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POISONED BY ACCIDENT: INCIDENTAL ADDITIVES

Some poisons get into food purely accidentally, and we may never know they are there. A striking example are the polychlorinated biphenyls (PCBs). These are synthetic industrial chemicals which were introduced around 1930 as cooling agents in electrical transformers. They are so amazingly stable, heat-resistant and nonflammable that their use spread to inclusion in paints, condensers, oils, adhesives, plasticizers, hydraulic fluids, printing inks, carbonless carbon paper and other products in which they were technically desirable. Manufactured in the United States by Monsanto Chemical Company under the trade name Aroclor, these chemicals have been called "virtually irreplaceable" because of their "unique physical and chemical properties."

The only problem is that in chemical structure PCBs resemble DDT, and, like that insecticide, they are persistent. They hang around the environment a long while, and they are stored in body fat. As an FDA staff paper on PCBs stated: "Like DDT, PCB will enter the organism, be stored in the fat and thus be transferred through the food chain at increasing concentrations." Consequently, because we eat PCB-contaminated food, most of us are carrying around small residues of PCBs in our bodies. Because PCBs are virtually indestructible, they are difficult to dispose of once the product containing them comes into disuse or disintegrates. Like DDT, the PCBs remain behind. They seep into the earth, are carried into rivers, lakes and oceans, and sometimes are carried in the air. They are accidentally ingested by tiny organisms, which are then ingested by larger ones, and the PCBs move up the food chain in increasingly greater concentrations. Some scientists now believe PCBs to be our most widespread environmental contaminant, more prevalent than DDT and much more toxic.

The wide environmental contamination by PCBs came to light in 1966 when a Swedish scientist, Dr. Soren Jensen, identified them in the feathers of birds, in sea eagles and in two hundred fish specimens. (Previously scientists had identified what we now know are PCBs only as "unknown but chlorine-containing compounds.") With publication of Dr. Jensen's findings, other scientists took up the search—most notably Dr. Robert Risebrough of the Institute of Marine Resources at the University of California at Berkeley. Dr. Risebrough found PCBs in sea birds off the coast of California, in fish, and in human milk of nursing mothers in California at an average concentration of 2.6 parts per million.

That humans in general are contaminated with PCBs has been documented. One study by the Environmental Protection Agency (EPA) of 723 people in one South Carolina county showed that 40 percent had PCBs in their tissues at concentrations of twenty-nine parts per billion. Another EPA study of 688 people in Michigan, Florida and Colorado discovered that almost two thirds had PCBs in fatty tissue ranging from a trace to more than two parts per million. Thus it's safe to say, as the government has said, that more than half of us are contaminated by PCBs.

PCB contamination has been recognized in government circles for some time, due to sporadic but unpublicized outbreaks. But it was not until the summer of 1971 that the PCB problem crashed to public attention on the East Coast. At Holly Farms, a leading producer of broilers in Wilkesboro, North Carolina, Dr. Kenneth May, director of research and quality control, discovered that their

chickens weren't hatching properly and many were sick and dying. Dr. J. R. Harris of North Carolina State University, who tested some of the chickens, described them:

> The most common symptoms were gasping and incoordination of the head and neck just prior to death. The most severely affected birds emitted a squeaking sound. The mortality ran to 50 percent and the remainder were stunted to the point that they were destroyed. . . . On postmortem examination, most birds had a severe hydropericardium with sufficient fluid in the peritoneal cavity to cause distention. A greenish yellow gelatinous fluid was found under the skin of some of the birds. The livers showed varying degrees of degeneration, with a mottled roughened appearance resembling cirrhosis. The kidneys were swollen with small hemorrhages. Some of the birds had white caseous-like material, resembling a bacterial infection, over the heart and liver.

Dr. Harris also noted that the breeder flocks ordinarily hatched 88 percent; some were now down to 5 percent.[1]

Investigators suspected a toxic substance in the feed, and through tests from the East Coast Terminal Company in Wilmington, N.C., it was isolated: PCBs. The feed contained as much as 148 parts per million of PCB, and analysis determined that it was the toxic factor in the affected chicks; embryos were killed by as little as one part per million or less of the PCBs.

