

EIR Science & Technology

Science, pesticides, and environmentalist politics

From Silent Spring to the ban on DDT, environmentalist scare stories about pesticides are flagrant hoaxes. A speech by entomologist Dr. J. Gordon Edwards at Dartmouth College on April 11, 1999.

A week after my college graduation, I was inducted into the Army. In 1944, I went ashore in France at Omaha Beach (three weeks after the great invasion). Later, I spent several hours daily in a cloud of 10% DDT dust, puffing it down inside the clothing of European people who feared that typhus might again spread across Europe as it did during the First World War. At that time, it killed nearly 3 million people in Russia and millions more in the Balkans, Poland, and Germany. This terrible disease is spread by body lice, and they were becoming common in Europe again in 1944. Fortunately, DDT had recently been discovered and it quickly killed body lice, so typhus did not become a problem in Europe during the war.

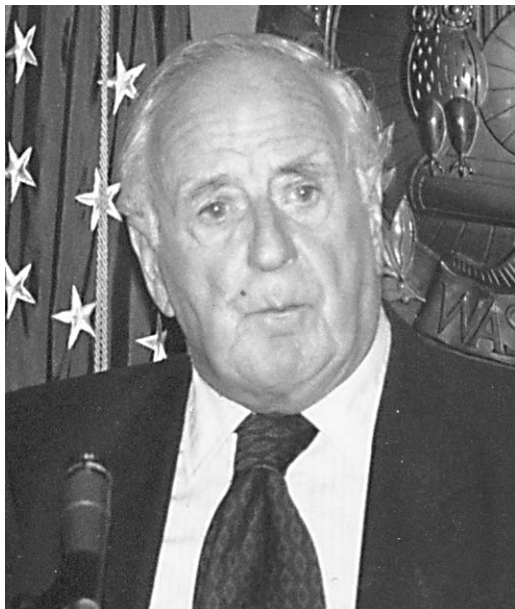
After the war ended, I went to Ohio State University to continue my study of beetles. I feared that the government might blanket the United States with DDT, to kill all the insect pests. I thought that might eradicate so many insects that my career as a beetle specialist would be threatened. Fortunately, I was wrong on every count.

During the early 1960s, I worked for a month each summer studying high-altitude ecology in Grand Teton National Park, Wyoming. While I was there, the *New Yorker* magazine carried a review of Rachel Carson's new book, *Silent Spring*. I read the review and thought it was great, because I was a dedicated ecologist and had little use for industry or construction projects. I bought a copy of the book and began reading it. I noticed that Miss Carson made a great many misleading

statements, but I tried to overlook that because "she was on our side." Gradually, however, I realized that she was deliberately lying. I was really shocked! I began to understand why her original co-author, Edwin Diamond (science editor of *Newsweek*), had withdrawn from the relationship and criticized *Silent Spring* as "an emotional, alarmist book seeking to cause Americans to mistakenly believe their world is being poisoned" (*Saturday Evening Post*, Sept. 28, 1963).

In the front of her book, Rachel Carson dedicated *Silent Spring* as follows: "To Albert Schweitzer who said 'Man has lost the capacity to foresee and to forestall. He will end by destroying the Earth.'" Since the major theme of her book was anti-pesticides (especially anti-DDT), this appeared to indicate that the great man opposed the use of DDT. However, in his autobiography, Schweitzer wrote: "How much labor and waste of time these wicked insects do cause us . . . but a ray of hope, in the use of DDT, is now held out to us."

On page 187, Carson wrote: "Only yesterday mankind lived in fear of the scourges of smallpox, cholera and plague that once swept nations before them. Now our major concern is no longer with the disease organisms that once were omnipresent; sanitation, better living conditions, and new drugs have given us a high degree of control over infectious disease." That statement bothered me, because I had been teaching medical entomology at San Jose State University for more than ten years and was aware that the greatest threats to humans are diseases like malaria, typhus, yellow fever, Chagas'



Most scientists thought that the eradication of malaria by use of DDT was a great humanitarian victory. But not Britain's Prince Philip (right) and Club of Rome President Alexander King (left), who decried the fact that human population grew as a result. Their malthusian policies led to the banning of DDT, on completely unscientific grounds.



disease, African sleeping sickness, and several types of leishmaniasis and tick-borne rickettsial diseases. She avoided mentioning any of those, perhaps because she knew that they could be controlled only by the appropriate use of insecticides. It was later revealed in *Science* (June 9, 1972) that “at least 80% of all human infectious diseases are arthropod-borne.”

The National Academy of Sciences, in *The Life Sciences*, 1970, commented that: “To only a few chemicals does man owe as great a debt as to DDT. In a little more than two decades, DDT has prevented 500 million human deaths that would otherwise have been inevitable.”

Malaria

In Ceylon (Sri Lanka) in the 1950s, two million people were developing malaria each year, but after a DDT program was carried out there, there were only 17 cases in the entire country. Most scientists thought that that was a great humanitarian victory. However, in 1981, Britain's Prince Philip wrote in *People* magazine: “I was in Sri Lanka, where malaria was halted by DDT. Earlier, malaria had been controlling population growth. The consequence of using DDT was that within about 20 years, the population doubled.” (He was happier when thousands of poor people died of malaria annually.) Alexander King, the president of the Club of Rome, wrote in his 1990 book: “In Guyana, within two years, DDT had almost eliminated malaria, so my chief quarrel with it in hindsight is that it has greatly added to the human population problem.” The World Health Organization stated that up to 40% of the children in poor nations would die of malaria, in response to which a leader in the Agency for International Development said: “Rather dead than alive and riotously reproducing.”

Sierra Club president McClosky told reporters: “The Si-

erra Club wants a ban on DDT, even in tropical countries where it has kept malaria under control,” and the National Audubon Society urged that DDT “be banned throughout the land and banned from export.”

A leading British scientist (D.G. Hessayan) later pointed out that “If there *had* been a worldwide ban on DDT, then Rachel Carson and her *Silent Spring* would now be killing more people every year than Hitler killed in his entire holocaust.”

Starvation

Starvation is also a great problem in Third World nations, where insect pests typically destroy nearly half of all crops each year. In 1986, Secretary of State George Shultz telegraphed orders to U.S. embassies in Africa, stating that “The U.S. cannot, repeat cannot, as a matter of policy, participate in programs using any of the following pesticides: 1) lindane, 2) BHC, 3) DDT, or 4) dieldrin.” To combat swarms of locusts, the most effective pesticide was dieldrin. Without it, 300 million tons of crops were destroyed, and widespread human starvation followed. Within a decade, millions of humans starved or died of insect-transmitted diseases as a result of that action by George Shultz.

