



MAINE ORGANIC FARMER + GARDENER

Sept/Oct 93

FARMSOURCESUBS

News & Events



Environmental Links to Breast Cancer

One in eleven. One in ten. One in nine. One in eight. The number of women diagnosed with breast cancer in the United States is increasing almost linearly, so that breast cancer is now the leading cause of death for women between the ages of 40 and 55, killing almost 50,000 women in the United States each year. The search for a cause or causes has baffled scientists. The July 3 issue of *Science News*, however, had a fascinating review article called "Eco-Cancers" that summarized factors associated with cancer and their possible interactions.

Scientists do know that elevated concentrations of estrogen at certain stages of a woman's life will stimulate cell proliferation in breasts during the menstrual cycle. They have also found that many "estrogenic agents" or "xenoestrogens"—compounds that mimic estrogen, possibly by binding to cell receptors that trigger genetic activity—induce or promote mammary cancers in lab animals, and some, especially chlorinated hydrocarbons and polycyclic aromatic hydrocarbons (PAHs), may increase a woman's risk of breast cancer. Among these compounds are certain pesticides, such as DDT, heptachlor and atrazine; some ingredients in plastics; some petroleum byproducts; PCBs and PAHs.

Other factors that increase the amount of estrogen in the blood are light at night; electromagnetic fields, such as 60-hertz magnetic fields, microwaves and most radio waves; beta-blocker drugs (used to treat high blood pressure); age; and alcohol. (Among pre-

menopausal women, moderate drinkers have a 40 to 100% greater chance of getting breast cancer than those who abstain, reports *Science News*.)

The research reviewed in *Science News* suggests that these other factors may increase estrogen in the blood by suppressing the secretion of melatonin, a hormone secreted by the pineal gland of the brain during nighttime darkness. Melatonin inhibits the production of estrogen and increases the levels of naturally occurring antioxidants in breast cancer cells, and it may reduce the number of estrogen receptors on breast cancer cells, too, thus possibly slowing tumor growth. *Science News* adds that lab animals that are chronically starved develop fewer cancers than those with adequate diets—and that such severe diet restriction also boosts melatonin secretion.

Some studies have combined some of the above factors. For example, in two studies, rats exposed to variable magnetic fields and chemical carcinogens developed more mammary tumors than rats who were not exposed to the magnetic fields but were exposed to carcinogens. Also, several factors affect the form of estradiol, the naturally occurring form of estrogen in the body. This 18-carbon hormone can have a hydroxyl (OH-) group on its 2-carbon position or on its 16-carbon position. When the 2-carbon position is hydroxylated, estradiol appears to be innocuous; this form is highest in vigorous exercisers. Cigarette smoking, dioxins, and indole-3-carbinol (a compound found in vegetables in the cabbage family) also stimulate production of this form.

But when the 16-carbon position of estradiol is hydroxylated, the risk of getting breast cancer is promoted. Alcohol, human papillomavirus, the combustion pollutant benzopyrene, and some drugs depress

the 2-carbon-hydroxylation pathway in favor of the 16-carbon pathway.

A later issue of *Science News* (July 24, 1993) reviewed two more studies, one showing that a family history of breast cancer indicates a smaller risk of getting cancer than previous studies indicated; and another showing that women who consumed the greatest amounts of vitamin A, in their diets and from multivitamin pills, had a 20% lower risk of breast cancer than women who took the smallest amounts of the vitamin. One of the coauthors of the study, Walter C. Willett of Harvard, pointed out, however, that vitamin A can be toxic in large doses, so women should try to get vitamin A from their diets, where the vitamin comes from non-toxic beta-carotene. Vegetables high in beta-carotene are spinach, carrots, and yellow and winter squashes.

While scientists debate the pathways that cause cancer, environmentalists call for a ban on chemicals that seem to have clear links to breast cancer. Greenpeace, in its July/August/Sept. 1993 newsletter, points out that in Israel, breast cancer rates and organochlorine pesticide contamination were among the worst in the world. But when several carcinogenic pesticides were phased out in the 1970s, contamination and cancer rates dropped quickly. Greenpeace says that "over the last 20 years, a few organochlorines have been banned or restricted. But thousands are still being produced, and thousands more—like dioxin—[are] produced unintentionally whenever chlorine is used. Regulating these chemicals, one by one, would take centuries. A more practical solution to the problem would be to phase out organochlorines as a group, with chlorine—the chemical building block of them all—specifically targeted for elimination." □

News and Events



New Hampshire Organic Farmer Alleges Problems with Pesticide Drift

New Hampshire's largest organic farmer, Eero Ruuttila, who has also contributed much to MOFGA through his extensive knowledge of health problems related to agricultural chemicals and through talks at MOFGA's Farmer to Farmer Conference, suffered a serious setback this spring.

In June, Ruuttila's neighbor David Campbell treated his pumpkin fields with the herbicide Command (also sold as Commence, Dimethazone, Fenoxan, Camit and Merit, and known by the common name of Clomazone), while Ruuttila's seedlings — ultimately worth \$21,500 of produce — were hardening off outside of his greenhouse. The seedlings were later transplanted to 2 1/2 acres of field, where they became bleached (Command is a pigment inhibitor) and had to be pulled so that Ruuttila could replant and maintain his certified organic status.