Holly Farms' Dr. May contacted Monsanto Chemical, and in the late afternoon of July 16 Monsanto called the FDA to inform them of the hazard. FDA investigators were dispatched to the East Coast Terminal Company and confirmed that the fish meal was highly contaminated with PCBs. To prevent the fish meal from being infected with salmonella (a food-poisoning bacteria), the company had begun pasteurizing the meal by passing it through a heat-exchange system containing PCBs; the dangerous chemicals had leaked into the fish meal. The company had been

attempting to fix the leak since April, and had used about five thousand pounds of PCBs in June alone. Between April 30 and July 16, the company shipped about sixteen thousand tons of presumably contaminated fish meal, which was mixed into approximately 800,000 tons of feed eaten by poultry and hogs in a wide area of the South. The tainted fish meal—about one thousand tons—was recalled, and Holly Farms condemned about 88,000 chickens in the last two weeks of July.

There is no doubt that PCBs got into hundreds of millions of chickens and hogs fed the contaminated feed, and hence to consumers. USDA samples showed that at slaughterhouses across the South, about 70 percent of the broilers which had been given the feed were contaminated with "traces of PCBs" up to 1.4 parts per million. Millions of feed animals marketed during the leak had passed through the slaughterhouses and on to supermarkets directly or to processors for inclusion in canned and frozen foods such as soups and TV dinners.

Eggs too, similarly contaminated, reached the market and were consumed. The FDA immediately put an embargo on about 450,000 eggs known to be contaminated above .5 parts per million, but through a comedy of errors sixty thousand of the tainted eggs were sold in the Washington, D.C., area even though the distributor was less than six blocks from the FDA's laboratory headquarters. And, of course, countless eggs had been distributed and eaten by unknowing consumers before the leak and the contamination were detected.

Government regulators soft-pedaled any danger. At first they withheld announcement of contamination. Then Dr. Yeutter of the USDA said that the public "should not be unduly alarmed." He added, "It is not worthwhile to worry the consumer now about something he ate a few weeks ago. It hasn't affected my consumption of chicken."[2] The FDA hastily declared "guidelines for safety" for the contaminated chickens and eggs—of five parts per

million for chickens and .5 parts per million for eggs. (If contamination was under this level, the FDA would not take legal action to remove the product from the market.)

These "safety" guidelines, as a congressman later noted, were "pulled out of a hat" for immediate regulatory purposes. There is no toxicological data showing such a tolerance to be safe for humans. The five-parts-per-million figure is based on acute toxicity studies; it certainly doesn't protect consumers against chronic effects or the fact that these chemicals are cumulative in the body. Two parts per million today, three more tomorrow and another on Sunday, and your body has already been assaulted by an "unsafe" dose. The guidelines, lacking any scientific validity, were intended only to prevent the wholesale destruction of contaminated chickens and eggs.

There were also discrepancies in the reported degree of contamination, as Harrison Wellford pointed out to congressmen. The USDA insisted that none of the chickens it analyzed from Holly Farms contained more than two parts per million of PCBs, which was well below the "guideline." However, Holly Farms personnel told Wellford that *all* the chickens they had tested were well above the five-parts-per-million "safe" level, and that they had found residues up to forty parts per million in their poultry.[3] If this was true at Holly Farms, it seems certain that it was equally true in other broiler farms using identical feed.

How toxic are PCBs? Studies show that only five parts per billion of PCBs in water kill 72 percent of the shrimp in twenty days. Experiments on rats given PCBs reveal liver damage and reproductive interference, mainly fewer offspring who live a shorter time. When Coho salmon containing fifteen parts per million of PCBs were fed to mink, the mink died within sixty days. (Apparently mink are extraordinarily sensitive to PCB toxicity.) In chickens, besides being immediately toxic—as evidenced by the pathetic deaths of chickens fed PCBs at Holly Farms—PCBs cause birth defects and a syndrome called "chick edema"

disease which has been studied since the late 1950s; the baby chicks are born with huge sacs of fluid on their necks, rumps and backs and a mass accumulation of fluid around their hearts. PCBs, like another powerful chemical, called dioxin (a contaminant of some herbicides), also produced gross skeletal defects in baby chicks.