News media lack of responsibility

We have now been exposed to more than 30 years of untruthful statements in *Audubon* magazine, the Sierra Club publications, *National Wildlife*, and many other “environmental magazines.” Most news media found it difficult to disagree with such wealthy, influential groups, so their propaganda was repeated in newspapers and magazines, and on radio and television reports. It became very difficult to inform the general public of the truth about such matters!

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Ben Bradlee, the *Washington Post* editor, stated: "I'm no longer interested in news. I'm interested in causes. We do not pretend to print the truth. We print what people tell us. It's up to the public to decide what's true." (However, they only repeated what favored sources told them, and the readers were brainwashed, instead of informed!)

Charles Alexander: "As the science editor at *Time*, I would freely admit that on the environment we have crossed the border from news reporting to advocacy."

Stephen Schneider, now a Stanford professor, wrote (in *Discover*, October 1987): "We have to offer up scary scenarios, make dramatic statements, and make little mention of doubts. Each of us has to decide what the right balance is between being effective and being honest." Obviously, he decided that being honest is not very practical. Many anti-pesticide activists obviously feel that way, too.

Effects on wildlife

But what about harm caused to wildlife and the environment? Many people, misinformed by the affluent pseudo-environmental organizations, feared that DDT, for example, might harm birds and other wildlife. The claims of such threats were not supported by facts; however, the general public seldom learned the truth about those allegations. Consequently, they donated millions of dollars to the propagandists so they could "continue their good work."

Population explosions of birds. When marshes in the U.S. Midwest were sprayed with DDT to control mosquitoes, a common result was a population explosion of birds such as

redwing blackbirds. They swarmed out of the marshes and destroyed great quantities of crops. *Audubon* magazine (August 1971) reported: "Today, in a small area of northern Ohio, 10 million redwings mill about in the cornfields after nesting season." The Virginia Department of Agriculture stated: "We can no longer tolerate the damage caused by the redwings. . . . 15 million tons of grain are destroyed annually . . . enough to feed 90 million people." DDT caused those outbreaks of birds because: 1) it eliminated mosquitoes and black flies, which are carriers of bird diseases (avian malaria, avian bronchitis, leucocytozoan diseases, encephalitis, and fowl-pox); 2) it reduced destruction of plant products by insects, thus increasing the abundance of bird food; 3) egg production is reduced by 10% to 30% or more when birds are infested by chewing lice, but the lice are quickly killed by DDT; and 4) it stimulated more hepatic enzymes to be produced by the livers of the birds. Those enzymes destroy cancer-causing aflatoxins that are produced by molds in grain, seeds, and nuts. Aflatoxins are carcinogenic at levels of 0.03 to 0.08 parts per million in the diet. (Remember how small a part per million is: In a pile of pennies worth \$10,000 one part per million is just one penny.) The *British Medical Bulletin* (1969) and several other medical journals revealed how DDT in the diet prevents aflatoxin toxicity in birds and mammals.

Audubon Christmas Bird Counts. In Indiana and Ohio, I participated in the nationwide Audubon Christmas Bird Counts for several years. In 1941 (before DDT was present), those counts recorded 19,616 robins (only 8.41 seen per observer). In 1960 (after extensive DDT usage), the total counted was 928,639 robins (104.01 per observer). That was an increase of 12 times more robins seen, per observer, during the DDT years than before DDT was present. *Science* articles also provided evidence that DDT had never adversely affected bald eagles, per observer, than during the pre-DDT bird surveys.

Even while bird numbers were expanding (in 1962), Carson wrote in *Silent Spring*: "Like the robin, another American bird seems to be on the verge of extinction. This is the national symbol, the eagle." That same year, the greatest ornithologist in the United States, Dr. Roger Tory Peterson, wrote (in his Nature Library Book *The Birds*) that "North America's most abundant bird is the robin."

The bald eagle. In 1921, an *Ecology* article was titled: "Threatened Extinction of the Bald Eagle" (Alaska paid bounties on 128,000 bald eagles, up to 1952). In 1930 (15 years before DDT), ornithologists reported that there were only 10 nesting bald eagles in Pennsylvania, 15 in the Washington, D.C. area, and none in most of New England. *Bird Lore* magazine wrote: "This will give you some idea of the rarity of the eagle in the eastern U.S."

So, bald eagles were nearly extinct long before DDT or other man-made pesticides were discovered. Do environmental extremists think those eagle populations declined *in anticipation of DDT*?

The Hawk Mountain Sanctuary reported that the number

of bald eagles migrating through Pennsylvania more than doubled during the first six years of heavy DDT usage in eastern North America. Before DDT was used, the Audubon Christmas Bird Count recorded only 197 bald eagles in 1941, but after years of heavy DDT use, they recorded 891 bald eagles in 1961. In 1973, an Everglades National Park biologist stated: "I know of no evidence that the region ever supported a larger number of nesting bald eagles."

In 1960-64, the U.S. Fish and Wildlife Service Center at Patuxent, Maryland autopsied 76 bald eagles that were found dead in the United States and reported that 71% had died violently (shot, electrocuted, or impacted with towers and buildings), and four died of diseases, but none were poisoned by pesticides. They concluded that "the role of pesticides has been greatly exaggerated" (*J. Wildlife Diseases*, 6, 1970). From 1964 to 1972, they analyzed 190 more dead eagles. Most had been shot, and the majority of the others also died violently. There were 19 suspected cases of dieldrin poisoning, but no DDT involvement (*Pesticide Monitoring Journal*, 9:12-13, 1975).

The Fish and Wildlife Service fed high levels of DDT to caged bald eagles for 112 days (up to 4,000 mg/kg), with no adverse effects (*Trans. 31st N.A. Wildlife Conference*, 1966, pp. 190-200). From 1973 to 1988, the United States spent millions of dollars for eagle-breeding and -rearing programs, so more were being seen by people in almost every part of the United States. In 1983, New York State had only three active bald eagle nests, but then they imported 150 eagles from Alaska. Peter Nye wrote in *Natural History* magazine (May 1992) that in 1940 there were only a few pairs, "yet the oft-mentioned culprit DDT wasn't there until the 1950s, when the last few nesting eagles were already struggling for survival."

Gulls too abundant to live. On Tern Island in Massachusetts, seagulls increased during the DDT years from 2,000 pairs in 1940 to 35,000 pairs in 1971. William Drury, president of the Massachusetts Audubon Society, decided to poison 30,000 of those gulls, even though they were on the state's list of protected birds. He succeeded, and said, "It's kind of like weeding the garden" (AP, April 13, 1971). It was remarkable that nobody seemed to notice that the numbers of gulls had increased by 28,000 during the years of greatest DDT use! . . .

