wats
1-800-432-8717

(Continued from page 39)

recently were such that workers were allowed to breathe in an amount of EDB roughly equivalent to eating a million ounces of bread a day with EDB residues of 30 parts per billion (the new Ruckelshaus standard for bread). Two studies of workers who were breathing in close to this amount of EDB for decades showed no increase in cancer. But because of the limitations of these studies, I and others fought to get California to lower the allowable level for workers by more than 100-fold. Our experience with asbestos and radium has taught us we can't ignore occupational carcinogenic hazards.

Humans are ingesting, and have always ingested, large amounts of many natural chemicals that might cause cancer. It is among those chemicals, not the traces of EDB allowed in our diets, where most scientists believe we will find the main environmental causes to the common human cancers.

Mr. Ames is chairman of the Department of Biochemistry at the University of California at Berkley. This article is adapted from his September 1983 article in Science magazine, "Dietary Carcinogens and Anticarcinogens." ■



Experimental Mole Cricket and Nematode work has been performed thru the State of Florida over the past few months in regards to examining various new labeling pending results and EPA approval. Nearly a dozen courses in geographically different locations have been host sites for various chemicals, not to mention combinations of various insecticides. Preliminary testing is inclusive at the time of going to press, however the future looks promising from a few of the site locations.



Two Lofts Turf-Type Ryes PVP Certified

Lofts Inc. recently announced that Palmer and Prelude turf-type perennial ryegrass varieties have received Plant Variety Protection Certificates.

Prelude was awarded PVP Certificate *8200177, and Palmer *8200178. Each of these varieties has been on the market for only one year, and were developed jointly by Lofts and Rutgers University's New Jersey Agricultural Experiment Station.

Both Palmer and Prelude have been extensively tested at universities, and each variety has consistently proven its excellence in overall turf performance.

Palmer and Prelude are notable for several important qualities, including improved mowability; tolerance to drought and heat; dark green color; good winter hardiness; improved resistance to crown rust and brown patch; quick establishment; and fine-leaved, dense growth. Both varieties are well-suited wherever a ryegrass is applicable, particularly in overseeding programs.

Under U.S. patent laws and the Plant Variety Protection Act, any unauthorized reproduction of these varieties is prohibited. Both Palmer and Prelude turf-type perennial ryegrasses are available only through Lofts Inc., its subsidiaries and distributors. ■

get out of the water

Weeds grow all the time, even when you don't have time for them.

We specialize in aquatics. We have the people, the equipment, the know-how and the time to do it right.

When we manage your water and shoreline areas, you spend your time on more important things. You know that your lakes are in the best possible hands.

Serving golf courses and green spaces throughout Florida

FLORIDA AQUATIC

Licensed/Insured/Bonded

1637 N.W. 38th Avenue
Ft. Lauderdale, FL 33311

(305) 792-1500