We even have striking human evidence of PCB poisoning. In Japan in 1968 about three hundred people developed a peculiar and severe kind of skin disease; the cause was traced to a shipment of commercial rice oil, used for cooking, which had become contaminated with PCB. The victims used the oil for about a month before symptoms appeared. Nine of the victims were pregnant and two of the babies were born dead, each showed signs of chlorobiphenyl poisoning.

In Senate testimony, ecologist Risebrough calculated that to get the same amount of PCBs as the poisoned Japanese, a person would have to eat forty-five pounds of fish containing the government-allowed five parts per million. But it's well known that many foods, notably fish, exceed that toxicological allowance. For example, Sam Spencer, assistant chief of fisheries of the Alabama Department of Conservation, confirms that fish collected in his state's waters in 1970 showed contamination as high as 365 parts per million—*seventy-two times the FDA limitation*. Catfish, he said, had levels up to 277 parts per million. Though the FDA made these tests, Spencer claims that it tried to hide the results by not reporting them back to state officials until he made a special request. He says, "I feel the consumers of fish or any other food product are entitled to know what they are eating."[4]

To illustrate the possibility of acute PCB poisoning in this country, Risebrough made these additional calculations: the average concentration of PCBs in the flesh of fish sampled in Alabama was ninety parts per million. Therefore, a person would have to eat only two *and a half pounds* of such fish to ingest the level of PCBs that poisoned the Japanese.[5]

The Holly Farms incident was not the first or last time that government officials were confronted with PCB accidents. In 1969, the FDA found PCBs in milk in West Virginia; grazing dairy cattle had become contaminated with PCBs used in a herbicide-spraying operation along highways. In 1970, PCB residues showed up in milk in Ohio, Florida and Georgia. The contamination was traced to PCB-containing sealant in silos which had migrated into silage given to cows. In early 1971, high levels of PCBs showed up in chickens in New York State; it was thought that they came from bakery wrappers somehow ground up in the chickens' feed. One hundred thousand chickens had to be destroyed.

Soon after the Holly Farms incident died down, there were two more outbreaks in August of 1971—one in Minnesota, where fifty thousand turkeys had to be condemned because of PCB contamination, and another in Oklahoma, where contaminated poultry was discovered. The cause was not clearly established in either case. In 1972, PCB residues were found at high levels in large numbers of chickens in Maine and turkeys in California that had already been slaughtered. Again, the source could not be found.

In some instances, food processors themselves spot the contamination in their laboratories. Swift and Company reported the Minnesota incident, and the Campbell Soup Company detected the PCBs in the New York chickens. Such companies say they reject the contaminated poultry regardless of the FDA's lenient attitudes. A Campbell Soup Company spokesman was quoted in the *Washington Post* as saying, "Contaminated substances did not then, have not now and never will get past our laboratories." An unidentified spokesman for a leading food-processing company said he thought the government's guideline for PCBs was excessive in the extreme. He was quoted as contending, "The government may set five parts per million of PCB as an acceptable level, but we set our tolerance at zero."[6]

Apparently some food companies feel strongly about the intrusion of what they consider foreign chemicals, though they may not

be so averse to chemicals that have been clearly designated for food use. But the point is, once again the government has erred far beyond economic necessity in setting PCB allowances (as it has done with other incidental additives, including filth, as we shall see), providing a margin of danger that is unacceptable to certain segments of industry. This fact alone should alert the FDA to the idea that the guideline is too high; nevertheless, the agency has proposed to give the unofficial guidelines the status of legal "tolerances," no longer amenable to ready lowering by the FDA should officials be so inclined.

The FDA has proposed the following tolerances in food for what it calls "unavoidable residues of PCBs": milk and dairy products, 2.5 parts per million; poultry, five ppm; eggs, .5 ppm; finished animal feed, .5 ppm; fish (edible portion), five ppm; infant and junior foods, .1 ppm; food-packaging material, five ppm.

The pervasiveness of PCBs in our food is well documented. Between July 1, 1970, and June 30, 1971, the FDA found that of nine thousand samples of food, five hundred were positive for PCBs—about 5.5 per cent. They discovered PCBs in fish (315 of 570 samples), cheese (one part per million), milk (sometimes as high as twenty-eight parts per million), eggs, processed potatoes, oysters, crabmeat, cat food, candy (probably migrated from wrappers), meat, poultry and cereals. In 1972, the FDA found that 5.2 percent of the milk sampled was contaminated with PCBs, ranging from traces to 2.8 parts per million.