Ospreys. Raptors always receive a lot of attention from environmentalists, perhaps because they are so vicious. Ospreys were a great pest around fish hatcheries, so traps were set atop poles near the ponds. In 1943 (before DDT), leading authority Joseph Hickey attributed a 70% decline of eastern ospreys to that pole-trapping. Correlated with DDT increases, counts of ospreys migrating over Hawk Mountain totalled 254 in 1951, 352 in 1961, 527 in 1969, and 630 in 1971 (just before DDT was banned). In 1976, the *Hawk Mountain Sanctuary Newsletter* reported: "For reasons we do not understand at all, the number of osprey counted is returning to something like normal—318 in 1974 and 279 in 1975." (In other words, they said they could not understand why there

were 351 fewer migrating ospreys during the years after DDT was banned.) Environmentalist propaganda apparently has a blinding effect!

Peregrines. Dr. William Hornaday (head of the New York Zoological Society) discussed peregrines in his 1913 book, *Vanishing Wildlife*. He wrote that the undesirable peregrines "deserve death, but are so rare that we need not take them into account." He urged persons who found peregrine nests to "shoot the parents and destroy the eggs or young." (Peregrines were listed in most states as "vermin" before environmentalists converted them to ecological "gold mines" in the United States.)

Thomas Cade (the founder of the Peregrine Fund) wrote that "peregrines completely disappeared from east of the Rockies," and that "the subspecies is probably extinct." His fund then reared more than 4,000 peregrines (of *foreign* subspecies), at a cost of many millions of dollars, released them in the eastern United States, and then claimed that the Endangered Species Act had "saved the eastern peregrines." Cade was disappointed when a regional director of the FWS [U.S. Forestry and Wildlife Service] ordered that no more European peregrines be released in the eastern United States. Cade said we are left "with a large number of Spanish and Scottish peregrines on our hands" (*Audubon*, November 1977). Brian Walton, who was in charge of the California branch of the fund, reported that it cost \$1,500 to \$2,000 for each peregrine produced. In 1985, the fund's director complained that they were having trouble raising the million dollars for that year's peregrine recovery program "because 50 million people were starving in Ethiopia."

I enjoyed driving to Inuvik, North West Territory [Canada], where peregrines are common. Canadian biologists reported that nesting success "was as high as ever recorded for the species (an average of 2.4 young per active nest)." Frank Beebe, Canada's leading raptor authority, wrote in his book (*The Myth of the Vanishing Peregrines*) that "It appears that the Canadian peregrines, not knowing how gravely ill they are, go right on reproducing in blissful unconcern of their desperate plight."

What effect did DDT have on birds that ingested it? Researcher Hickey testified during the U.S. Environmental Protection Agency (EPA) hearings that he could not even kill his caged robins by overdosing them with DDT because it simply passed through their digestive tract and was eliminated with the feces. In other research, reported in the *Journal of Wildlife Management*, baby birds in nests were fed *only* food containing high levels of DDT, and none were adversely affected.

Bird eggshell data

Rachel Carson referred to "Dr. DeWitt's now classic experiments on quail and pheasants." She said, on page 120: "Quail into whose diet DDT was introduced throughout the breeding season survived and even produced normal numbers of fertile eggs, but few of the eggs hatched." I read DeWitt's article (in *Journal of Agriculture and Food Chemistry*, 1956),



A Greenpeace ship in Stockholm. According to a Greenpeace statement in 1983, "We should not wait for scientific proof of harm before we take action: The use and discharge of chlorine chemicals that may cause harm should be avoided. Proof of innocence is not required."

and found that 75.7% of the eggs produced by DDT-fed birds hatched, compared with 83.9% of those produced by the "controls" (birds with no DDT). I thought 75.7% was more than "a few" eggs hatched, so I became even more suspicious of Carson's intentions. In his Table, DeWitt also reported that 80.6% of the eggs produced by his *pheasants* on the DDT diet hatched, compared with only 57.4% hatching of the eggs produced by the "control" birds. It was not surprising that Carson avoided mentioning how much *better* the DDT-fed pheasants did (despite her reference to "DeWitt's classic experiments on quail and pheasants.")

The *San Francisco Chronicle*, on Feb. 14, 1969, reported that because of DDT, bird eggshells were becoming so thick that the young often could not get out of the eggs. Two months later, the same newspaper reported that because of DDT bird eggshells were becoming so *thin* that they could break under the weight of the incubating females. Neither allegation was true, but they indicated that in the *San Francisco Chronicle* there was already little hope for truthful reporting on the subject of DDT! (And it became worse, every year.)

A common misconception for many years was that DDT caused birds to produce thin-shelled or softer-shelled eggs. With so many studies proving that this charge was not true, it is amazing to see it still being repeated! (No confirming data are ever provided, but the naked statement is simply made, in the press, on radio, on television, and in environmental magazines!) The poultry and egg industries should have been the first place to seek the truth, but the environmentalists knew

that that would destroy their eggshell propaganda. Likewise, environmental propagandists avoided the great 1949 book on the subject, by Romanoff and Romanoff, titled *The Avian Egg*, which contained all of the information needed to explain the "thin eggshell" problems. A 1967 book by the same authors was *The Avian Embryo*, which provided details regarding the amount of calcium drawn from the eggshell by the developing embryo. The propagandists never cited that book, either; however, they usually collected and measured eggs *after* the embryo had removed calcium from the eggshell, for bone development.

FWS biologists Tucker and Haegele (*Bull. Environ. Contam. & Toxicology* 5:191, 1971) fed different levels of calcium to different groups of quail. One group got 3% calcium and another group got only 1% calcium. None had any DDT or [the metabolite] DDE in their diet. The shells produced by the 1% group were 9.3% thinner than those on the normal 3% calcium diet. Now, with those details available, how could a person design an experiment that would incriminate DDT as a cause of eggshell thinning? Simply feed the birds a reduced calcium diet, add DDT to their food, and then blame the thinner shells (that would certainly result from the calcium deficiency) on the DDT in the bird's diet! That is exactly what anti-DDT researchers in the U.S. Fish and Wildlife Service did.

Bitman and colleagues at Patuxent fed their quail only *half* as much calcium as the lowest amount Tucker's quail received. Tucker's birds had produced shells about 10% thin-

ner when only 1% calcium was in their diet, so what would result from Bitman's feeding quail only 0.5% calcium? Their shells would be expected to be even thinner than 10% of normal. Bitman reported, however, that the shells were *not* that thin! His article was published in *Science* magazine, however, and was the most widely used reference to "prove" that DDT caused thin eggshells!