Ruuttila suspects that the bleaching was caused by drift from his neighbor's application of Command. "An event of this magnitude has never happened to a certified organic farmer in New England," Ruuttila told the *Boston Globe* (June 27, 1993).

While Campbell had been applying Command, Ruuttila's wife detected a sweet smell drifting through her home. Later, Ruuttila's crops, weeds and even houseplants turned white. In addition, his 10-year-old son got diarrhea, his wife had violent headaches, and Ruuttila began hearing noises, his left hand numbed, and he passed blood in his urine. Some two dozen people from Litchfield who live near Campbell's pumpkin field have since reported similar complaints to New Hampshire's Division of Pesticide Control. Their complaints include vomiting, raw throats, diarrhea, numbness in the hands, headaches, and ear ringing and popping. Cats and dogs belonging to Ruuttila and his neighbors got diarrhea, two rabbits and a hen and a ferret died, and a horse has suffered with eye problems. The horse and many of the people were still sick when Ruuttila talked with *The MOF&G* on the 19th of July, and Ruuttila's blood had tested positive for traces of xylene, an aromatic hydrocarbon in Command that is known to affect the central nervous system, liver and kidneys.

Martin Fletcher, head toxicologist for FMC Corp., which makes Command, told the *Boston Globe* that company studies on animals showed no health problems resulting from Command. He said that herbicide scares tend to provoke flurries of groundless health complaints.

An EPA Pesticide Fact Sheet says that "a complete data base for the chemical ... shows very little potential for acute or long term health effects. However, because the adjuvants (inert ingredients) used in the formulated product can cause irreversible eye damage, the 6EC label bears the signal word danger... Off-target movement of Command is not expected to cause any adverse health effects to persons in the vicinity of treated areas."

Ruuttila, however, has obtained medical safety and fact sheets that say that Command can damage the central nervous system and the liver and can produce various symptoms of toxicity. He has requested more data from the EPA through the Freedom of Information Act, and he wants to hear from individuals throughout the country who have become ill after exposure to Command. "Everything I read about it says it's dangerous stuff," Ruuttila told *The MOF&G*. "It's problematic in the Midwest because of drift and because it attaches to water molecules" — a potentially important factor given the floods there this year. In past years, Command drift has bleached vegetation at

homes near Midwestern farms where the herbicide was applied.

Because Ruuttila's fields, which are part of the Monadnock Community Land Trust, are not near his home, they were not contaminated with the herbicide and he was able to replant some of what he lost with certified organic stock. But he has had to move out of his house because of continued health problems when he was there, and he is unsure of his farming future. One of the symptoms he and his wife have suffered is an extreme loss of energy. "We may have to shut the farm down," he told *The MOF&G* in July, although he was still farming in August, when he contacted *The MOF&G* again.

Campbell, who sprayed the herbicide, told the *Boston Globe* his solution to the problem. "We'll take care of it," he said. "I imagine with money. We've got a lawyer."

The New Hampshire Division of Pesticide Control was still investigating the case when we went to press, and therefore could not comment. In addition, the EPA was initiating a federal investigation, and the Environment and Agriculture Committee of the New Hampshire House of Representatives had asked for a complete report on the case from the Pesticide Board.

Command is a relatively new herbicide, originally developed for use on soybean fields in the Midwest. It has recently been approved for use on squash and pumpkins, but Willie Erhardt, University of Maine Extension Vegetable Specialist, says that he does not know of anyone in Maine who has tried it yet. He says that the label is replete with warnings about the dangers of drift of Command, telling farmers that the herbicide must be incorporated immediately because drift causes severe injury to neighboring crops. "I know a chemical salesman who is so afraid of it [because of the toxicity of drift to nearby plants — even trees] that he doesn't want to sell it," says Erhardt.

Organic and Conventional Growers Must Protect Workers

New federal farm worker protection rules, intended to reduce the hazards of pesticide use in agriculture, forestry and horticulture, are catching Maine growers—organic and conventional—off guard, notes the Maine Board of Pesticides Control (BPC).

The [year old] Worker Protection Standard protects agricultural employees who produce plants on farms and in greenhouses, nurseries and forests, and handlers hired to mix, load, apply or handle pesticides, or to clean and repair related equipment on such establishments.

Agricultural pesticide labels—including products containing *Bacillus thuringiensis* (Bt), rotenone and pyrethrum—will include new language about personal protective equipment and restricted entry intervals (given in hours, rather than "until dust has settled or spray has dried"). Protective clothing and personal protective equipment requirements on new labels will not be optional, and violating them constitutes a misuse of the pesticide.

"This law affects everyone who uses agricultural pesticides," says Tammy Gould of the BPC. "... It's not just synthetic pesticides which are covered by the rule; it also includes those that are considered organic."

Nancy Ross, executive director of MOFGA and president of the Agricultural Council of Maine (ACOM), agrees. "We can't remind people enough that botanical pesticides are toxic," says Ross. Although they should not affect consumers because the botanicals break down so rapidly, they can affect the applicator, Ross adds.

For more information about the Worker Protection Standard, contact Gould at (207) 287-2731.