In July 1971 FDA surveyors doing a routine analysis for pesticide residues turned up PCBs in a shredded-wheat biscuit. The source of PCB contamination turned out to be the cardboard dividers in a cereal box that had been made from recycled paper, including carbonless carbon paper—which contains thirty thousand parts per million of PCBs. The PCBs had "migrated" into the food. A subsequent survey found that PCBs inadvertently were getting into food packaging for all kinds of products, and into the products themselves: crackers, bread crumbs, macaroni, pretzels, chips,

breakfast cereals, prepared mixes, dried milk, dessert and pudding mixes, infant dry cereals—75 percent of them were contaminated—cookies, rice, oatmeal, chocolate and cocoa products, grated cheese, dried fruits, frozen fruit juices. All told, about 19 percent of the food sampled was contaminated with low levels of PCBs—an average of .1 part per million. Since much of the contamination occurred when the food came into contact with recycled paper, the FDA proposed prohibiting recycled paper in food packaging. But the industry says that PCBs today have been significantly lowered in recycled paper intended for food packaging.

When we eat this contaminated food, our bodies become reservoirs for a slow build-up of PCBs. It has been shown repeatedly that the larger species accumulate the largest residues as the chemical is carried up the food chain. A recent study of lake trout dramatically showed that big fish who eat small ones contaminated with PCBs soon end up the most contaminated of all. Smaller, younger fish contained only one or two parts per million of PCBs. Those nine years and older had a lifetime storage of 30.4 parts per million in their flesh.

Cooperative experiments conducted by the USDA and the FDA also show that feeding low levels of PCBs to chickens causes a slow buildup of PCBs in their eggs. If the chickens are given ten parts per million in their feed, within two weeks their eggs also contain close to ten parts per million. At these low levels of PCBs there is no apparent observable disease in the adult chickens—no suspicion that either the chickens or their eggs are contaminated. Thus such eggs could be and undoubtedly are passed on to consumers in the marketplace without any warning signs of contamination. Furthermore, once the PCBs build up in hens' tissues, it takes at least eight or nine weeks after the PCB-contaminated food is withdrawn for the PCBs to disappear from their eggs.

Obviously, PCBs are a widespread environmental problem. No one intended them or wants them as food additives, including the FDA. But unlike other chemical additives, PCBs fall under no one

jurisdiction. Consumer advocate Harrison Wellford noted that government control of PCBs is hopelessly split: the USDA is charged with looking for PCBs in meat and poultry, the FDA with looking for them in whole eggs, the USDA in cracked eggs, the FDA in fish meal, the EPA in pesticides. Authority is confused and often lacking. A legal loophole allows these environmental chemicals to slip through—and into our food; it should be closed. Senator Warren G. Magnuson has introduced an amendment to the Federal Hazardous Substances Act which would require that all new substances—"some of which may be a danger to human health or the environment"—be tested for safety and that a constant surveillance system for detecting their presence in food and the environment be established.

In the meantime, we're stuck with PCBs, which are non-biodegradable. Monsanto announced in 1971 that it would no longer sell PCBs to any food or feed company, which was a responsible gesture, though it seems impossible that Monsanto can retain tight control over PCBs once they are shipped out of its plant. In March 1972, at the same time that the FDA proposed PCB tolerances for food, the agency proposed to prohibit use of PCBs in food, food-packaging and feed-manufacturing plants. A year later, the regulation was not in effect.

The late Congressman William F. Ryan of New York, in the wake of the North Carolina chicken contamination, introduced a bill to ban all sale of PCBs in the United States. Ryan, who had been concerned about PCB contamination for several years, said, however, that responsible agencies could ban PCBs on their own. He said that prior to the North Carolina PCB accident he had repeatedly urged the FDA, the USDA, the EPA and the Secretary of Interior to ban PCBs. The incident at Holly Farms, said Ryan, "tragically illustrates the failure of the federal government to take preventable action against the unconscionable use of this deadly chemical."