Actually, a great many other feeding experiments proved that shells are *not* thinned by the introduction of DDT into the diet of birds *if* there is adequate calcium in their diet, but such results were seldom mentioned in the media, and never mentioned in pseudo-environmental publications. To get thinner shells, the anti-DDT activists always had to do something else at the same time—something that was *known* to cause thinner eggshells all by itself. Things having that effect include noise, excitement, irritation, dimmed lights, shortage of water, presence of several kinds of chemicals, and (*especially*) a deficiency of calcium in the diet. Every bird experiment that resulted in thin eggshells used one or more of those known causes in order to produce the desired effects, which were then blamed on DDT.

In Congressional testimony, I presented the data, and was critical of Bitman's work. The next year he repeated his experiment, but fed the birds adequate calcium in their diet. The DDT-fed and DDE-fed birds produced eggshells that were not thinned at all. The article was presented to *Science* magazine, again. Unfortunately, the editor of *Science* magazine always refused to publish articles that were favorable to DDT, so he rejected Bitman's new article. It was published, instead, in *Poultry Science*, and poultrymen and unbiased scientists applauded the truthful results. Of course, the circulation of that journal was not nearly as great as *Science*, so relatively few scientists ever heard about the reversal of the allegation that DDT and DDE caused thinner eggshells.

Why did *Science* refuse such articles? The editor, Philip Abelson, had earlier informed Dr. Thomas Jukes that *Science* would never publish any article about DDT that was not antagonistic to that insecticide. He refused to even consider a manuscript written by the World Health Organization. As a result, the DDT articles in *Science* were mostly written by the same coterie, and "peer review" became a sham. The anti-DDT authors just kept citing each other and supporting each other's statements. No other views were accepted. Without that sheltered bias the case against DDT would have quickly folded!

M.L. Scott, J.R. Zimmerman, Susan Marinsky, P.A. Mullenhoff, G.L. Rumsley, and R.W. Rice spent years at Cornell testing various chemicals in the quail diet to determine the greatest causes of shell thinning. They reported that DDT, [metabolites] DDD, and DDE in the diets resulted in thicker shells, rather than thinner shells. The chemical that caused the greatest amount of shell thinning was methyl mercury (*Poultry Science*, 54:350-368, 1975). The results of years of reliable scientific work by these researchers also did not appear in *Science* magazine.

TABLE 1

Dietary causes of eggshell thinning

Chemicals in the food	Effects on eggshells
Lead	14.5% thinner than normal
Sevin	8.7% thinner
Mercury	8.6% thinner
Parathion	4.8% thinner
PCBs	4.0% thinner
o,p' DDT	0.5% thicker than normal
Tech DDT	0.0% (no change)
DDE	0.0% (no change)

Source: Tucker et al., *Utah Science*, June 1971.

Tucker et al., in *Utah Science* (June 1971), published the results of careful experiments performed to determine serious dietary causes of eggshell thinning. Some of the results are given in **Table 1**. Also, after water was withheld for 36 hours, the quail laid eggs with shells averaging -29.6% thinner than normal.

The importance of chlorine

DDT is a chlorinated hydrocarbon compound, dichlorodiphenyl-trichloroethane. It has certainly saved at least a billion human lives. In addition to directly preventing deaths from malaria, typhus, yellow fever, plague, and a dozen other famous killers, it has made it possible for humans to work harder, harvest more food, and live longer, healthier lives. Many opponents of DDT are outspoken critics of *all* chlorine compounds. Greenpeace is leading the campaign to rid the world of chlorine, but public health and medical organizations all around the world have praised chlorine for its role in protecting public health and saving lives.

A *Science* editorial on Aug. 26, 1994 stated: "There is reason to hope that the EPA will not continue to act like a tool of Greenpeace. A plethora of EPA regulations and unfunded mandates coupled with examples of brutality in enforcing them has cost the EPA their support in Congress." The World Health Organization estimates that 25,000 children die each day from drinking water that has not been chlorinated. A year ago, Peru was encouraged by U.S. activists to remove chlorine from their drinking water supplies. That move rather quickly resulted in more than a million illnesses and more than 8,500 deaths from organisms in the water that would have been eradicated if chlorine was present.

Dr. Gordon Gribble, a famous biochemist at Dartmouth College, has written extensively on the subject and even wrote a book that contains more than 2,000 structural formulae of chlorine compounds! He points out that 85% of all pharmaceuticals require chlorine, and more than 25% of all medical equipment is also dependent on chlorine for their manufacture.

Dioxins are a group of about 75 chlorinated chemicals, great quantities of which are produced in nature when wood or other material burns. Human activities produce them also, during paper pulp production, but the amount is less than a pound or two per year from the entire industry. Forest fires produce more dioxins than all other sources combined. During the Vietnam War, dioxins were present in Agent Orange, the chemical used to defoliate jungle trees so human movements could be seen from the air. The most toxic form of dioxin is probably TCDD, but no human deaths are known to have been caused by it, even following heavy exposures for long periods of time. Skin rashes have been the most frequent result of over-exposures, but no cancers of any kind have been caused. Dr. Gribble published these facts in a *Heartland Institute Journal* article in 1996. He also commented that over 40,000 scientific articles have discussed dioxins, and “the evidence now at hand does not support claims that dioxin is a major health threat.” A study of 2,200 Dow Chemical employees who were in close proximity to dioxin were tested for cancer, and had slightly lower than normal cancer rates.

Dr. Dixy Lee Ray criticized the propaganda surrounding the ozone hole and chlorofluorocarbons. It was an interesting hypothesis, she said, “but no CFC breakdown products have ever been found in the atmosphere.” The National Academy of sciences predicted an 18% ozone decrease (in 1985), and finally to “5% over the next hundred years.”

In 1983, Greenpeace wrote: “We should not wait for scientific proof of harm before we take action: The use and discharge of chlorine chemicals that may cause harm should be avoided. Proof of innocence is not required. No further organochloride pollution should be permitted . . . this means phasing out the substance that is their root—chlorine.”

Gypsy moths

In 1869, Leopold Trouvelot brought some gypsy moths to Medford, Massachusetts, thinking perhaps silk could be made from their cocoons. A few escaped, and multiplied. For 30 years applications of lead arsenate (5 lbs/acre) was the only way to slow them down, but it was too expensive, too hard to apply, killed too many non-target organisms, and still failed to halt their spread. In 1945, 800,000 acres of oak trees were defoliated in eight states, and a decade later, nearly 10 million acres of oaks were being destroyed annually. DDT was sprayed (1 lb/acre), and quickly eradicated the moths from Pennsylvania, New Jersey, New York, Virginia, and all other states west of Vermont. The National Audubon Society monitored the program and said “no damage was done to birds, including nestlings in their nests.”

James Nicholas (in his 1961 booklet on gypsy moths) pointed out that “over a million acres of Pennsylvania, New Jersey and New York were sprayed, always with 100% eradication of the pests. No infestation survived a single aerial treatment with DDT on 1,107,458 acres.” Disregarding the tremendous destruction by the moths, most environmental

organizations fought desperately against any use of DDT to preserve the forests. They would rather lose millions of acres of the great eastern oak forests than modify their harsh anti-DDT propaganda!

Carl Amery wrote: “We in the Green movement aspire to a cultural model in which the killing of a forest will be considered more contemptible and more criminal than the sale of six-year-old children to Asian brothels.” When considering the millions of acres of dead oaks in the eastern U.S. caused by environmentalists preventing the use of DDT, and the extensive forests permitted to burn in Yellowstone, I often recall Amery’s comment. I wonder if the environmentalists who permitted those disasters to happen ever think of it, too.

Borlaug’s warning of pesticide dominoes

Dr. Norman E. Borlaug was a Nobel Peace Prize winner in 1970 because of his “Green Revolution.” In a United Nations speech in Rome (*Science*, Dec. 10, 1971), he stated that “fear-provoking, irresponsible environmentalists” were mounting a “vicious, hysterical propaganda campaign against agricultural chemicals.” He praised DDT’s great record of safety for mankind, and warned that its elimination in the United States would be followed by campaigns to have it banned everywhere. He warned that “DDT is only the first of the dominoes. . . . As soon as DDT is banned, there will be a push for banning all chlorinated hydrocarbons then, in order, the organic phosphate and carbamate insecticides. Then they will attack the weed killers, and eventually the fungicides.” Dr. Borlaug was exactly right, and most of his predictions have already come true. In the 1970s and 1980s the EPA, relying primarily on the misapplication of the Delaney clause, banned chlordane, aldrin, dieldrin, endrin, BHC, lindane, heptachlor, toxaphene, and many other pesticides.

EPA admits false allegations

In the early 1970s, EPA released false reports to Congress about the amounts of DDT in human diets, and we wrote to object. Laurence O’Neill responded, writing: “You are correct in stating that EPA’s DDT report erred. The correct figure should have been 15 *micrograms* per day instead of 15 *milligrams*.” (The average human intake at that time was about 13 milligrams *per year*.) O’Neill also stated that the human intake had dropped rapidly to 1.8 *micrograms* instead of 1.8 *milligrams* after the ban. (In other words, the daily intake had dropped from 0.015 milligrams to 0.0018 milligrams). “We will make every effort to rectify the erroneous figures with the news media,” he promised. (But they did not.)

I was making many speeches at the time, and before speaking I usually swallowed a tablespoon of DDT to get the audience’s attention. I felt safe doing that, because volunteers for Federal studies had ingested 35 mg of DDT daily for 20 months, without experiencing any adverse effects. Also, 35 workers at the Montrose DDT plant in Torrance, California had been taking in about 400 times more DDT daily than the

average man, for 19 years, and not a single case of cancer developed.

The EPA also falsely claimed, in a radio broadcast (May 15, 1975), that “hundreds of thousands of American farm-workers are injured every year by pesticides, and hundreds of them die annually as a result.” When challenged by actual data, EPA meekly apologized, saying: “We used those statements in good faith, thinking they were accurate, and they turned out not to be accurate. . . . They cannot possibly be substantiated” (UPI, May 24, 1975).

But what evidence could have led anyone to make such a claim? *USA Today* (April 14, 1992) printed an editorial using that same figure, and attributed it to “a Congressional study last month.” I wrote to the editors, pointing out that the statement actually came from a World Resources Institute press release seven years earlier! I quoted the two WRI researchers who made the study (Robert Wasserstrom and Richard Wiles) but quit because of the untruthful figure of 300,000 in that press release, which they said “tells a story substantially different from what we found” (*Chemical & Engineering News*, September 1985).

The 300,000 figure was based on a report that 235 California farm-workers had made medical complaints in 1982 (roughly half of the complaints involved skin irritation from sulfur). Dr. Molly Coye (NIOSH) extrapolated from 235 to 300,000 cases, as follows. Dr. Ephraim Kahn had previously estimated that California doctors reported only about 1% of such cases, so Molly Coye multiplied 235 by 100 and said 23,500 California workers must have actually had medical problems because of pesticides during the year. That would be about 7.8% of California farm-workers. Since there were about four million farm-workers in the United States, she calculated 7.8% of 4 million, to arrive at a total of 312,000 “poisoned” farm-workers each year. Dr. Coye never mentioned Dr. Kahn’s well-known, year-long study in 1977, wherein he concluded that 80% of farm-worker illnesses are reported (rather than his earlier estimate of 1%). As usual, *USA Today* did not respond to my letter or the enclosed documentation of facts.

Natural pesticides and organic gardening

Dr. Bruce Ames (a biochemistry professor at the University of California) pointed out in 1987 that we ingest in our diet about 1.5 grams per day of *natural* pesticides. Those foods contain 10,000 times more, by weight, of *natural* pesticides than of man-made pesticide residues. More than 90% of the pesticides in plants are produced *naturally* by the plants, which help protect them from insects, mites, nematodes, bacteria, and fungi. Those natural pesticides may make up 5% to 10% of a plant’s dry weight, and nearly half of them that were tested on experimental animals were carcinogenic. Americans should therefore feel unconcerned about the harmless, infinitesimal traces of synthetic chemicals to which they may be exposed.

The highly publicized traces of synthetic pesticides on fruits and vegetables worried some people so much that they began to favor “organically produced” foods, thinking that they would not contain any pesticides. Most people are not aware that organic gardeners can legally use a great many pesticides, so long as they are not man-made. They can use nicotine sulfate, rotenone, and pyrethrum (derived from plants), or any poisons that occur naturally, such as lime, sulfur, borax, cyanide, arsenic, and fluorine.

The 1971 EPA hearings

In 1971, the Environmental Protection Agency was forced to hold hearings on DDT. The hearings were presided over for seven months by Judge Edmund Sweeney. Hundreds of scientists expressed their views and presented evidence. The printed transcript of testimony exceeded 9,000 pages, and would be the basis upon which an interesting university course could be developed!