Most disturbing, however, are the government's proclamations

that there is no problem. FDA officials at a New York conference in 1972 assured everyone that the PCB problem was "under control." When sixty thousand PCB-tainted eggs got loose in Washington, the FDA's public-information officers went to great lengths to tell the public no one could get sick from eating the eggs (which was true in acute terms, but not over the long term). In its proposed PCB order, the FDA stressed that "PCBs are not considered to be an immediate hazard to public health," although "PCB levels in food and animal feed must be reduced to minimize the longer-term exposure."

There is a problem, and that fact should not be hidden from the public. The public should not be treated as children who cannot be alarmed. If truly informed, the public can be counted on to take far stricter views on correcting environmental hazards than the conglomerate of federal agencies.

Remember, too, that when government officials say there is no human health danger from PCB-contaminated food, they do not necessarily mean PCBs are not present. The double-talk is illustrated by statements from Agriculture's Dr. Yeutter after the incident at Holly Farms. At first Dr. Yeutter insisted there "was no evidence that any contaminated chickens have reached any consumer." When called on that, he explained the contradiction with: "There was no statement that chickens fed on the contaminated fish meal had not reached the market. The statement was that there was no evidence—and there still is none—that any of the marketed chickens contained more PCB than the 5 parts per million considered acceptable by the government." (Italics added.)

Thus, contamination is not considered as such when it is sanctioned by the government. As James S. Turner succinctly pointed out in *The Chemical Feast*, the public's standard of safety and the government's may be two different things. Wrote Turner: "When the FDA says a substance is safe, it merely means that for its own

reasons—usually not explained—it has chosen to take no action against the substance."

This brings us to another kind of unintentional contamination—not by synthetic chemicals but by naturally occurring substances. No book on food safety would be sufficiently enlightening without mention of those most repulsive incidental additives: cockroach legs, rodent droppings, mold, insect eggs, worms, larvae, etc. For years the FDA kept secret from the public its standards of what constitutes filth—though they were known to some manufacturers. In March 1972, under pressure from consumer advocates and members of Congress, the agency finally released its "filth tolerances," which it calls "unavoidable defects" that "present no health hazard."

To a public that thought it was getting pure food, the report was a shocker. The FDA said it generally did not take legal action against a product unless it exceeded the following limits: chocolate, sixty microscopic insect fragments per 100 grams; cornmeal, an average of one whole insect per 50 grams; raisins, ten insects per eight ounces; wheat, one rodent pellet per pint; apple butter, an average of four rodent hairs per 100 grams; peanut butter, an average of fifty insect fragments per 100 grams; canned or frozen asparagus, 15 percent of the spears infested with six attached asparagus beetle eggs or egg sacs; frozen brussels sprouts, forty aphids or thrips per 100 grams; canned or frozen spinach, two spinach worms (caterpillars) five millimeters in length in twelve No. 2 cans; canned tomatoes, ten Drosophila fly eggs per 500 grams. (For a complete list of the filth tolerances, see the Appendix.)

According to the FDA, these tolerances exist "because it is not now possible, and never has been possible, to grow in the field, harvest and process some crops that are totally free of natural or unavoidable defects." Though the FDA admits that such filth is "aesthetically unpleasant," it assures us it presents "no hazard to

health." That is not what the agency was saying a few years ago in its book *General Principles of Food Sanitation* (1968 edition). The agency specifically warned against filth, noting that rodents and flies carry disease bacteria, constituting a "real health hazard," and that insect bodies may carry "untold numbers of organisms of disease." To quote the FDA:

> Often the line of demarcation between a harmful and filthy food is exceedingly narrow. Many sources of filth in food products are potential sources of disease organisms. Flies and roaches may harbor pathogenic bacteria and transmit infections to foods. Rodents, flies and other insects closely associated with filth and unsanitary conditions are capable of mechanically transferring pathogenic and spoilage organisms from such filth directly to food products.