George Woodwell wrote in 1971 that “6 billion pounds of DDT had been used, but only 12 million pounds could be accounted for in all of the earth’s biota,” and that was “less than a thirtieth of one year’s production of DDT in the 1960s.” He theorized that “most of the DDT has either been degraded to innocuousness or sequestered in places where it is not freely available.” That *Science* article (December 1971) contrasted so sharply with his testimony during the EPA hearings that a reporter asked him why he had completely omitted it from his testimony. Woodwell replied that the EPA lawyers told him not to mention the article, “lest my testimony be disallowed” (*Business Week*, July 8, 1972).

Woodwell made what he called a “typographical error” in *Science* magazine (Dec. 10, 1971) when citing data from two other articles that reported 10^{12} parts of DDT, he referred to such values as “parts per million,” rather than parts per trillion. He reported that “Wheatly found three parts per *million* in English fields,” but it was really only three parts per *trillion* [a millionth of the amount Woodwell stated!]. He also said that “Tarrant found 73 to 210 parts per *million* in rainwater, but Tarrant’s *highest* reading was actually only 190 parts per *trillion*.” (That millionfold exaggeration made his statements appear menacing.) He then said those references “confirmed high levels of DDT in the rain of England, similar to concentrations in the U.S.,” but none of the references he cited contained *any* data from the United States, not even in parts per trillion!

During the EPA hearings, Samuel Epstein testified that he was a member of the Health, Education, and Welfare panel on carcinogens, but under cross-examination he admitted he was *not* on that panel. Epstein also stated that tests by Fitzhugh et al. indicated that mice with DDT in their diet developed cancer. He failed to mention that Fitzhugh’s *control* mice (with no DDT) developed 26% *more cancers* than did his DDT-fed mice. Fitzhugh said the reason the report was not published was that they had discovered the mice were mistak-



William Ruckelshaus banned DDT single-handedly, ignoring the testimony of a legion of scientific experts. "Decisions involving the use of toxic substances," he said bluntly, "are political, with a small 'p'," and "the ultimate judgment remains political."

only fed 300 mg/kg of DDT for an unknown period of time, rather than the intended 100 mg/kg.

Philip Butler testified at the EPA hearings and sought to convince people that DDT did not break down rapidly and disappear from the environment. He stated that "I am thinking of a study which has shown that DDT persists for as much as 40 years in terrestrial deposits." We knew that was untruthful, because DDT had only been around for 30 years at the time of his testimony. Under cross-examination, Butler also admitted that published reports from his own EPA laboratory at Gulf Breeze, Florida, revealed that 92% of the DDT *and its metabolites, DDD and DDE*, had disappeared from sea water (in huge closed submerged glass containers), in just 38 days! (Wilson, A.J., *USDI Circular*, 335, 1970). Dozens of other published studies reveal that DDT and its metabolites also disappear rather quickly from normal outdoor soil.

Croker and Wilson applied DDT to a tidal marsh. In less than 24 hours, only traces remained, and even those traces disappeared in five days (*Trans. Amer. Fish. Society*, 94, 1965).

In Washington State estuaries, the Bureau of Commercial Fisheries monitored pesticide residues in shellfish at 19 stations during three years of heavy DDT use (1966-69). Ninety-three percent of the samples contained less than 10 parts per billion of DDT and the highest level found was only 0.1 part per million. Shellfish are known to concentrate chlorinated hydrocarbons in their system at levels 40,000 to 70,000 times as great as that in the surrounding water, so it was evident that DDT residues had not persisted long in the coastal waters.

After seven months of such testimony, the EPA Hearing

Examiner, Judge Edmund Sweeney, issued his final official decision on April 26, 1972. In it, he stated: "DDT is not a carcinogenic, mutagenic, or teratogenic hazard to man. The uses of DDT involved here do not have a deleterious effect on freshwater fish, estuarine organisms, wild birds, or other wildlife. . . . The evidence in the proceeding supports the conclusion that there is a present need for the essential uses of DDT."

The EPA administrator, William Ruckelshaus, never attended a single day of the hearings, and his aides reported that he did not even read the transcripts. Nevertheless, he overruled his judge's decision and single-handedly banned DDT. His final ruling was not very reassuring. He used the wrong chemical name for DDT; stated that "DDT has three major breakdown products, DDA, DDE, and DDD," and that "separate registrations exist for TDE (DDE)." (The truth is that DDE is *not* the same as TDE, and DDE was never registered as an insecticide.) He also stated that farmers should use parathion as a substitute for DDT, evidently unaware that hundreds of humans had been killed by parathion and that it is extremely toxic to bees, birds, and every other form of animal life! Rachel Carson recalled that "a small parathion application killed 65,000 redwings, as well as raccoons and rabbits."

My lengthy critique of Ruckelshaus's *Order* was inserted into the *Congressional Record* by Sen. Barry Goldwater (R-Ariz.). Later, in a letter to the president of the American Farm Bureau Federation, Ruckelshaus wrote: "Decisions involving the use of toxic substances are political, with a small 'p'," and "the ultimate judgment remains political." Ruckelshaus refused requests by the U.S. Department of Agriculture (and others), to comply with the Freedom of Information Act, and also refused to file any Environmental Impact Statements (even though his actions would result in the loss of millions of human lives, worldwide, and the destruction of millions of acres of forests in the United States).

Vice President Al Gore appointed Florida environmentalist Carol Browner to be the new EPA administrator. Shortly thereafter, Browner reported: "I'm appalled by what I've learned about the EPA's total lack of management, accountability, and discipline. I have reviewed audit reports that clearly describe serious violations of rules and an intolerable waste of taxpayers' money" (*Audubon* magazine, September 1993). Well, we can certainly agree with *that!*

Faulty analyses of DDT

Faulty analyses of soil and water led many people to believe that DDT was very persistent in the environment. The more likely truth is simply that samples were not properly analyzed. In 1969, Dan Anderson reported that he had reanalyzed the five pooled samples he used in 1965 to help ban DDT. Three of the five samples he had earlier reported as having high levels of DDT actually contained none at all, and

the other two contained only a fourth as much as he had earlier claimed (*Canadian Field-Naturalist*, 1969).

Many other scientists warned that most analytical procedures did not distinguish between DDT and PCBs, and that “some chromatogram peaks of PCB are identical to peaks of DDT, DDD, and DDE” (*Env. Sci. Technology*, 1970).

W. Hylin warned that “organochlorine compounds in plants can cause interference in analyses of residues of DDT” (*Residue Reviews*, 1969), and J.J. Sims found that “marine algae produced halogen compounds that had been misidentified as DDT metabolites, and that halogen compounds containing bromine or iodine also can register falsely on the gas chromatograph.”