The filth tolerances were first set in 1911 and were revised in the 1930s and again in 1973 as a result of howls of public protest. Still, the tolerances are outrageously high and allow marginal manufacturers to continue unsanitary practices that other manufacturers easily eliminate. In a scathing article on the government's filth standards, *Consumer Reports* magazine, published by Consumers' Union, termed the FDA's current attitude about filth in food "grossly irresponsible." Observed CR: "We find the FDA's standards grossly out of line with current food processing capabilities." The magazine pointed out that, contrary to FDA assertions, many types of contamination are avoidable. "High levels of filth often result from using infested raw materials. Rat excreta or roach fragments in food are signs of improper storage or manufacturing practices." CR noted that 86 percent of the peanut butter samples it tested in 1972 contained *neither* insect fragments nor rodent hairs. These are patently preventable infestations. The FDA's allowance for rodent excrement in wheat (up to one pellet per pint), said CR, "does not even reflect average conditions found

more than two decades ago, and conditions have improved since then."

The same situation exists with corn, said the magazine. Corn used to be stored in corn cribs vulnerable to rats and mice. "Such storage conditions are comparatively rare now, but the FDA filth standards that were adopted to correct the situation that existed in 1940 have weathered the generation gap." Many manufacturers now have much more rigid guidelines against filth than the FDA. "By setting such high tolerances for filth, the FDA is, in effect, encouraging adulteration of foods rather than assuring their purity," concluded CR.[7]

By setting an unnecessarily high guideline for another natural contaminant, aflatoxins, the FDA is also exposing Americans unduly to disease. Aflatoxins are a group of potent poisons produced by *Aspergillus flavus* molds, which can form under humid conditions on such foods as wheat grain, corn, and nuts of all kinds. The poisons were discovered in 1960 when the death of twelve thousand young turkeys in England was traced to feed containing peanut meal that was contaminated with aflatoxins. Since then aflatoxins have proved to cause a fatal disease in dogs, called hepatitis-X, and cancers in rats and other species in which they have been tested. One aflatoxin, designated Aflatoxin B-1, is regarded as the most potent carcinogen ever found; a mere fifteen parts per billion fed to rats cause liver cancer in 100 percent of them.[8] Epidemiologists have also linked aflatoxins to human illnesses in Thailand, the Philippines, South Africa, Uganda and India. Studies in Thailand show that people eating food contaminated with aflatoxin have a high incidence of liver cancer. In India, after twenty malnourished children were accidentally given a protein supplement contaminated with three hundred parts per billion of aflatoxin, three died of cirrhosis of the liver within eighteen months.

Despite aflatoxins' carcinogenic potency, the FDA takes no

action against food contaminated with less than twenty parts per billion. Not long ago, an FDA official justified this "guideline," saying, "Though the Delaney clause allows no tolerance for a known carcinogen, we stick to the 20 ppb. guideline. We can't accurately measure much less than that."

As long ago as October 1971, chemists at a meeting of the Association of Official Analytical Chemists announced they had improved methodology so that aflatoxins could be reliably detected at five parts per billion. In fact, there was wide speculation that the FDA would immediately lower the tolerance 300 percent to five parts per billion in line with improved technology, as Canada has done. But FDA officials decided to stick with the twenty parts per billion. Furthermore, even five parts per billion is not a floor. Consumers' Union analyzed peanut butter samples for aflatoxin at two parts per billion, and the FDA has a method sensitive to one part per billion for finding aflatoxin residues in the flesh of animals fed aflatoxin-contaminated feed.

The twenty-parts-per-billion tolerance is simply a figure the FDA uses for economic purposes. And it subverts the aim of keeping carcinogens out of foods. Such was the case with some cornmeal mixes analyzed at the FDA; they were contaminated at nineteen parts per billion of aflatoxin, a dangerous dose, but since this squeaked under the legal limit, they were not touched by the FDA and were shipped out and consumed by Americans—all under a "technicality" of the law. (Since aflatoxin is invisible and tasteless, there is no way consumers can detect it. Even government chemists can spot it only through chemical analysis, for it may be present even though there are no obvious signs of mold.)

Yet the FDA's Dr. Wodicka has called aflatoxins one of the agency's most worrisome problems and a national hazard. He has acknowledged that "although levels sufficient to cause acute poisoning are extremely unlikely, the regular consumption of these materials over an extended period can lead to liver cancer, and

there is considerable indirect evidence that it does in some countries."