Frazier et al. analyzed 34 soil samples that had been sealed in glass jars since they were collected in 1911. The gas chromatograph indicated that five kinds of chlorinated hydrocarbon insecticides were in that soil, even though none were in existence until 30 years after the samples were sealed (*Pesticide Monitoring Journal*, 1970).

W. Hom (*Science*, 184: 1197-99) explained a high “apparent DDE” concentration in sediments that were deposited in the Santa Barbara Basin of southern California 12 years before any DDT existed. He said: “We attribute the DDE in the 1930 sample to spurious contamination during collection, storage or analysis.” (Thousands of other samples have been reported to contain DDT more than ten years after it ceased to be present, and usually the persons who reported such contaminations have not bothered to retract the false reports.)

Environmentalists often said that “DDT cannot be broken down in the environment,” and Marc Lappé even wrote that “DDT is not broken down by living things.” Actually it *was* rather quickly broken down in the environment by heat, cold, moisture, sunlight, alkalinity, salinity, many natural chemicals, and common soil micro-organisms. (Obviously, if it did not break down, it would not be necessary to apply it repeatedly to crops to control the pests!) DDT is also quickly destroyed by hepatic enzymes in birds and mammals, and arthropod pests often developed “resistance” to DDT by degrading it within their bodies. When I heard Lappé’s allegations, I quickly went to my files and found more than 140 articles documenting the breakdown of DDT in the environment (not including examples of pests that had built up natural “resistance” to the chemical). I mailed copies to many newspapers and radio and television stations, but not a single one responded or corrected their earlier false statements, even after they had the scientific data in hand!

During the campaign seeking EPA’s permission to spray parts of three northwestern states with DDT to halt the great tussock moth outbreak in the 1970s, the *Vancouver Sun* and the *Lewiston Tribune* both carried editorials (Dec. 12, 1974) claiming that “DDT has a half-life of several thousand years.” I knew where they had gotten that false allegation, so I sent each editor copies of the scientific literature refuting the

charge, but neither editor responded. After three years of strenuous campaigning, we got permission from the EPA to spray 430,000 acres of forest in the Northwest. That single, well-timed spray of DDT (one pound per acre) eradicated the epidemic and caused no harm to other forms of life.

The Delaney Clause

The Delaney Clause of the Food Additives Law ruled, under Section 409 of 21 USCS 3498, that “no chemical shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal. . . .” The tests that were usually used were *not* “appropriate for the accurate evaluation of carcinogenicity.” They involved extremely high doses forced into the diets of rats that had been specially bred to be hypersensitive to carcinogens.

The use of *inappropriate* tests on rodents involving massive dosages and unnatural applications of chemicals has caused much controversy. The American Council for Science and Health wrote that “sound toxicological principles are routinely flouted in laboratory rodent tests and the results are frequently inappropriately extrapolated to humans” (1991). Rats were found to produce a special protein (Alpha 2U Globulin) which makes them especially prone to develop tumors and cancers. In 1992, the Environmental Protection Agency pointed out that humans lack that protein, which “*could invalidate thousands of tests of pesticides, preservatives, additives, and other chemicals that were banned because they produced tumors in laboratory rats.*” Those tumors, they said, “are a species-specific effect in rats and are inapplicable to human risk assessments.” Obviously, such rodent tests should not have been considered “*appropriate for the evaluation of the safety of food additives to induce cancers in man or animals,*” as required by Delaney.

EPA Administrator Russell Train ignored Delaney’s requirement that tests must be *appropriate*, and EPA attorneys assumed they could ban any chemical which caused *any* cancer when applied to test animals at *any* dosage, and even in very *inappropriate* manners (including gavage and direct injections into blood, peritoneum, and elsewhere).

Even after ignoring Delaney’s proviso requiring “appropriate tests” for carcinogenicity, they still could not have banned many of those substances if “cancer” had not been redefined by attorney Russell Train! *Cancers* had previously been considered to be malignant growths that tend to spread to other parts of the body, frequently with fatal results. *Tumors*, on the other hand, were considered to be non-malignant lumps that did not spread (and in lab rodents they often disappeared after the massive chemical insults were halted). Attorney Train redefined those medical terms, and stated that “*for EPA’s purposes tumorogenic substances and carcinogenic substances are synonymous*” and “*for purposes of carcinoge-*

nicity testing, no distinction should be made between the induction of tumors diagnosed as benign and the induction of tumors diagnosed as malignant” (*Chem. & Engineering News*, 52:13, 1974). Substances of either type could therefore be called “carcinogens” and could then be banned by improperly invoking the Delaney Clause! The Council for Agricultural Science and Technology (a consortium of more than 30 scientific and professional organizations) observed that “classifying as ‘carcinogens’ all chemicals that cause tumors greatly overestimates the cancer risk.”

Train left the EPA to join the Board of Directors of the Union Carbide Corp. (which was not very “environmentally friendly”). At that time, the EPA already had more than 10,000 employees and its 1980 budget was \$5 billion.

Appropriate questions might be: Did anyone at the EPA ever actually read the Delaney Clause? If so, did they then deliberately seek to misinterpret Delaney’s clear requirements? Representative Delaney once stated that “too many egos, reputations, and careers are at stake; if you try to change things, the crazies come at you with blow torches and chainsaws.” It is easy to understand why he bemoaned the fact that, as he stated, “I’ll go to my grave with that damn thing hanging around my neck.”

The Food Quality Protection Act

In 1996, Congress enacted the Food Quality Protection Act (FQPA). This mandate states that the EPA may ban any chemical, *unless* they believe that “there is a reasonable certainty of no harm.” All existing pesticides are required to be reassessed before 2006. By August 1999 they must analyze 3,000 of them. The director of EPA’s Pesticide Programs said that one way to implement the act would be to just revoke *all* tolerances and simply start over! Nobody has indicated what the EPA might mean by “reasonable,” and (even worse) there was no indication of what they might mean by “harm.” Also, the EPA will have to tell us what the meaning of “no” is!

‘Our Stolen Future’

In 1996, we were exposed to an improper new book, *Our Stolen Future*. The lead author was Theo Colborn. Early in the book, it is stated that she tried to find evidence of increased cancer rates from chemicals in the Great Lakes area. Unfortunately, her investigation revealed *lower* cancer rates! “Faced with this major setback, she turned her mind again to the wildlife literature and tried to think clearly about where she should go next.” The resulting book dwells on unprovable allegations, including hazards from infinitesimal exposures to chemicals, which she says will result in sperm deficiencies, cancer of breast, testicles, and prostate glands, reduced human fertility, female endometriosis, eroded intelligence, increased disruptive behavior of children, and epidemics of undescended testicles and shortened alligator penises.