Food becomes contaminated with aflatoxin mainly because of poor storage practices which allow grain to become damp, thus breeding molds. Since aflatoxin is potently toxic to chick embryos, causing early deaths and deformities, one method of confirming its presence is through the chick-embryo test. I have analyzed many samples sent to me from FDA field men throughout the country. In 1971 aflatoxin contamination was found in excess of twenty parts per billion in 140 food samples—notably in corn, cornmeal, hominy feed, pistachio nuts, cottonseed, copra (coconut) meal, cornmeal mixes. The FDA has seized or recalled corn, cottonseed, almonds, cornmeal mixes, but in many instances the contaminated grains or nuts have been sold because the dealer would not voluntarily withhold the product while the FDA was doing the analysis, and the FDA cannot make a seizure without proof of contamination. Confronted with the guideline, some offenders have also mixed their highly contaminated grain with less contaminated grain to reduce the total contamination level below twenty parts per billion.

There is no reason—except economic—that the aflatoxin tolerance could not immediately be reduced at least to five parts per billion for so potent a carcinogen. Nor should grain contaminated above that level be allowed to be fed, as it is now, to milk- or meat-producing animals, when the aflatoxin can show up in food intended for humans. We don't want aflatoxin-contaminated livers any more than we want DES-contaminated livers.

The necessity for low tolerances also applies to all kinds of pesticides and herbicides, such as 2, 4-D and 2,4,5-T, which contain the dread dioxins, known to cause terrible birth defects in animals at exceedingly low levels. (Only 125 to 500 parts per trillion fed daily have caused deformities in rats.) These herbicides were used as defoliants in Vietnam and are still being widely used in the

United States; consequently, dioxins do show up in food as a result of irresponsible spraying. So life-threatening are these defoliants that they should be immediately and totally banned from use, as some scientists have recommended.

Consumers should also be on the lookout for increased contamination from another incidental additive: ionizing irradiation of food. Even now the FDA permits irradiation of wheat for disinfestation, to kill or sterilize bugs, and irradiation of potatoes and onions to prohibit sprouting, though it is not yet widely used for these purposes. The use of irradiation on strawberries, fish and other perishables has also been proposed to extend their shelf life; irradiation changes food chemically, retarding deterioration. Bacon subjected to high doses of irradiation can remain unrefrigerated for two years, but such usage is not approved. That such usage will be contemplated in the future seems inevitable; for example, astronauts took irradiated bread on their moon trips. Moreover, irradiation in food processing—for example, to achieve the form-fitting plastic packaging of turkeys—is now allowed. As a result, consumers are undoubtedly being subjected to the byproducts of irradiation in food.

Irradiation at high levels has been shown not only to severely destroy vitamins and minerals in food, but also to cause reproductive problems, a shortening of the life span and other complications in laboratory animals. In some instances—for example, in irradiated jams and fruit compote—cancer is a suspected result.

Incidental additives, then, can be fully as dangerous as intentional ones, and we must do everything possible to reduce them to their lowest levels—instead of setting high legal tolerances that condone and encourage adulterated foods.

9

FIRST CYCLAMATES, NOW SACCHARIN

Cyclamates, the synthetic sweeteners, have passed from the American supermarket shelf, though occasionally you hear reports that the industry still hasn't given up. McCormick's Richard L. Hall, former president of the Flavor and Extract Manufacturers' Association, said in May 1972 that "the cyclamate story is far from over." Believe it or not, cyclamate and its metabolic byproduct cyclohexylamine (CHA) are still being tested, and in June 1972 Dr. Oser's Food and Drug Research Laboratories announced that CHA had come out clean in new tests. Some observers speculate that there is an underground movement afoot to "reevaluate" cyclamates as evidence mounts against saccharin, the artificial sweetener that industry fell back on when cyclamates were banned.

When asked about the safety of saccharin, an FDA official, in October 1972, called it "a story in the making." He failed to add that it's the same old story, with nearly identical details, as the one the public heard about cyclamate. At present it's too soon to tell whether the saccharin story will have a surprise ending—or, for that matter, whether cyclamate will have a comeback. But it is instructive to look at the FDA's handling of cyclamate and note how little we've learned when the scenario can repeat itself.

The cyclamate incident was one of the biggest explosives to hit the FDA. Officially, you might say it began to sizzle on October 1, 1969, when, after clearing the matter with superiors, I was inter-

to be continued
(or Buy your own in 74?)