Jessica Matthews, of the Council on Foreign Relations,

wrote about the book in the *Washington Post*, March 11, 1996, saying: “We have been too obsessed with the obvious risks of toxic chemicals, cancer and birth defects. Immune suppression and hormone disruption, if proved, could be more dangerous.” She contended that the book “will make earlier struggles — over nitrates, saccharin, formaldehyde, Times Beach, Love Canal, cholesterol, Alar, and even tobacco — look like kid’s stuff.”

Co-author Carol Dumanoski (environmentalist for the *Boston Globe*) had earlier written: “There is no such thing as objective reporting, and I’ve become even more crafty about finding the voices to say the things I think are true. That is my subversive mission.” According to the *Washington Times*, March 13, 1996, Miss Dumanoski admitted in 1994 that she had “manipulated facts about the hole in the ozone layer” in order to get top billing for her story, which therefore ran on page one of the *Los Angeles Times*.

The American Council on Sciences and Health reviewed the book, reporting, “The scientific evidence is extremely tentative but the potential for arousing fear in non-scientists is great.” It was also reviewed in *Science* magazine, where the reviewer stated that “it was not written for scientists,” commented that there was “no discrimination between anecdotal reports and scientific studies,” and said that the book “raises questions about the scientific judgment of the authors.”

Miss Colborn said that in Lake Apopka, Florida, alligator penises are one-half the normal size, but provided no previous baseline measurements. Louis Guillette became famous for measuring those penises, but his former cohort, Timothy Gross, said the measurements were based on weak data because Guillette didn’t know the age of any of the alligators, thus couldn’t know if they were fully developed.

My own article, in *21st Century Science & Technology* (Fall 1996), was titled “The Long and Short of It,” but dealt primarily with the condition of the lake itself. I have traced the condition of Apopka for over 30 years, because of its notorious pollution.

Wilderness magazine (Winter 1986) said that Lake Apopka was already a cesspool in the 1950s, due to citrus processing wastes, sewage effluents, and wastes from hundreds of acres of muck farmland along its shores. *National Observer* (June 21, 1971) stated, “Apopka is a fetid, shallow body of water, nearly unfit for human use. Human waste is dumped into the lake from Winter Garden’s chemicals, including ethynylestradiol (EE) from women’s urine, which is hormonally active at concentrations as low as 0.1 nanogram (a tenth of a billionth of a gram.)”

It must be assumed that alligators now in the water must also be affected by the EE! Studies also reported high levels of *Aeromonas liquefaciens* in the water, a bacterium which dissolves internal organs of aquatic animals. In September 1971, *Audubon* magazine reported that thousands of turtles and fish died there, as well as the “first known die-off of

alligators.” It should be pointed out that the alligators apparently were not damaged earlier, during 30 years of DDT pollution!

A National Academy of Sciences report regarding effects of chemicals, including estrogens, on humans will soon be released. Based on inconclusive allegations, such as those in Colborn’s book, the Federal government now plans to test 60,000 chemicals. According to a recent *Forbes* magazine article by Michael Fumento, the plan is premature, because there has been no scientific verdict regarding alleged endocrine disruption. Thorough tests of suspect chemicals will cost an average of \$1.5 million. “If EPA does not call off the hunt at a preliminary stage, the cost will be \$23 billion to test just the most suspicious 24% of the chemicals. . . . Testing common organochlorines alone could cost the nation \$100 billion yearly,” says Dr. Fumento.

In a *Science* article, June 7, 1996, it was stated that while a single chemical may not have any adverse effect, a combination of four chemicals seemed to have an effect a thousand times greater than the combined individual effects of the four. (Those researchers were reportedly also financed by the John Myers Foundation.) A year later, the researchers responsible for that article retracted it, in *Science*, because nobody could repeat the results, not even the original researchers.

False allegations regarding Alar

Ed Bradley, on a CBS “60 Minutes” television show titled “A is for Apple,” told 40 million American viewers (Feb. 26, 1989) that “the most potent cancer-causing chemical in our food is a pesticide sprayed on apples to keep them on the trees longer and make them look better. And who is most at risk? The children, who may someday develop cancer from this one chemical.” It is important to point out that Alar is *not* a pesticide, but is instead a plant hormone. It never killed anything, but simply increased the tree’s ability to prevent early fruit fall. Bradley also failed to inform the viewers that not a single human case of cancer had ever been correlated with the use of Alar.

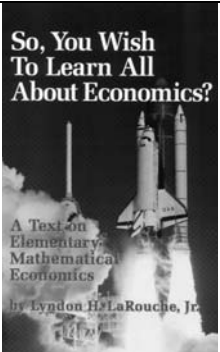
William Lijinsky was the major “scientific spokesman” on the CBS program. He was introduced by Ed Bradley as “the head of a chemical carcinogenesis laboratory at the National Cancer Institute.” The Cancer Institute objected, saying that Lijinsky “is not employed by or connected with the National Cancer Institute in any way.”

The EPA had already issued a press release on Feb. 1, 1989, saying that a two-year test on mice failed to indicate that Alar is carcinogenic. The president of the International Apple Institute said the hormone “is so scarce on apples that a person would have to eat 28,000 pounds of apples a day to get as much as the cancer researchers fed their mice.” Other sources noted that a child would have to drink 19,000 quarts of apple juice every day, in order to be exposed to the proportional concentration of Alar that the rodents were forced to ingest.

When heated, Alar breaks down into UDMH (a hydrazine metabolite). Aflatoxins (natural molds in some human foods) are 3,000 to 5,000 times more potent than UDMH as carcinogens. Recent studies revealed *no cancer* was caused by UDMH, even in rodents. Massive amounts of UDMH caused *no cancers* or tumors in rats, at any dosage level. When K. Smith (in 1994) fed mice four times the “maximum tolerated dosage,” one mouse out of 45 developed a benign tumor. (No traces of cancer, even in the most susceptible strain of mice.) It should be emphasized that the “maximum tolerated dose” may cause death quickly (*without* any tumors or cancer), and that four times the maximum tolerated does should be fatal in a very short time.

[Hollywood actress] Meryl Streep was a leading opponent of Alar on the show, and wrote a booklet titled “Mothers and Others for Pesticide Limits.” After the scurrilous show, 95,000 copies of the book were ordered, for \$8.00 a copy.

In Britain, a group of scientists appointed by Parliament in 1984 to review the Alar charges declined to ban the plant hormone, saying, “We don’t assume that animal data are transferrable to man or that high-dose responses can predict low-dose responses.” It would be wonderful if more U.S. scientists were that intelligent. Presuming that some of them are, it would be even more wonderful if they could be that truthful!



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